

ANNUAL REPORT

2018-19

futurearth  
Research. Innovation. Sustainability.



**Future Earth Annual Report 2018-19**

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**Cover:** Towns, fields, and pastures surrounding the swirls and whorls of the Mississippi River, the largest river system in North America. Countless oxbow lakes and cutoffs accompany the meandering river south of Memphis, Tennessee, on the border between Arkansas and Mississippi. (Credit: NASA's Goddard Space Flight Center/USGS)

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This annual report covers the period from 1 April 2018 to 31 March 2019



Future Earth

# Annual Report 2018-19

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# Executive director's note

"If solutions within the system are so impossible to find, then maybe we should change the system itself." These words from Greta Thunberg, the young leader of the global youth climate movement, demand immediate and radical change to combat today's escalating global crises.



Late last year the United Nations' 1.5°C Special Report warned that climate inaction could lead to irreversible impacts on ecosystems, biodiversity, food security, and more. Most recently, the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) IPBES Global Assessment found that nature is declining at rates unprecedented in human history with grave impacts for economies, livelihoods, health, and quality of life worldwide. We need fundamental, large-scale reorganization across all technological, economic, and social paradigms, and we need it now.

Future Earth at its core is about systems change. It is about strengthening our understanding of the linked human-environment system and building the knowledge to enable transformations that will help society achieve the vision of the Sustainable Development Goals (SDGs). We are still far from the scale of change that Greta and the world's youth are demanding. But at Future Earth, we are focusing our efforts on this challenge.

In April 2018, the Future Earth Advisory Committee (AC) and Governing Council (GC) directed the Secretariat to work with our community to identify a few cross-cutting themes where transdisciplinary science is needed to help accelerate the global sustainability agenda. We call these cross-cutting themes, *Global Systemic Challenges*. By coordinating our research efforts in a few high-priority focus areas, we aim to work more effectively, foster new collaborations and funding opportunities, and develop a stronger collective response to the risks we are all facing.

Our first Global Systemic Challenge focuses on the concept of *Earth Targets*, recognizing the necessity of taking a whole Earth system approach to co-creating SDG solutions. Last year we launched two new initiatives under the Earth Targets theme. First, the Earth Commission will synthesize the latest science to help a larger global effort in the setting of science-based targets for Earth's life-support systems (such as water, biodiversity or land). Second, our initiative on Science-Based Pathways for Sustainability, will build knowledge on the avenues through which targets can be met, especially given local or regional contexts and the synergies and trade-offs that may occur among SDGs as transformations to sustainability are achieved.

A second Global Systemic Challenge on Societal Transformations for Climate Action on a healthy and equitable planet is also in the works. Together, these two Challenges are helping to focus the Future Earth community to work together on a few big levers of systems change, from multiple and intersecting social, biophysical, and technological angles.

In this era of unprecedented anthropogenic change, the world needs an authoritative, independent, nimble voice of science to advance global sustainability policy and action. Future Earth provides that voice. And now with a coordinated, systems-focused agenda, our Global Research Projects, Knowledge-Action Networks and our many national and regional structures are better equipped to translate the global vision of the SDGs into rapid, societal change at home and around the world.

**Amy Luers**  
- July 2019

*Future Earth is governed by the International Science Council (ISC), Belmont Forum of funding agencies, the United Nations Educational, Scientific, and Cultural Organization (UNESCO), the United Nations Environment Programme (UNEP), the United Nations University (UNU), the World Meteorological Organization, and the Science and Technology in Society (STS) forum.*



Over the last year we have seen unprecedented growth in global awareness and calls to action to ensure our planet's sustainability, from student protests to results at the ballot box. These movements parallel important advancements in science, from analyses of global risks, and new assessments on climate and biodiversity, to the ongoing exploration of transformative pathways to sustainability. With the public demanding change, Future Earth's role in providing the trustworthy science to spur action has become more important than ever. Our extensive research network continues to explore the boundaries of sustainability science, teaming up with policy makers, business, and civil society in recognition that we must enable societal transformations collaboratively. Future Earth's ambitious mandate, to advance the frontier of Earth system research for global sustainability and contribute to actionable transformative change, becomes more relevant every day.



**Johan Rockström,**

Future Earth Advisory Committee Co-chair



**Leena Srivastava,**

Future Earth Advisory Committee Co-chair



# A global network of researchers and innovators



5 Global hubs

Regional centers and offices

5

ca. 20 National networks

Connecting to international platforms:  
10+ global policy partnerships, such as the United Nations Framework Convention on Climate Change

- Global hubs
- Regional centers, partners & offices
- National networks

Sweden hub

Japan hub

Global  
Research  
Projects

20

9 Knowledge-Action  
Networks\*

# Facilitate research and innovation

Our society rests precariously on the complex interconnections between natural, social, and economic systems. At Future Earth, our 20 Global Research Projects study the relationships between people and planet to track and anticipate changes among these systems, enabling us to better respond to vulnerabilities and generate high-impact solutions. This year's research included the promising finding that policies supporting renewable energy are helping to reduce emissions in 18 developed economies and a new project examining what the longevity of ancient cities can teach us about planning sustainable cities today.

We've also begun working towards our first Global Systemic Challenge on Earth Targets and have continued to lead or partner on multiple initiatives in the last year that dig into biodiversity and ocean sustainability, linkages between the finance sector and ecosystem tipping points, feasible technology pathways to halve emissions by 2030, and much more. Read on to see how Future Earth is working with partners in government, business, and academia, to drive new sustainability research and innovation across the globe.



# Global Research Projects Highlights

The core research of Future Earth is conducted in its 20 global research projects which are networks of experts from across the globe that collaborate to advance our understanding of the Earth system and science based pathways to a more sustainable world.

## Global Carbon Project

The 2018 Global Carbon Budget made headlines around the world after it was released at the annual United Nations climate negotiations (COP24) in December 2018. The Global Carbon Project found global emissions of carbon dioxide from fossil fuels and industry were projected to rise for the second consecutive year, by more than 2% to a new record. The Global Carbon Budget is produced by 76 scientists from 57 research institutions in 15 countries working under the umbrella of the Global Carbon Project. The budget, now in its 13th year, provides an in-depth look at the amount of fossil fuels that nations around the world burn and where it ends up.

## IHOPE

In 2018, the Integrated History and Future of People on Earth (IHOPE) project began a US National Science Foundation (NSF) – National Socio-Environmental Synthesis Center (SESYNC) project on what long-lived ancient cities can teach us about planning sustainable future cities in changed environmental conditions. Ancient cities in arid environments are particularly rich in management approaches. IHOPE is a global network of researchers and research projects using integrative frameworks to combine the study of human and Earth system history on behalf of our species' future. IHOPE's long-term, human-scale perspective unites Earth system science with the social sciences, the humanities, and extensive collaboration with communities of practice.

## oneHEALTH

oneHEALTH conducted an annual review of hot topics for One Health that will profoundly change the future of health on the planet. Published in June 2018 in the One Health Congress newsletter, the *Future Earth's Top Challenges for One Health* summary highlighted Future Earth's goals and the value of integrated research, showing examples of where One Health approaches can help in assessing threats and opportunities on the horizon to better understand health and environment dynamics and anticipate and mitigate possible negative consequences.

## Earth Systems Governance

A new Science and Implementation Plan for the Earth System Governance Project (ESG), developed in consultations with the Earth system governance community by the New Directions Initiative, was launched at the 2018 Utrecht Conference on Earth System Governance, the tenth conference in the annual series. The Plan will guide research in the years to come, and to realize the vision to understand, imagine, and help realize just and sustainable futures. Simultaneously, the Earth System Governance Harvesting Initiative is compiling key research findings in books or journal contributions. The Project also launched the Earth System Governance Journal, a peer reviewed, open access journal that addresses governance at all levels of decision-making within a planetary perspective, focusing on global environmental change and Earth system transformations, as well as a new book series with Cambridge University Press that aims to present policy-relevant research that is of interest to both academics and policy-makers, complementing the long-standing Earth System Governance series with The MIT Press. And through its global, diverse, and dynamic network of researchers, Research Centers, and Taskforces, the Earth System Governance Project is continuously coordinating, producing, and fostering cutting-edge research.

## IMBeR

Scientists from Integrated Marine Biosphere Research project (IMBeR) published a number of important findings during this period.

In the Antarctic, krill are keystone organisms. Atkinson et al. published a paper in *Nature* based on their observations of major shifts in the distribution and size of krill in response to warming seas. This has big implications for the species that feed on krill and their food webs, and potentially also affects biogeochemical cycling. These findings are invaluable for the management of both the globally important fisheries of the Antarctic and its iconic biodiversity.

In one of the first global studies of its kind, Pethybridge et al. identified previously unknown effects of warming oceans on marine top predators and their food webs. They found that areas starved of oxygen have shorter food chains and affect foraging behavior of predators. As deoxygenation is a direct result of climate change, and low oxygen zones are expanding, the findings have improved our ability to model the impacts of climate change on ocean ecosystems.



## IGAC

The International Global Atmospheric Chemistry Project (IGAC) initiated the Tropospheric Ozone Assessment Report (TOAR) in 2014 with a mission to provide an up-to-date scientific assessment of tropospheric ozone's global distribution and trends from the surface to the tropopause. TOAR has now compiled the largest data set of ozone measurements around the world, which helps track which regions of the world have the greatest human and plant exposure to tropospheric ozone pollution. In 2018 and 2019, it provided metrics for climate, health, and vegetation studies in a series of papers in a special issue of *Elementa: Science of the Anthropocene*, for the purpose of improving research regarding ozone's impacts on climate change, air quality, ecosystems, and agricultural production.

## AIMES and PAGES

There is an increasing realization that human modification of the Earth system runs the risk of inducing abrupt transitions in climate, ocean circulation, the cryosphere, ecosystems, and society. Our ability to predict when and where such transitions, so called "tipping points" might happen is limited. While abrupt climate change has long been identified in ice core records and other archives, skillfully modeling abrupt change has largely been limited to simple models and many state of the art climate models underestimate the rate and extent of abrupt change apparent in paleo data. To address these issues, the Analysis, Integration, and Modeling of the Earth System (AIMES) and Past Global Changes (PAGES) global research projects held a joint three-day workshop on 14-16 November 2018 at the Max Planck Institute for Meteorology, where workshop attendees evaluated the potential for significant progress in using paleoclimate data to predict future tipping points and abrupt change. A synthesis paper describing the future challenges and opportunities has since been submitted to *Nature Geoscience*.

# Earth Targets

In 2018, Future Earth decided to focus on Earth Targets as its first Global Systemic Challenge. Under this theme Future Earth is building two complementary initiatives, the Earth Commission and Science-Based Pathways for Sustainability. These will provide scientific guidance behind the target-setting process, and will explore innovative ways to meet new and established targets.

## Earth Commission

The Earth Commission is an international science panel that will develop a scientific report on environmental thresholds from a planetary perspective. Building on previous scientific assessments, it is the first major attempt to conduct a global scientific synthesis encompassing a whole Earth system approach. The core objective is to define the biophysical boundary conditions for a stable and resilient planet and a safe operating space for humanity. The synthesis will provide the quantitative basis for defining targets – similar to the 1.5°C target for climate – but for Earth's other life support systems like freshwater, land, oceans, and biodiversity.

The Earth Commission is a critical component of the Global Commons Alliance, a large network of scientific, business, and nongovernmental organizations aiming to transform how society interacts with economic and natural systems. The Commission's work will be

central to inform another component of the Alliance, the Science-Based Targets Network, which will develop actionable targets for companies, cities, and potentially nations looking to safeguard the global commons.

In 2018, the initiating partners of the Alliance asked Future Earth to host the Earth Commission's scientific secretariat with support from the Potsdam Institute for Climate Impact Research and International Institute for Applied Systems Analysis. Over the year, and in collaboration with Alliance partners, Future Earth established a terms of reference for the Commission, promoted the Commission at a World Economic Forum event, secured initial funding from the Porticus Foundation and the Gordon and Betty Moore Foundation, and launched a call for nominations to appoint the Commission's lead scientists. The Earth Commission members were announced in September 2019 and their first scientific meeting is planned for November 2019.

## Science-Based Pathways for Sustainability

A new Future Earth initiative, Science-Based Pathways for Sustainability is working with scientists and stakeholders to jointly design pathways, at various geographical scales, to inform decision-making for the achievement of the SDGs.

The initiative focuses on the four life-supporting SDGs (freshwater, oceans, climate, and land) as entry points into the SDG framework to:

1. Build, strengthen, and connect national, regional, and global research communities and their links with other stakeholders through transdisciplinary synthesis efforts.
2. Generate knowledge to inform policy and help develop a shared vision among scientists and stakeholders on societally urgent themes related to the SDGs.
3. Influence research agendas by identifying critical knowledge gaps and needs for transdisciplinary efforts in sustainability research.

A core team from across the Future Earth community first came together at a Future Earth research summit in August 2018 to develop the initiative's concept. Since then the group has expanded to 18 members representing multiple disciplines within the natural and social sciences. National processes have commenced in Canada (introductory workshop in March 2019), France (national launch in May 2019 and four 2019-2020 workshops planned in collaboration with the French National Committee of Future Earth), and Germany (workshop in preparation for the end of 2019 led by the German Committee Future Earth). Future Earth's regional partners in Africa and Asia are currently scoping potential workshops, including Future Earth's Regional Centers and network of Early Career Researchers.



Interactions between the Science-Based Pathways for Sustainability Initiative (left), the Earth Commission (middle) and the Science-Based Targets Network (right). The smaller rings represents working groups of experts connecting all three components.

# PEGASuS

The Program for Early-stage Grants Advancing Sustainability Science (PEGASuS) directly supports sustainability science. Future Earth has demonstrated that the capacity to form transdisciplinary teams is very strong within the Biodiversity and Natural Assets community of researchers and practitioners. In addition, PEGASuS: Ocean Sustainability is demonstrating Future Earth's ability to form policy-relevant research teams, as well as the power of early career researchers at the interface of science and policy.

Five teams have completed, or are near competing, their research on Biodiversity and Natural Assets. Examples of outputs include databases on the impacts of drug trafficking on the protection and management of biodiversity hotspots in Central America, workshops on pest management on farms in Malawi, growing a global database of mountain biodiversity, translating local knowledge on the diversity of native bees in Bolivia, and establishing an international network of scientists and stakeholders focused on the nature conservation-poverty reduction nexus.

Two research teams and two postdoctoral researchers are currently tackling ocean sustainability at the science-policy-action interface. One team is examining the relationship between fisheries management and food security in the Pacific, while another is advancing the development of global monitoring systems for biological ocean variables. Both PEGASuS teams and postdoctoral researchers are deeply engaged in the UN Decade of Ocean Science for Sustainable Development.

In 2019 / 2020, PEGASuS will be launching new grant competitions focused on Pathways to the SDGs, and the Food, Water, Energy Nexus.

# Sleeping Financial Giants project

Financial flows have an understated impact on Earth's climate system. The Sleeping Financial Giants project is engaging the finance sector to help it realize its direct links to global sustainability. A collaboration between Future Earth, Stockholm Resilience Center, and Global Economic Dynamics and the Biosphere Programme at the Royal Swedish Academy of Sciences, the project communicates research on the links between financial investments and tipping points in major ecosystems, focusing especially on the Amazon rainforest and the boreal forests.

In 2018, the Sleeping Financial Giants project went on the road with dialogues with representatives of major financial institutions in Stockholm, London, New York, and Tokyo.

## Road trip:

- ▶ In London, the seminar brought together executives and top climate scientists.
- ▶ In New York, the project's report was launched to an audience of the UN Sustainable Development Solutions Network, which includes leading economists such as Jeffrey Sachs and heads of some of the world's major environmental organizations. The project report was quoted in leading news outlets including *The New York Times*, while some spin-offs from the research included a look at corporate tax havens involved in deforestation – a report that received wide media attention, including in *The Guardian*.
- ▶ In Tokyo, both a public symposium and an invite-only seminar were organized with an emphasis on the dialogue between Earth system scientists and the finance sector, in collaboration with the Future Earth Finance and Economics Knowledge-Action Network.

Funds for this initiative come from Vinnova, Futura Foundations, The Erling-Persson Family Foundation, and MISTRA.

Background report: <https://sleepinggiantsearth/backgroundreport/>

# Futures CoLab

Futures CoLab, a collaboration between Future Earth and MIT Center for Collective Intelligence, brings together hundreds of researchers and innovators from around the world in facilitated dialogues through an online platform to explore potential solutions to global systemic challenges.

In 2018, Futures CoLab teamed up with the ClimateWorks Foundation to conduct an online scenarios exercise exploring the socio-economic, political, and technological developments that could impact climate action strategies over the next 30 years, identifying blind spots in current thinking. The final report, *Broadening the Dialogue: Exploring Alternative Futures to Inform Climate Action*, was published in November 2018.

In 2019, Futures CoLab conducted an exercise to explore potential disruptions to the systems sustaining global unsustainability and inequity. This exercise, *Disrupting Systems for Global Sustainability*, engaged over 160 diverse experts in online dialogues over a period of three weeks. A summary report was produced as input to the Sustainability in the Digital Age Research and Innovation Agenda and a final report will be published in autumn 2019.



# Exponential Roadmap

*“Right now, it is easier to imagine a global climate catastrophe than a rapid economic transformation, yet the next decade could see the fastest energy transition in history,” says co-lead author Owen Gaffney from Future Earth and the Stockholm Resilience Centre.*

The *Exponential Climate Action Roadmap*, which was presented as the keynote at the Global Climate Action Summit in San Francisco on 13 September 2018 by Christiana Figueres and Johan Rockström, charts essential steps to 2030 to catalyze action at the speed and scale now required to combat climate change. The Paris Agreement’s goal to reduce the risk of dangerous climate change can be achieved, but the world must follow an exponential trajectory of halving greenhouse gas emissions every decade from 2020.

Although it is now technologically feasible and economically attractive, the world is not on this path. This roadmap focuses on the immediate priorities, and has three purposes:

- ▶ To communicate the pace, scale, and systemic nature of the necessary economic transformation.
- ▶ To connect the exponential scaling potentials in the digital revolution to the climate challenge.
- ▶ To support momentum across policy, markets, and technology.

Digitalization can drive exponential action across all economic sectors to reduce emissions – while driving prosperity and growth. “The tech sector can influence whether we live on a 1.5-2°C planet or on a +3°C world,” says Johan Falk co-lead author from Future Earth and the Stockholm Resilience Centre.

The initiative is engaging the Information and Communications Technology (ICT) sector to lead global decarbonization, and the report has had wide impact and media coverage. It was presented and discussed at the World Economic Forum in January 2019, and at several workshops and seminars, including one at the Swedish Parliament. More than 20 front-running ICT companies, including Ericsson, Salesforce, Cisco, Uber, and HP, have also signed the Step Up Declaration to drive decarbonization.

# Partnership for Resilience and Preparedness (PREP)

PREP works with partners at city, state, and national levels across the globe to facilitate the use of climate data in decision-making. PREPdata is a free, open-source platform that provides accessible, curated data for decision-makers to analyze vulnerability and build climate resilience. It allows users to easily access credible climate, physical, and socioeconomic datasets from sources like NASA, the National Oceanic and Atmospheric Administration, the United States Geological Survey, and the European Space Agency. By combining local, regional, and national data PREPdata users can create solution-focused adaptation dashboards and communicate data needs to data providers. PREP is a public-private partnership working with Google, Microsoft, NASA, the Stockholm Environment Institute and 26 other contributing and resources partners in the private and public sectors, and civil society.

Future Earth co-leads this partnership with the World Resources Institute. Leaders in the Indian states of Uttarakhand and Madhya Pradesh are already using PREPdata. In Uttarakhand, for example, which borders Nepal at the foot of the Himalayas, severe rains in 2013 caused flooding and landslides that killed more than 5,700 people. Access to high quality data might help this country map where landslide risks overlap with sites such as population centers or tourism hubs. The South Asia Regional Office for Future Earth, which is based in Bengaluru, India, is supporting this project by reviewing the data used by the PREP team. Additionally, our South Asia Regional Office hosted a workshop in August 2018 on Data and Tools for Climate Resilience Planning in South Asia to further build on PREP's work in the region. Funding for this initiative came from the Climate Resilience Fund and others.

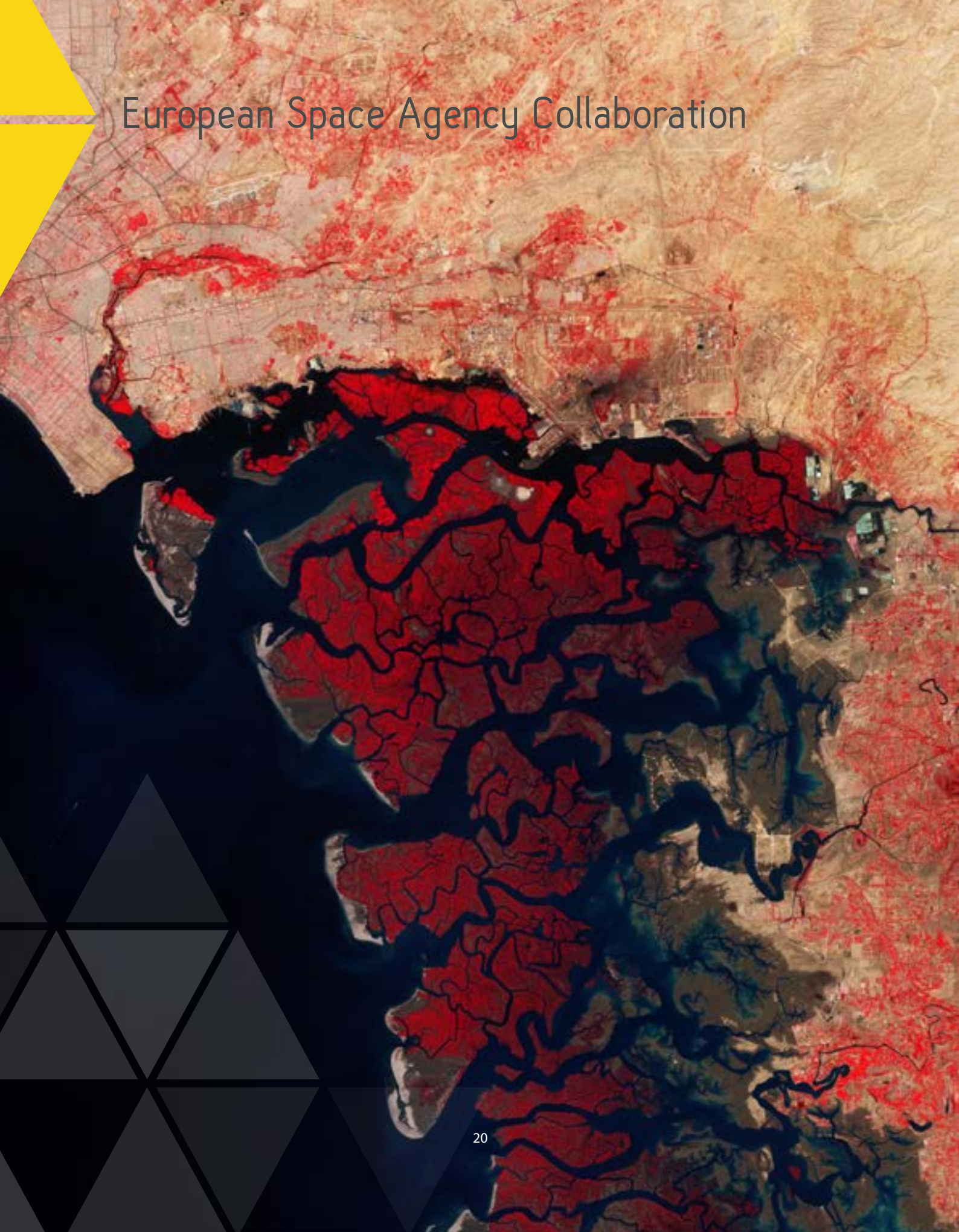


# Sustainability in the Digital Age

Sustainability in the Digital Age is a new Future Earth initiative working to build knowledge and tools to help build a more sustainable and equitable world in the digital age. The initiative kicked off in early 2019, with both philanthropic and government funding from the ClimateWorks Foundation, the Fonds de Recherche du Québec, the Canadian Institute for Advanced Research, and Mitacs.

An international Expert Advisory Committee has been established to guide the initiative, consisting of 20 leaders in their fields, from natural and social science, government, civil society, philanthropy, and the private sector. One of the Committee's key tasks is to help develop a Research, Innovation, and Action Agenda on how to leverage the digital age for societal transformations on climate. Initial phases of the Agenda were informed by a Futures CoLab exercise in March 2019 – an online dialogue process, developed in collaboration with the MIT Center for Collective Intelligence. Our research team held a September 2019 workshop on AI and Society and is planning a 2020 workshop on AI and Planetary Health.

# European Space Agency Collaboration



A satellite image of a coastal region, likely in Western Pakistan, showing a prominent river delta with a winding channel. The land is colored in shades of red and orange, while the water is dark blue. The image is overlaid with a semi-transparent white box containing text.

Future Earth partners with the European Space Agency (ESA) Climate Office to encourage innovative ways of using satellite Earth observation data to support transformations towards sustainability. The partnership strengthens Future Earth's links with the Earth observation and climate communities and ensures that ESA's strategic direction is guided by robust science from Future Earth.

## HIGHLIGHT from 2018

**ESA supported the annual science meeting of the Ecosystem Studies of the Subarctic and Arctic Seas (ESSAS)** in June 2018, in Fairbanks, Alaska, home to the Alaska Satellite Facility. ESSAS is a regional programme in Future Earth's Integrated Marine Biosphere Research project (IMBeR) that addresses important gaps in our understanding of ecosystem sensitivity to reductions in sea ice cover, warming and consequent changes in ocean mixing as a result of climate change. As well as providing an opportunity for scientists to plan new collaborations, the meeting included a training session on the use and analysis of remote sensing data to study ocean processes and ecosystem change. It highlighted the open datasets available via ESA's Climate Change Initiative.

# Build and mobilize networks

As society grows ever more connected, Future Earth is capitalizing on the power of networks – linking science, policy, business, and civil leaders – to bring about collaborative solutions for complex environmental problems.

To create collaborative opportunities for our Global Research Projects and Knowledge-Action Networks the secretariat has been preparing for the inaugural Sustainability Research and Innovation Congress, a first-of-its-kind event, gathering academia, business, nongovernmental organizations, and governments to address global sustainability challenges.

We also helped administer two research funding opportunities with the Belmont Forum this year and continued to create connections among the next generation of scientists, through our Early Career Network and Global Sustainability Scholars Program. More collaborative activities, including the ongoing efforts of our Knowledge-Action Networks, are featured in the following pages.

# Knowledge-Action Networks (KANs)

## Systems of Sustainable Consumption and Production Knowledge-Action Network


In 2018, this KAN had four publications in highly respected journals resulting directly from KAN and Working Group collaborations. This KAN organized a session at the IPCC Cities and Climate Change Science Conference in Edmonton, and prepared a statement read at the 2018 High-Level Political Forum in New York where countries' progress on SDG12 (Responsible

Consumption and Production) was reviewed. It organized a session on sustainable consumption at the World Social Science Forum in Fukuoka, Japan. Moreover, it submitted input to the Talanoa Dialogue Platform on Climate Change; participated in sessions at the annual conference of the International Association for Media and Communication Research in Oregon; and organized a workshop on Communication for Sustainable Consumption at the Third International Conference of the Sustainable Consumption Research and Action Initiative at the Copenhagen Business School in Copenhagen, Denmark.

## Risk Knowledge-Action Network

The Risk KAN – jointly developed by the World Climate Programme (WCRP), Integrated Risk and Disaster Risk (IRDR), and Future Earth – launched in October 2018 an open call for a Development Team (DT) which was widely shared through the co-sponsoring programmes and associated activities. The DT was selected by representatives of the three programmes and started its activities at the beginning of 2019. Since then Terms of Reference and Governance Plan of the Future Earth - IRDR -WCRP Knowledge-Action-Network on Emergent Risks and Extreme Events (Risk

KAN) were developed and the Risk KAN webpage [www.risk-kan.org](http://www.risk-kan.org) was launched. Eight overarching topics for working groups and respective Risk KAN DT contact points were identified by the DT as follows: Compound events (Markus Reichstein), Critical infrastructures (Patricia Romero-Lanko), Early warning (Brian Golding), Eco-DRR (Takehito Yoshida), Learning from the past (Felix Riede), Low elevated coastal zones and cities (Qian Ye), Modelling and insurance (Reinhard Mechler), and Systemic risks and global governance (Gordon McBean). Risk KAN DT members actively participate in research funding activities (NSF, H2020 etc.) for Risk KAN.



## Ocean Knowledge-Action Network

The Ocean KAN's activities for 2018 involved (1) focusing on working group efforts in advancing ocean learning through networks and knowledge mobilization and (2) preparing to engage in the UN Decade of Ocean Science for Sustainable

Development. The KAN held an in-person meeting in Paris in September in conjunction with the launch of the UN Decade at UNESCO headquarters. In addition, the PEGASuS grant administered by Future Earth is funding two working groups at NCEAS and funded some Ocean KAN members to travel to Palau and to Santa Barbara for working group activities in February and March 2019.



## Finance and Economics Knowledge-Action Network

The Finance and Economics KAN published the *Palgrave Studies in Sustainable Business In Association with Future Earth*, a book series that defines a clear space for the work of this KAN. Other activities include the Third German Future Earth Summit - Session on Reconnecting

Economics and Finance to Earth in Berlin, Germany; Adaptation Futures 2018 - Double session on the water-energy-nexus under climate change, including economic analyses in Cape Town, South Africa; the TransAtlantic Business Ethics Conference – Paper presented on *Future Earth Leadership* by Eleanor O'Higgins and Laszlo Zsolnai at Rutgers University in Newark, USA.




## Urban Knowledge-Action Network

The KAN held an in-person meeting of the Development Team at the Cities and Climate Change Science Conference that also involved members from the Coordinating Committee (now known as the Steering Committee). Based on the

experience of the past years' operation and to align with the Future Earth Society, the KAN decided to move to a governing structure of Steering Committee with co-chairs, and an advisory group. Xuemei Bai and Timon McPhearson, both award-winning experts in the field, were selected as co-chairs.






## Natural Assets Knowledge-Action Network


The main activity of the Natural Assets KAN in 2018 was the publication of the peer-reviewed article *Framing natural assets for advancing sustainability research: translating different perspectives into actions*. In this paper, the scope and challenges of establishing a global Knowledge-Action Network around the newly created term “Natural Assets” are

highlighted. In close collaboration with the EQUIVAL project (a PEGASuS project) and the capacity building component of Future Earth, the Natural Assets KAN held a workshop on capacity building around plural valuation in Bangalore, India. The KAN held its first regional workshop on in Latin America, titled; Forest transition in the Andes: Pathways to optimize the balance between Natural Assets and the Sustainable Development Goals in Tucuman, Argentina. This workshop got excellent coverage in the local media.



## Health Knowledge-Action Network

The Health KAN developed research priorities and submitted these to the Belmont Forum Climate, Environment, and Health Collaborative Research Action (CEH CRA) to serve as a guideline for funding priorities.



## Nexus Knowledge-Action Network

The Nexus KAN was represented at the 2018 UNC Nexus Conference, where we promoted the Research and Engagement Plan and presented a case-study on desalination in Santa Cruz, California. The Development Team organised a panel on the water, energy, and food nexus at Critical Perspectives on Governance by

Sustainable Development Goals: Water, Food and Climate, with an audience of scientists, civil society representatives, and policy makers. The KAN ran a webinar series to explore the challenges and opportunities facing the continent and stress the role of social engagement and science in shaping the future of Africa, with a particular focus on food, water, and energy availability.

# Global Sustainability Scholars

Global Sustainability Scholars (GSS) recruits the brightest young scholars who represent the diversity of today's society for three summers of experiential learning with leading international scientists. This prestigious opportunity fosters professional development, builds an international network and provides transdisciplinary research skills within a new generation of scientists

During summer 2018, Future Earth hosted its first fellow in partnership with Global Sustainability Scholars, based out of the Sustainability Innovation Lab at Colorado, which also houses the Colorado Hub of Future Earth. Adrienne Hampton came to Future Earth and Global Sustainability Scholars from the Environmental Policy and Management Program at the Evans School of Public Policy, University of Washington

Seattle, where she recently completed her master's degree in May 2019. Adrienne has gone on to receive the NOAA/ Washington Sea Grant "Keystone" Fellowship, October 2019.

In spring 2019, GSS selected the inaugural cohort of nine undergraduate students and two GSS Fellows who are from underrepresented groups in science, technology, engineering, and mathematics. The GSS cohort spent the summer 2019 learning about international research collaborations focused on urban sustainability at the intersection of food, energy, and water needs, and traveling to select Belmont Funded projects, such as CITYFOOD (Seattle, Washington and Berlin, Germany); SUNEX (Bristol, United Kingdom); and Vertical Green 2.0 and Creating interfaces (Berlin, Germany). And during the next two summers (2020 and 2021) students will be embedded, working side by side with lead scientists from these different transdisciplinary projects.



# Sustainability Research & Innovation (SRI) 2020



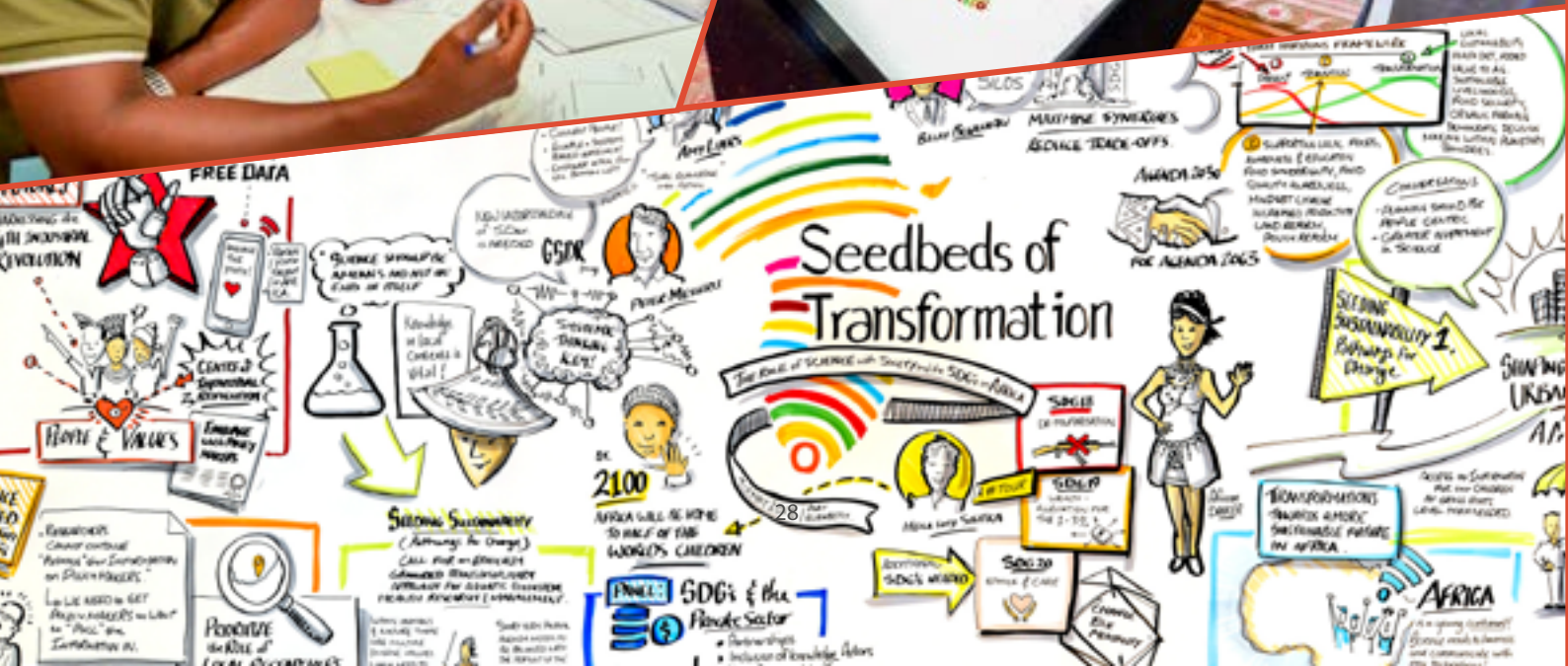
Future Earth and Belmont Forum are joining forces to establish an annual congress series focused on Sustainability Research and Innovation (SRI), in which the world's foremost research and innovation communities will come together to share successes, exchange views, and work across disciplines and sectors to support a global transformation to sustainability.

SRI will offer an inclusive and dynamic platform for the sustainability community, highlighting the latest sustainability research and knowledge; fostering green entrepreneurship and sustainable innovation; developing evidence-based plans and strategies to advance sustainability pathways; providing a productive space for sustainability funders to explore new partnership models; and increasing the use of sustainability research through effective public and stakeholder engagement. Finally, SRI will legitimize and advocate for sustainability as a career through the formation of a first-of-its-kind international professional society dedicated to changemakers in the sustainability sector.

# Seedbeds of Transformation Conference

In May 2018, the National Research Foundation of South Africa and the South African Department of Science and Technology, together with Future Earth, co-hosted the conference, Seedbeds of Transformation: the role of science with society and the SDGs in Africa. The event took place in Port Elizabeth, South Africa and brought together over 300, mostly African, participants from research, government, civil society, private sector, and the arts.

The conference explored the themes of: 1) *Understanding Trajectories of Change* related to the state of knowledge of present trends and future trajectories; 2) *Traversing Critical Challenges* for understanding what “working towards the SDGs” means in the diverse contexts of Africa; and 3) *Creating Momentum*, which identified opportunities to advance African perspectives and priorities for SDG efforts on the continent.



# Belmont Forum and Future Earth launch call on Climate, Environment, and Health



Future Earth joined with the Belmont Forum to launch a proposal call for multilateral, inter- and transdisciplinary proposals focusing on climate, environment, and health. The call is being supported by 13 funding agencies from 9 countries, and will support research teams to improve the understanding of pathways to protect and promote human health and well-being in the face of environmental and climate challenges. The call is the first in a series planned in this area, and will allow researchers to: investigate where significant uncertainties exist that are barriers to action; address complex climate, ecosystem, and health pathways; and foster the use of scientific information to better inform planning and enhance resilience.

The Future Earth Health Knowledge-Action Network and the Global Secretariat played a major role in developing the call, identifying key priority topics, and shaping a global scoping process that served as the basis for the development of the call.



# Belmont Forum, Future Earth, and JPI Oceans launch major funding call for Ocean Sustainability Research



The Belmont Forum, in collaboration with Future Earth and JPI Oceans, has launched a call for proposals on *Transdisciplinary Research for Ocean Sustainability*. The call aims to bring together researchers and experts across the globe to innovate solutions to accelerate sustainable use of oceans and minimize the effects from global change.

This Collaborative Research Action (CRA) call aims to contribute to the overall challenge of ocean sustainability. Relevant SDGs, particularly SDG 14 (Conserve and sustainably use the oceans, seas, and marine resources for sustainable development), set the overall framework for this call.



# Open Network

The Open Network is a free online tool for research collaboration and engagement for global sustainability, a space for professionals from around the globe to connect and stay up to date with the sustainability community. In 2018, the network grew to over 6,700 members from more than 155 countries.

**6,777**

Membership

**50,188**

Website pageviews

**1,918**

Discussion posts

**96**

Calendar events added

## Early Career Professionals

**One of Future Earth's priorities is engaging early career professionals from a range of disciplines and sectors.** We bring together professionals to strengthen their capacities in conducting research around global sustainability. Our goal is to generate solutions for sustainability and improve our understanding of the physical, biogeochemical, and human dimensions of global environmental change. Future Earth engages with early career researchers, practitioners, artists, and academic activists. We work with researchers in the natural and social sciences and humanities. We also reach out to professionals in policy, business, the technology industry, agriculture, civil society, and much more. Future Earth is committed to integrating early career professionals into its governance structures, with early career representatives on our Advisory Committee as well as in most Development Teams and Steering Committees of the Knowledge-Action Networks.

### Featured Professionals

#### **Maria Jose Martinez Harms (Chile)**

Maria has been the co-chair of the Natural Assets Knowledge-Action Network since August 2017. Having an early career professional in this position

is rare, and Maria is the youngest Knowledge-Action Network leader to date. On top of that, Maria led a scientific publication in 2018 on the framing of Natural Assets for Future Earth, alongside senior scientists. In 2017, she received the Future Earth travel grant where she traveled to Future Earth Natural Assets Knowledge-Action Network definition workshop in Bern, Switzerland, from 12 to 13 September.

#### **Leopoldo Gerhardinger (Brazil)**

Leopoldo has been a member of the Development Team of the Ocean Knowledge-Action Network since 2017. He raised substantial funding to create the four-year PainelMar's program "Brazilian Oceanic Horizon: Youth Leadership in the interface of Knowledge & Public Policies for 2030 Agenda for Sustainable Development" which integrates the Ocean Knowledge-Action Network and the Early Career Researchers Network of Networks (ECR NoN). He is a founding member of ECR NoN and received a Future Earth travel grant in 2017 to attend meetings in Brussels and New York.

# Shape the narrative

Good research can catalyze effective societal action but it takes a dedicated push to get it into the policy arena. Future Earth works to be that mechanism, incorporating the latest sustainability science into global decision-making and fostering public discourse grounded in research.

In addition to publishing our regular *Insights in Climate Science* and *Anthropocene Magazine*, the Future Earth community produced new material this year on the theme of urban sustainability which was presented to a world congress of local and regional governments, and launched a new initiative engaging the private sector in Asia to explore innovative and sustainable ways of washing. We also worked to ensure that the science emerging from the Future Earth community makes its way into sustainability policies and business practices on the horizon, playing a key role in two high-profile international science-policy events this year: the World Economic Forum and the Global Climate Action Summit.



# Anthropocene magazine and dialogues

*Anthropocene* is Future Earth's premier independent magazine. Its mission is to get sustainability solutions moving at a speed commensurate with the problems. To do this, we are changing up the game plan for environmental media. Traditional environmental reporting has played defense, explaining the science and fending off attacks. We play offense. We convene some of the world's foremost innovators and thinkers to explore and flesh out scalable solutions to the big challenges of our time. Think MIT Technology Review meets Foreign Policy for the sustainability world.

Now two years out of the starting gate, *Anthropocene* is the largest outward face of Future Earth.

Every week, the *Anthropocene* Weekly Science Dispatch goes out to over 17,000 subscribers worldwide in both English and Spanish—and that list is growing by about 200 subscribers per month. Our team of science writers tracks over 75 peer-reviewed publications ranging from wildlife and fisheries journals to medical, engineering, energy, and architectural journals. The team crafts provocative summaries of compelling papers related to sustainability, which we post daily on the web and social media and compile into a weekly e-newsletter.

The *Anthropocene* website now has over 40,000 unique users every month. We are reaching visitors from nearly 200 countries, and 49% of our visitors and sessions are coming from outside of the US. The site now offers more than 1,000 original posts. We are offering much of this material to a far larger audience through syndication deals with *Quartz*, *El Pais*, *The Next Web*, and more.

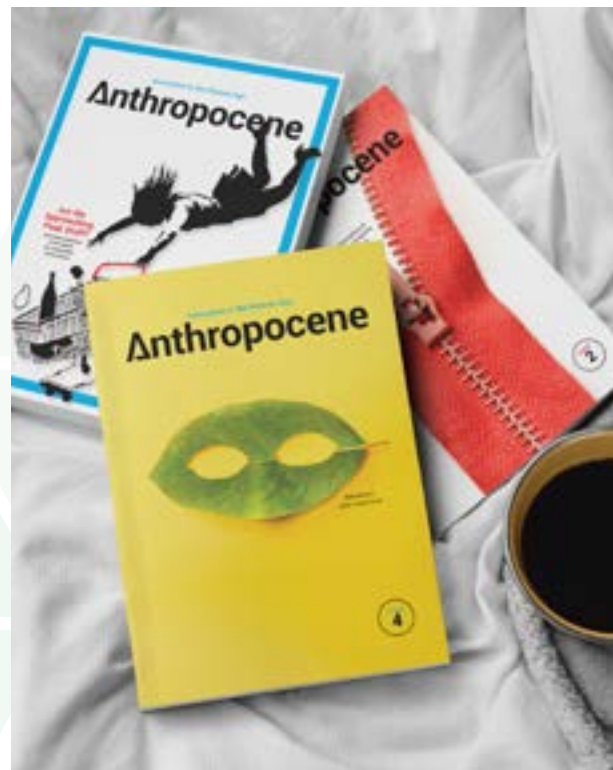
And we've produced four award-winning print issues of the magazine (112 pages each) featuring world-class writers from *The Economist*, *The New York Times*, *Atlantic*, *Bloomberg*, and more. We've also established an *Anthropocene* membership system that runs on tax-deductible donations. Print issues are used as a benefit of membership. We now have 1,410 active, paying members with 30% coming from 42 countries outside the US. To date we've raised a total of US\$160,000 in membership dues.

Our next step is to forge a three-way partnership designed to scale our operations—and to move the discussion of sustainability solutions to a more central place in national and international dialogues.

The broad outline of this partnership are as follows:

- ▶ A nonprofit organization (in this case Future Earth/*Anthropocene* Magazine) will house a small, core staff, raise funds, and grow and manage an international membership base.
- ▶ An established media organization will amplify *Anthropocene's* voice by running a dedicated "Anthropocene page" with key articles on their website.
- ▶ A major university institute will host and support high-profile guest columnists as well as a series of *Anthropocene* Dialogue live events.

Once established, we would seek philanthropic to support the partnership.



# 10 New Insights in Climate Science

*The 10 New Insights in Climate Science* was officially launched at a briefing event in 2018 at the United Nations Framework Convention on Climate Change Conference (COP24) in Katowice, Poland, organized by Future Earth and the Earth League. The report synthesizes recent key insights from science with a focus on those published in 2017-2018. The report emphasizes the urgency to act now and summarizes what we need to know to navigate the transformation to low-carbon societies.

This was the second year the report was presented at the request of the United Nations, providing negotiators and policy makers with a clear synthesis of the latest climate science.



# Future Earth at World Economic Forum

Future Earth's work goes beyond dedication to excellence in sustainability research. Our international organization has been carefully designed to shape the narrative of global systemic change, with effective tools and compelling evidence that is already influencing policy at high levels. This year's World Economic Forum focused on the changing geopolitical landscape and its implications for the global commons, and Future Earth's leaders played a key role in guiding the discussion around sustaining the resilience of our planet's life-supporting systems: our water, land, biodiversity, and oceans.

Amy Luers and Johan Rockstrom stood alongside youth leader Greta Thunberg and other partners at the Davos forum to announce the launch of the Earth Commission in front of a live audience of scientists, executives, activists, journalists, and politicians. The meeting was widely picked up in the media, including the *Guardian*. The Earth Commission will assess and synthesize scientific research to develop targets that will enable businesses and policymakers to safeguard a stable and resilient planet.



# Urban Planet: Knowledge towards Sustainable Cities

In April 2018, members of the Urban Knowledge-Action Network released *Urban Planet: Knowledge towards Sustainable Cities*, a book that calls for a systems approach, a new knowledge generation agenda *vis-à-vis* the urgency to understand the sustainability challenges and options for a rapidly urbanizing future. The initiative was one of the Fast Track Initiatives launched by Future Earth in 2014.

Urban Planet brings together over 120 contributors of a wide range of expertise. Out of the 52 chapters, 35 are written by non-academics from both the Global South and Global North. Bridging the divides between disciplines, and between policy and practice theory, the book demonstrates that the co-production of knowledge is attainable. It shares ideas not limited to thought leaders and academic scholars, including the perspectives of other important, yet often unheard, stakeholders in urban development and transformation—journalists, artists, designers, architects, landscape architects, activists, youth, and urban practitioners from city governments and civil society.

Urban Planet was launched in June 2018 at the ICLEI World Congress 2018 in Montreal, Canada. The book is open access and can be downloaded for free.



# Global Climate Action Summit

Technological innovation is poised to disrupt the global economy in the next decade. International and local businesses, politicians, investors, scientists, students, non-profits, and civil society members gathered at the 2018 Global Climate Action Summit in San Francisco in September 2018 to discuss the urgent need to act on climate change and mobilize an era of decarbonization. John Rockström and Christiana Figueres gave the opening plenary with a strong focus on healthy energy systems; inclusive economic growth; sustainable communities; land and ocean stewardship; and transformative climate investments. Rockström also launched the *Exponential Climate Action Roadmap*, which identifies the speed, scale, and solutions needed to halve greenhouse gas emissions by 2030. The Roadmap presents a challenge to the tech community to connect this disruption to meet societal goals relating to climate.

Future Earth's Executive Director, Amy Luers, opened and framed a discussion on technology disruption at the 2018 Global Climate Action Summit, debating the changing role of technology in society and how innovation and science can work together to scale solutions to societal challenges. In this session, CEOs, entrepreneurs, and coders discussed their own commitments to climate action and highlighted a few nascent products straight out of the lab that can accelerate emissions reductions. Participants in the session included leaders of Apple, Salesforce, WeWork, and many more.

Webinar: <http://www.futureearth.org/news/live-webinar-exponential-climate-action-roadmap>



# Nature in the Urban Century Assessment

Urbanization has been a major driver of habitat loss in recent decades, but this trend can be shifted with better planning for sustainable urban growth and use of natural solutions, careful management of protected areas near cities, and integration of habitat into cities. These findings are presented in *Nature in the Urban Century Assessment*, a report authored by The Nature Conservancy, Future Earth (particularly through the Urban Knowledge-Action Network), and The Stockholm Resilience Centre. The report, which was launched at the UN Convention on Biological Diversity Conference of the Parties in Egypt in November 2018, was authored by 27 experts and reviewed by 19 more.

Its call for global action to conserve habitats for nature and for human well-being was timely as global leaders worked to revise goals for biodiversity protection within the Convention. The assessment was inspired by and builds on the project Cities and Biodiversity Outlook initiated by the Convention of Biological Diversity and partly builds on one of the original Future Earth Fast Track initiative that became the *Urban Planet* book.

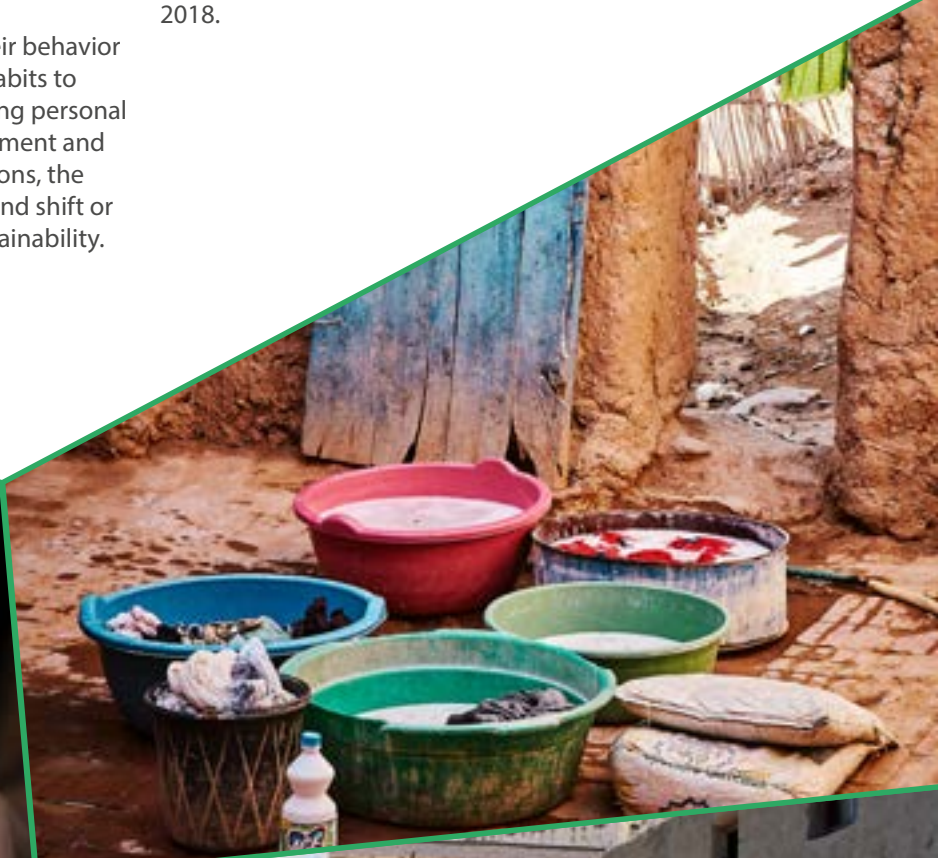


# Future of Washing Initiative

In December 2018, Future Earth, Kao Corporation, and The University of Tokyo Integrated Research System for Sustainability Science (now renamed as Institute for Future Initiatives) launched a design platform where various stakeholders – led by the private sector – collaboratively explore innovative and sustainable ways of washing.

In the initiative, stakeholders connect their behavior in terms of daily business and personal habits to their impact on the environment. By raising personal awareness of their impact on the environment and encouraging them to develop new solutions, the organizers believe they can facilitate a mind shift or a behavioral transformation towards sustainability.

The initiative is open to a wide range of industry partners and hopes to expand its engagement throughout Asia, taking into consideration cultural and religious diversity. Following several workshops and customer interviews, the initiative was formally launched on 7 December 2018 with a public forum in the presence of more than 140 participants at Ecopro 2018.





# Future Earth's global reach



# Asia Regional Centre




The Asia Centre hosted a Future Earth Regional Engagement Workshop in October, which aimed to develop a strategy to strengthen engagement between Future Earth and its various constituent entities in Asia. This was done through jointly exploring possibilities for researchers in the region to contribute to Future Earth's new Earth Targets Initiative. The Asia Centre further convened a union session at the 18th Conference for the Science Council of Asia held in Tokyo in December to discuss challenges and opportunities for national and regional level initiatives to contribute to attaining the SDGs in the region. The Asia Centre together with the Research Institute for Humanity and Nature organized a session at the Japan Geo-science Union meeting 2018 in May, aiming to leverage voices from Global Research Program communities in Japan and Asia to help shape activities of the broader Future Earth community with regional perspectives.

# Future Earth Australia

Throughout 2018, Future Earth Australia (FEA) focused efforts on three areas: urban systems transformation; climate risk and equity; and collaborative capacity building programs for early-career researchers and practitioners (ECRPs). In just nine months FEA sponsored 120 ECRPs to attend workshops and symposia across Australia. ECRPs became members of FEA early-career alumni. FEA held several events and community consultations around Australia to inform the development of a national strategy under its urban systems flagship. FEA's climate risk and equity flagship has seen the emergence of a range of activities concerned with ensuring public disclosure of climate risk. In Melbourne, FEA partnered with Professor John Thwaites, Dr Tahl Kestin and the Sustainable Development Solutions Network to hold an event comprising researchers and practitioners from across the country. Attendees were treated to a visit and keynote from Professor Jeffrey Sachs. FEA is also working with primary and secondary school students to discuss the importance of the SDGs. FEA remains an active collaborator with the Young Persons Plan for the Planet program, a secondary school initiative initially co-founded by FEA in 2016. In addition, FEA partnered with Questacon and the Academy to produce an "SDG explainer" video, which has had over 1,171,000 views across social media platforms and attracted significant philanthropic donations, enabling FEA's capacity-building efforts to continue.

# Future Earth Philippines Program

An aerial photograph of a boat on the ocean, viewed from above. The boat is moving towards the top right of the frame, leaving a white wake behind it. The water is a deep blue color. The boat has a yellow cabin and a white railing. The background is a dark blue sky with some clouds.

The Future Earth Philippines Program was launched in November 2018 to improve the capability to achieve the SDGs in the Philippines through the Philippine Knowledge-Action Programs for Sustainability by linking the country with the Future Earth regional and global initiatives on sustainability.

The proposal for the establishment of the Program was developed under a Department of Science & Technology (DOST)-supported project of the National Academy of Science and Technology in consultation with the sectoral councils of DOST and representatives of industry and the National Economic Development Authority.

In developing FEPP, scientific teams have been organized to prepare project proposals related to SDGs in consultation with stakeholders including government, industry, and civil society.

# Future Earth Mongolian Committee

In June 2018, the Future Earth Mongolian Committee organized the Invited Speaker program in Ulaanbaatar, Mongolia. The program brought together young researchers and early-career scientists to share knowledge about sustainability research and information on Future Earth international activities. Around 40 participants from academic research institutes, universities, private companies, and government joined the event. In the same month, the Committee together with the Mongolian Academy of Science organized the Scientific Committee meeting for the International Council for Science Regional Committee for Asia and Pacific in Ulaanbaatar.

In September 2018, the Future Earth Mongolian Committee and the National Development Agency of Mongolia jointly organized a North-East Asian Multistakeholder Forum on Sustainable Development Goals. The Forum provided an opportunity for participants to share experiences working towards the implementation of the SDGs. It also provided subregional perspectives for regional and global forums in 2019 that bring representatives from the governments of East and North-East Asia (China, Democratic People's Republic of Korea, Japan, Mongolia, Republic of Korea, and Russian Federation), together with academia, the international community, and civil society.



A woman wearing a vibrant, patterned headwrap is smiling warmly. She is outdoors, surrounded by green foliage. The background is slightly blurred, focusing attention on her. The overall tone is positive and community-oriented.

## Africa Regional Office

Following a kickoff meeting in Pretoria in October 2018, an Africa office for Future Earth is becoming operational. The office is consulting with relevant South African universities and government units to develop an operational strategy and to inform the development of an MoU with the Future Earth Secretariat.

In May 2018, the National Research Foundation of South Africa and the

South African Department of Science and Technology co-hosted, with Future Earth, a major conference on the UN Sustainable Development Goals (SDGs). The conference, Seedbeds of Transformation: the role of science with society and the SDGs in Africa, took place in Port Elizabeth, South Africa, and brought together over 300 (mostly African) participants from research, government, civil society, the private sector, and the arts.

A woman is seen from the side, carrying a baby on her back. She is wearing a patterned headwrap and a colorful, patterned dress. The background shows a field with green plants. The overall scene is peaceful and rural.

## Middle East and North Africa (MENA) Regional Center

From February 2018 to February 2019, work on a MENA Research Strategy has continued. In cooperation with members of the Regional Advisory Committee for the Future Earth MENA Regional Center (FEMR-RAC), first drafts of the major components have now been finalized. The centre also contributed to UN science-policy events including the:

- ▶ Convention on Biological Diversity, 14th Conference of the Parties; CBD-COP14, in Sharm el Sheik, Egypt, from November 22 to 26 2018.
- ▶ Framework Convention on Climate Change 24th Conference of the Parties; COP24, in Katowice, Poland, from December 12 to 14 2018, with an invited presentation by the Center Director.

▶ Outreach this year also included a number of invited presentations at:

- a training workshop of the GLOBAQUA Program, Athens, Greece.
- a meeting of the WANDEL Project meeting (funded by the German Research Ministry) in Kassel, Germany.
- the meeting of the International Consortium of Research Staff Associations.

# The Water Solution Lab: Bangalore

The Water Solutions Lab is a joint initiative of the Future Earth South Asia and Sustainable Water Future Programme (Global Research Initiative of Future Earth). It was instituted by the Divecha Centre for Climate Change at the Indian Institute of Science in Bangalore, India, in 2017. The Lab is a collaborative body that facilitates the process of innovation for water-related issues facing Bengaluru, India. Over the last year, it has undertaken a comprehensive assessment of geogenic contaminants that affect water quality in India and the health impact these contaminants have on human life and biodiversity. The Lab has also completed a theoretical study on the role of blockchain technology to address the challenges related to information asymmetry and transaction costs which manifest as distortions in water markets. Researchers have developed a conceptual foundation of urban water markets based on auctions and blockchain technology. The Lab is developing tools and resources for Bangalore, including a dashboard on the status of water distribution across the city, a water security index, and a study on the integration of urban water management, lake rejuvenation, and governance. To support both project efforts and outreach, the Lab conducted workshops at the Divecha Centre for Climate Change.



# Chinese National Committee for Future Earth

In April 2018, the Chinese National Committee for Future Earth (CNCFE) hosted the Xiangshan Science Conference Symposium on the topic of “the Future Earth plan and the building of a community with a shared future for mankind”. The event was attended by more than 50 experts from nearly 30 national and international institutions. The following month, the Second CNCFE Founding Congress and Academic Seminar were held in Zhuhai City, China, bringing together over 80 participants from more than 30 institutions. The seminar emphasized the

role and contributions of committee members in the field of humanities, social science, decision-making and management, media, and enterprises.

In October 2018, the Committee also convened the Forum on Future Earth and Ecological Civilization in Jiande City, China, and arranged for Committee representatives to attend the Symposium on Sustainability in the Korean Peninsula and Northeast Asia conference in Seoul, South Korea.



# About Future Earth



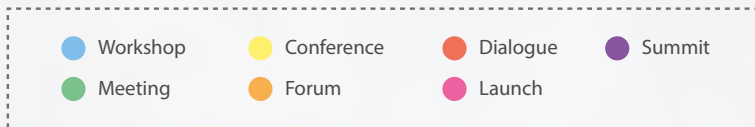
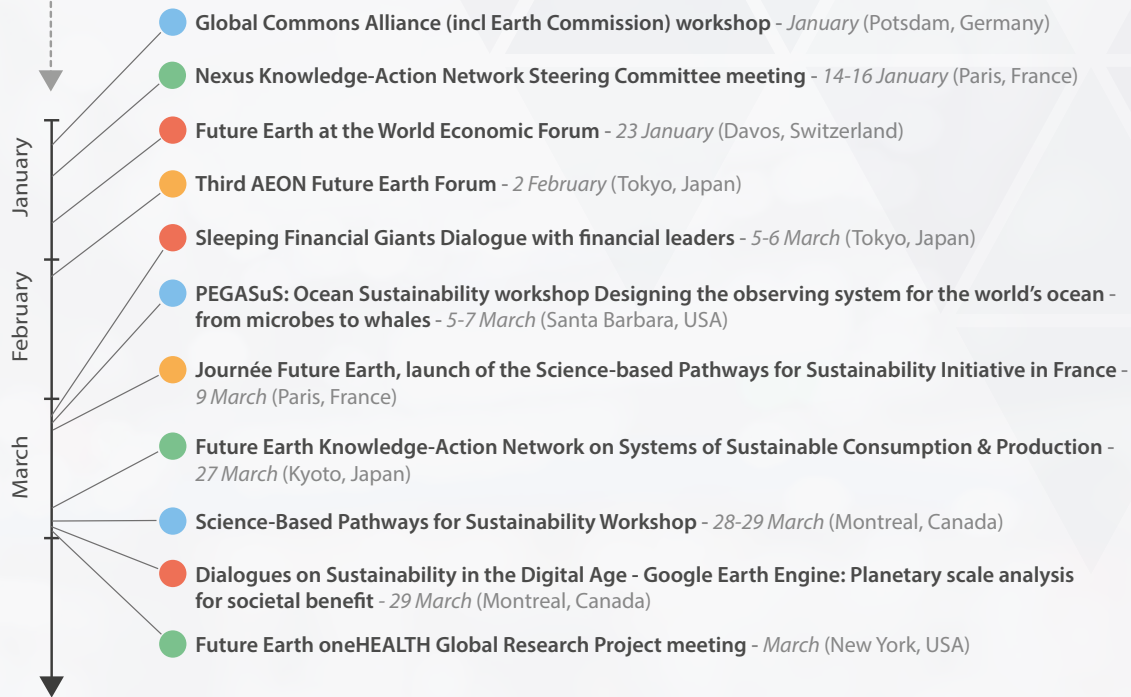


# Events

2018



# 2019



# Research papers

This year our Global Research Projects and Knowledge-Action Networks collectively produced around 1,000 scientific publications. This included peer-reviewed papers, book chapters and major reports. About 80 of these were published in very highly-cited scientific journals like *Nature*, *Science*, *the Lancet*, and *Proceedings of the National Academy of Sciences* among others.

Our publications this year covered a wide scope of topics, with a majority focusing on climate, land, ocean, and urban research. Other focus areas included governance, food, energy, and more. For the full list of publications, please refer to the digital version available on the web.

## Research with Impact

**1k** scientific publications



The majority focus on climate, land, ocean and urban research.

**80** publications in highly-cited scientific journals



"Trajectories of the Earth System in the Anthropocene"

large buzz on social media



5k  
tweeters



335  
news outlets

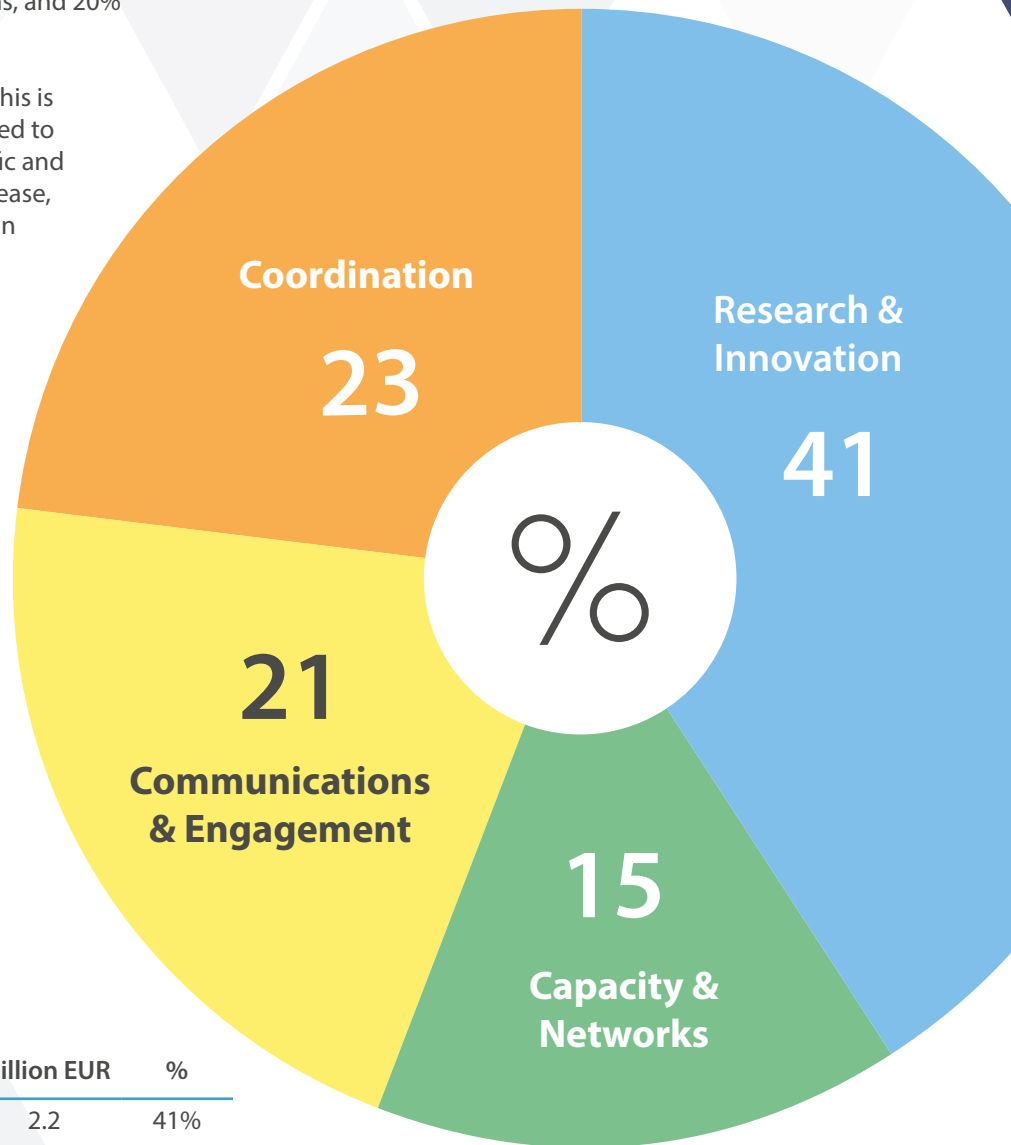
# Financial summary

During financial year April 2018 - March 2019, the consolidated revenue of Future Earth's Global Hubs consisted of 80% public sourced funds, including national contributions, and 20% private-sector funding.

Total expenses were 5.4 million EUR. This is an increase of 0.1 million EUR compared to last year's 5.3 million EUR. Our scientific and networking activities continue to increase, while other operating expenses remain stable compared to previous years.

The charts show the consolidated expenses of Future Earth's Global Hubs for the financial year 2018-19, divided by function.

**Global Hub expenses**  
in percent (%) of total 5.4 million Euro

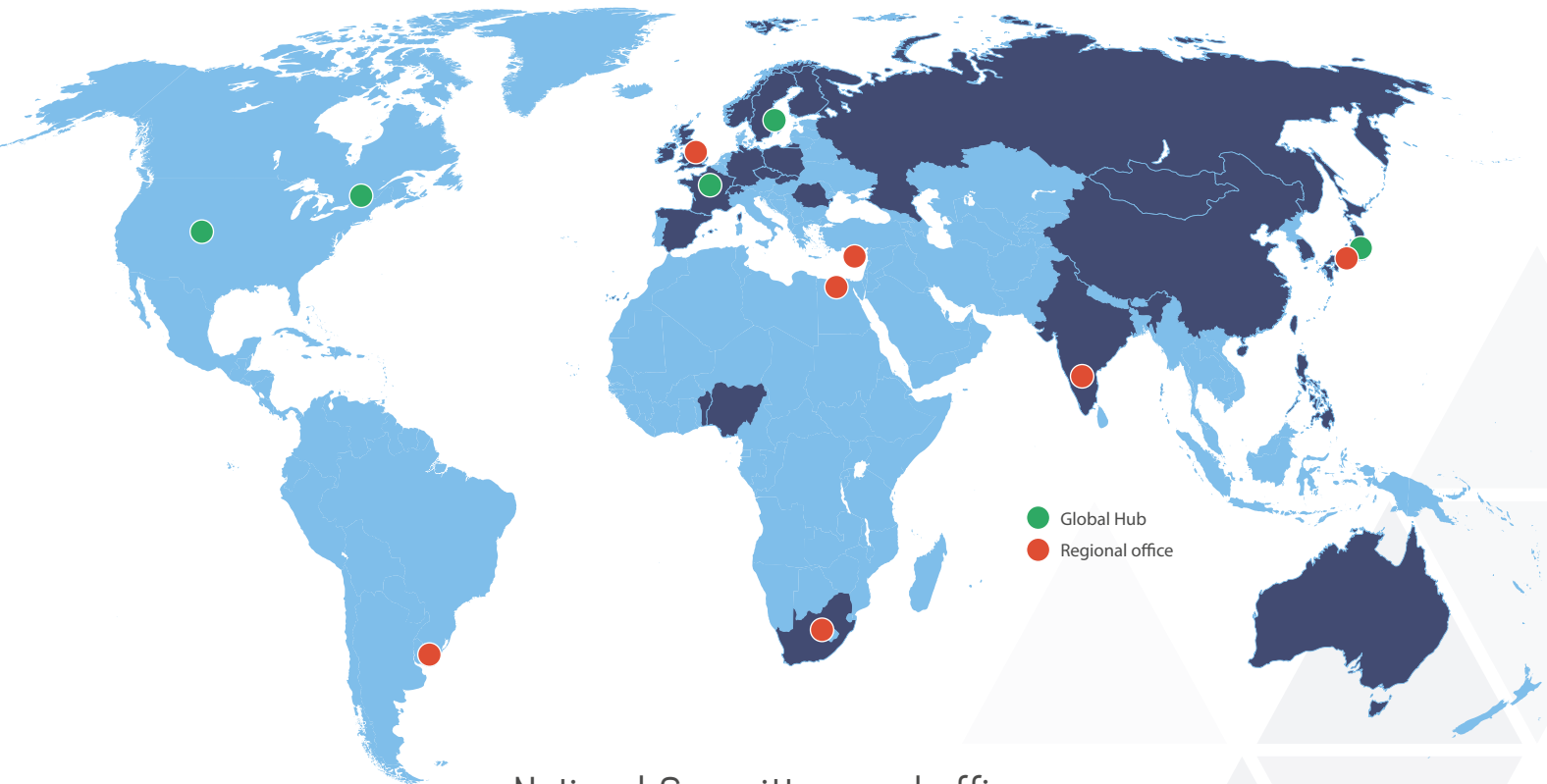


Expenses by function 2018-19	million EUR	%
Research & Innovation	2.2	41%
Capacity & Networks	0.8	15%
Communication & Engagement	1.1	21%
Coordination	1.3	23%
<b>Sum expenses</b>	<b>5.4</b>	<b>100%</b>

# Locations & offices

Building transformations to a more sustainable world is a task that falls to the entire planet. Future Earth, however, also recognizes that each region of the globe faces unique challenges, so we have global hubs, regional offices, and national offices that propel research toward unique solutions to make progress on sustainability.

- ▶ **Asia** (host: Research Institute for Humanity and Nature, RIHN, Kyoto, Japan)
- ▶ **Middle East and North Africa** (host: Cyprus Institute, Nicosia, Cyprus)
- ▶ **MENA North Africa Office** (host: Bibliotheca Alexandria, Alexandria, Egypt)
- ▶ **South Asia** (host: Divecha Centre for Climate Change, Bengaluru, India)
- ▶ **Latin America** (Strategic Partner, host: Inter-American Institute for Global Change Research, Montevideo, Uruguay)
- ▶ **Southern Africa** (host: National Research Foundation of South Africa)



## National Committees and offices

Australia  
Austria  
Benin  
China: Beijing  
China: Taipei  
Finland  
France

Germany  
India  
Ireland  
Japan  
Mongolia  
Nigeria  
Norway

Poland  
Republic of Korea  
Romania  
Russia  
Slovakia  
Spain  
South Africa

Sweden  
Switzerland  
The Philippines  
UK

## Executive Team

**Amy Luers**, Executive Director  
**Fumiko Kasuga**, Global Hub Director Japan  
**Josh Tewksbury**, Global Hub Director USA  
**Sandrine Paillard**, Global Hub Director France  
**Wendy Broadgate**, Global Hub Director Sweden

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## Colorado

**Josh Tewksbury**, Global Hub Director, USA  
**Alfredo Giron**, Postdoctoral Researcher, PEGASuS 2: Ocean Sustainability  
**Craig Starger**, Research Enabling Lead  
**Erin Satterthwaite**, Postdoctoral Researcher, PEGASuS 2: Ocean Sustainability  
**Judit Ungvari-Martin**, AAAS STP Fellow at NSF  
**Kathy Kohm**, Editor-In-Chief, Anthropocene magazine

**Kelsey Simpkins**, Digital and Engagement Editor  
**Lakshmi Muralidharan**, Finance Manager  
**Laurel Milliken**, Information Technology Officer  
**Makyba Charles-Ayinde**, AAAS STP Fellow at NSF  
**Maria Fernanda Enríquez**, Administrative Officer and Global Sustainability Scholars Coordinator  
**Veera Mitzner**, Network Lead

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## Tokyo

**Fumiko Kasuga**, Global Hub Director, Japan  
**Ayako Nagasawa**, Coordinator & Administrative Officer  
**Giles Sioen**, Science Officer  
**Junya Tani**, Senior Advisor

**Kyoko Shiota MacAulay**, Program Coordinator  
**Marcin Jarzebski**, Science Officer  
**Yuki Hashimoto**, Communications Officer

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## Montreal

**Amy Luers**, Executive Director  
**Alyson Surveyer**, Montreal Hub Manager and Head of Global Operations  
**Andrea Ventimiglia**, Staff Writer  
**Jennifer Garard**, Science Officer  
**Marie d'Acremont**, Administrative Officer

**Martin Deron**, Project and Research Assistant  
**Nilufar Sabet-Kassouf**, Executive Assistant  
**Patrick Lacombe**, Research Coordinator  
**Paula Monroy**, Communication Coordinator  
**Sylvia Wood**, Science Officer  
**Victoria Curl**, Project Coordinator

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## Paris

**Sandrine Paillard**, Global Hub Director, France  
**Alison Clausen**, Deputy Director  
**Fanny Boudet**, Science Office

**Hannah Moersberger**, Science Officer  
**Kaela Slavik**, Science Officer  
**Vincent Virat**, Science Officer  
**Xavier Peres**, Coordinator

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## Sweden

**Wendy Broadgate**, Global Hub Director, Sweden  
**Alistair Scrutton**, Director of Communications  
**Erik Pihl**, Science Officer  
**IngMarie Alström**, Finance Director  
**Johan Falk**, Senior Innovation Fellow

**Juan Rocha**, Research Scientist, Earth Commission  
**Lisa Jacobson**, Science Officer  
**Sophie Hebden**, Research coordinator - Earth observations  
**Susanna Dobrota**, Coordinator and Administrative Officer  
**Therese Öreteg**, Communications and Administrative Officer

## Advisory Committee Members

**Johan Rockström**, Potsdam Institute for Climate Impact Research (PIK) (Co-Chair), *Sweden*

**Leena Srivastava**, TERI School of Advanced Studies in New Delhi (Co-Chair), *India*

**Anny Cazenave**, International Space Science Institute, *Brazil*

**Asunción Lera St. Clair**, DNV GL, *Norway*

**Braulio Ferreira de Souza Dias**, University of Brasilia, *Brazil*

**Fatima Denton**, United Nations Economic Commission for Africa, *Ethiopia*

**Jim Balsillie**, Research In Motion (BlackBerry), *Canada*

**Joy Shumake-Guillemot**, WHO/WMO Climate and Health Office, *Switzerland*

**Naoko Ishii**, Global Environment Facility (GEF), *Japan*

**Oyun Sanjaasuren**, Global Water Partnership, Green Climate Fund, *Mongolia*

**Pamela Matson**, Stanford University, *USA*

**Peng Gong**, Tsinghua University, *China*

**Tetsuzo Yasunari**, Research Institute for Humanity and Nature (RIHN), *Japan*

**Tolullah Oni**, University of Cape Town, *South Africa*

## Governing Council Members

**Dirk Messner**, United Nations University (UNU) (Co-Chair), *Germany*

**Maria Uhle**, Belmont Forum (Co-Chair), *USA*

**Asako Omi**, STS Forum, *Japan*

**Hartwig Kremer**, United Nations Environment, *Denmark*

**Heide Hackmann**, International Science Council, *France*

**Jean-Marie Flaud**, Ministère de l'enseignement supérieur, de la recherche et de l'innovation, *France*

**Kazuhiko Takeuchi**, Science Council of Japan, *Japan*

**Leif Anderson**, Department of Marine Sciences University of Gothenburg, *Sweden*

**Meriem Bouamrane**, UNESCO, *France*

**Pavel Kabat**, World Meteorological Organization (WMO), *Switzerland*

**Rémi Quirion**, Fonds de recherche du Québec (FRQ), *Canada*





# Funders & strategic partners

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## Montreal Global Hub Funders

- ▶ Réseau des Universités du Québec
- ▶ Fond de Recherche du Québec (FRQ)
- ▶ Montréal International
- ▶ Concordia University
- ▶ Université de Montréal
- ▶ McGill University
- ▶ Université du Québec à Montréal (UQAM)
- ▶ Laval University
- ▶ Polytechnique Montréal
- ▶ Institut National de la Recherche Scientifique (INRS)
- ▶ Ouranos
- ▶ Canadian Institutes for Health Research (CIHR)
- ▶ Ministère des Relations Internationales du Québec
- ▶ Ville de Montréal
- ▶ Skoll Foundation
- ▶ ClimateWorks Foundation
- ▶ European Climate Foundation
- ▶ Natural Sciences and Engineering Research Council of Canada
- ▶ Canadian Institute for Advanced Research
- ▶ Mitacs

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## Japan Global Hub Funders

- ▶ Science Council of Japan
- ▶ The University of Tokyo/Institute for Future Initiatives
- ▶ National Institute for Environmental Studies
- ▶ Research Institute for Humanity and Nature
- ▶ Keio University
- ▶ Kyushu University
- ▶ Japan Science and Technology Agency/Research Institute of Science and Technology for Society
- ▶ AEON Environmental Foundation
- ▶ KAO Corporation
- ▶ Remote Sensing Technology Center of Japan

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## Swedish Global Hub Funders

- ▶ The Swedish Ministry of Environment (via Swedish Research Council, FORMAS)
- ▶ The Swedish Ministry of Higher Education and Research (via the Swedish Research Council, Vetenskapsrådet)
- ▶ The Erling-Persson Family Foundation
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# Complete list of research papers

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