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Executive Director’s note

This year humanity experienced a global systemic crisis along the lines of which our Future Earth community had long predicted. Yet, this crisis still came as a shock to many. Each of us, I expect, is reflecting deeply on what this all means for our individual and collective futures.

Much of our work within Future Earth focuses on understanding, mitigating, and responding to global systemic challenges. So while the COVID-19 crisis came as a shock, it was not a surprise for the scientific community.

We understand how interdependent humanity is on each other and nature. Science has enabled us to project the cascading and catastrophic effects that the multiple and intertwined forces of the changing climate, loss of biodiversity, and the rise of inequity, will have on global society. We run the models. We tell the stories. We work with decision makers to identify solutions. Yet, the COVID-19 crisis brought us to our knees in a matter of months. One message from this is that science, facts, knowledge matter. But we need knowledge not just about the changes underway, the challenges they create, and the solutions to address them. We most critically need knowledge about how to drive the societal transformations required to manage the global systemic crises of our future.

This is why the work of Future Earth is more important than ever, not only to anticipate the risks, but also to collaborate towards sustainable responses and solutions. For example, the Integrated Assessment of the Earth Commission is the first holistic attempt to establish scientific guardrails to underpin science-based targets for life-supporting systems like land, water, and biodiversity. We need these targets to help companies and cities contribute to the recovery effort. In another first this year, we conducted a survey of over 200 global change scientists to gather their perceptions of global risk and compare them to the views of the business community annually surveyed by the World Economic Forum. This diversity of views is critical to help prioritize future investments. The need to work across boundaries and communities in this work is also critical. Our many national and regional structures can exchange best practices to help inform rapid societal change on a global scale. And of course, Future Earth, as the largest global community of researchers in earth systems and social sciences, will work harder to be a more authoritative integrator of that knowledge, contributing insights for transformative change towards a more resilient, equitable, and sustainable future for humanity.

The world is at a pivotal point where we either get traction on science for change, in a decade of transformation, or we continue to follow a path towards rising shocks and irreversible changes for people and planet, exacerbating extreme vulnerability for us and future generations. The COVID-19 crisis is a manifestation of the non-linear world of the Anthropocene, where globalization of travel, trade, and economies, intertwined with climate change and biosphere degradation, form a deadly cocktail translating global risks into real shocks.

The pandemic provides a preview of the scope and scale of response measures needed for unexpected extreme events, and proves our inability to rise up to the challenge as a world community. This is a deep lesson, as we are likely to face similar global shocks due to climate change and other planetary stressors. The complex, integrated nature of the world we live in today implies that such impacts are likely to be unprecedented and borderless, with climate change and the COVID-19 crisis bringing us to our knees in a matter of months. One message from this is that science, facts, knowledge matter. But we need knowledge not just about the changes underway, the challenges they create, and the solutions to address them. We most critically need knowledge about how to drive the societal transformations required to manage the global systemic crises of our future.

The real thing is still a wake-up call even for those of us that work on these crises for a living. This is why the work of Future Earth is more important than ever, not only to anticipate the risks, but also to collaborate towards sustainable responses and solutions. For example, the Integrated Assessment of the Earth Commission is the first holistic attempt to establish scientific guardrails to underpin science-based targets for life-supporting systems like land, water, and biodiversity. We need these targets to help companies and cities contribute to the recovery effort. In another first this year, we conducted a survey of over 200 global change scientists to gather their perceptions of global risk and compare them to the views of the business community annually surveyed by the World Economic Forum. This diversity of views is critical to help prioritize future investments. The need to work across boundaries and communities in this work is also critical. Our many national and regional structures can exchange best practices to help inform rapid societal change on a global scale. And of course, Future Earth, as the largest global community of researchers in earth systems and social sciences, will work harder to be a more authoritative integrator of that knowledge, contributing insights for transformative change towards a more resilient, equitable, and sustainable future for humanity.

Amy Luers, Executive Director, Future Earth
A global network of researchers and innovators

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United States, Canada, France, Sweden, Japan
Facilitate research and innovation

Future Earth is rooted in the work of 20 long-established Global Research Projects. These networks have played a critical role in defining and advancing the field of Earth system science, and are now leading the evolution of our understanding of the Anthropocene. In 2019, these projects continued to produce world-class research, and strengthened sustainability communities through international open science conferences, technical workshops, training programs, and early career awards.

Future Earth has also continued to expand work on two Global Systemic Challenges – Earth Targets and Societal Transformations. These cross-cutting themes help coordinate transdisciplinary science within our research network to accelerate progress towards global sustainability. Finally, Future Earth’s partnership with the European Space Agency continues to facilitate the uptake of Earth observation data by our research networks to better understand changes in the Earth system.

Global Research Projects highlights

AIMEs: Analysis, Integration, and Modeling of the Earth System (AIMEs) guides and facilitates the integration of social and natural sciences through an Earth system modelling approach. AIMEs’ headline activity in 2019 was a workshop on the degradation of tropical forests. The workshop discussed the limitations of monitoring changes in ecosystem structure and loss of biomass associated with forest degradation, and explored how to better represent the drivers of degradation through future scenarios to support decision-making. Workshop participants are currently developing a roadmap and commentary article, as well as a summary for decision makers aimed at integrating new observation strategies and modelling of tropical forest degradation.

BioGENESIS: In 2019, bioGENESIS completed a Perspectives manuscript on “Evolution and Sustainability Science” to be submitted to Nature Sustainability, and the Scientific Committee held its annual meeting at Cornell University in April. The group also organized a two-session symposium entitled “Phylogenetic and Genetic Diversity: Linking Past and Contemporary Evolution to Sustainability” for the World Biodiversity Forum in Davos, Switzerland in February 2020.

ESG: The Earth System Governance Project forms the largest social science research network in the area of governance and global environmental change. It takes up the challenge of exploring political solutions and novel, more effective governance mechanisms to cope with earth system transformations. 2019 was the first operating year for the newly formed Scientific Steering Committee of the Earth System Governance Project and saw the relocation of its International Project Office from Sweden to Utrecht University in the Netherlands. The 2019 headline activity was a Conference on Earth System Governance held in Oaxaca, Mexico, hosted by the National Autonomous University of Mexico. The conference was organized around five analytical lenses structuring the new earth system governance research agenda and a sixth stream focusing on specific issues and challenges relevant to the Latin American region. In 2019, the Earth System Governance Programme...
Project also released its inaugural issue of the Earth System Governance Journal with Elsevier, as well as an elements and a book series with Cambridge University Press and one book series with MIT Press, purveying the findings from the first 10 years of the network via its Harvarin Initial. Additional 2019 highlights included the welcoming of a new Research Centre hosted by the University of Utrecht University, and the organization of a Speaker Series at Brasilia, the establishment of a new Taskforce on peer technologies, a Speaker Series at Utrecht University, and an Early Career Winter School (Sustainable forest management, November 2019, Zapotec indigenous community of Capulalpam, Mexico). The Global Carbon Project (GCP) produces budgets for five major greenhouse gases; carbon dioxide, methane, and nitrous oxide. The Global Carbon Budget for 2019 was presented on Climate Change (UNFCCC) climate summit COP25. It projected that global fossil CO2 emissions were set to climb by 0.6% in 2019 to a record high of 37 gigatonnes. The growth rate is slightly lower than the previous years due to the decline in coal use and weaker economic growth globally. The CO2 data was published in a special issue in Current Opinion in Environmental Systems. The GLP also published a new version of Mountain Day 2020 dedicated to mountain biodiversity. Finally, to support negotiations on priorities, goals and targets for mountains in 2030 and beyond, GMBA issued a new version of the Policy Brief "Elevating Mountains in the Post-2020 Global Biodiversity Framework 2.0" together with the UN Environment Programme (UNEP), GRID-Arendal (GRIDA), and the Mountain Research Initiative (MRI) and is engaged in follow-up work on mountain-specific indicators within the post-2020 framework.
The mission of International Global Atmospheric Chemistry (IGAC) is to facilitate atmospheric, chemical, and ecological research towards a sustainable world by fostering community, building capacity, and providing leadership. IGAC fosters community, building capacity, and providing leadership through its numerous scientific working groups. IGAC provides intellectual metrics on the impact of ozone on climate, ozone observations. The TOAR provides robust collection) and an online database of surface peer-reviewed publications (Elementa special chemistry research towards a sustainable world. The mission of International Global Atmospheric Chemistry (IGAC) is to facilitate atmospheric, chemical, and ecological research towards a sustainable world by fostering community, building capacity, and providing leadership. IGAC fosters community, building capacity, and providing leadership through its numerous scientific working groups. IGAC provides intellectual metrics on the impact of ozone on climate, ozone observations. The TOAR provides robust collection) and an online database of surface
In 2019, oneHEALTH was awarded a new project by the U.S. Department of Defense on the ecology, economics and epidemiology of Rift Valley Fever in South Africa involving government partners, local universities, and NASA. A paper reflecting major outputs from work over recent years was published in a special feature on land use change in the journal Earths Future. Project members participated in the Consortium of Universities for Global Health Planetary Health Working Group, activities of the Health Knowledge-Action Network, and The Lancet Commission on One Health. The group led the development of initial framing and indicators for a One Health target for the UN Post-2020 Biodiversity Framework, and in early 2020 oneHEALTH’s work was featured in the New York Times, addressing the Covid-19 pandemic.

The bioDISCOVERY Global Research Project fosters collaborative interdisciplinary activities on biodiversity and ecosystem science. This year bioDISCOVERY, along with the University of Zurich Research Priority Programme on Global Change and Biodiversity, organized the inaugural World Biodiversity Forum with the aim to redefine and set the agenda for biodiversity as a focal point over the next 10 years across sectors. The five-day scientific conference welcomed over 500 participants in Davos, Switzerland, including leading researchers, early career researchers, practitioners, decision-makers, and societal actors. At the end of the Forum, participants adopted the Davos Resolution.

Past Global Changes (PAGES) supports science aimed at understanding the Earth’s past in order to make predictions for the future. PAGES’ scope of interest includes the Earth’s past 10,000 years and even back centuries to thousands of years. In 2019, PAGES supported many activities engaging early career networks through a targeted preparation PECS members gathered at the Leuphana University in Lueneburg, Germany in December 2019 to develop the necessary geographical representation. PAGES also supported many activities engaging early career networks through a targeted workshop, a webinar on publishing scientific articles, and meetings at the 20th Congress of the International Union for Quaternary Research (INQUA) and at the 14th International Conference on Paleoceanography, aiming to communicate paleoscience in an accessible and informative way, published two issues on Paleo Constraints on Sea-Level Rise and on Ocean Circulation and Carbon Cycling. Moreover, various PAGES working groups held many activities (workshops, symposia) and issued many products (e.g. synthesis, articles, etc.) over the year.

The Programme on Ecosystem Change and Society (PECS) aims to integrate research on the stewardship of social-ecological systems, the services they generate, and the relationships among ecosystems, human wellbeing, livelihoods, inequality and poverty. Research under PECS employs a range of transdisciplinary approaches and methods with comparative, place-based research that is international in scope at its core. To celebrate its 10-year anniversary, PECS will host a special issue in Ecosystems and People in 2019, as well in preparation PECS members gathered at the Leuphana University in Lüneburg, Germany in December 2019 to develop the necessary content. In 2019, PECS started the process of expansion to a nodal and regional coordination structure. Two additional networks in North America and Latin America will be established in the near future to ensure broad geographical representation.
Earth Commission

The Earth Commission is a group of leading natural and social scientists preparing a major synthesis to underpin the development of science-based targets for a safe and just planet. The Earth Commission is the scientific foundation of the Global Commons Alliance, a network of scientific, business, and nongovernmental organizations aiming to transform the global economy. The alliance responds to a clarion call from business and cities for science-based targets to protect the global commons, the shared resources on which we all depend – healthy land and oceans, freshwater, biodiversity, and a stable climate. The Earth Commission is drawing on expertise from across Future Earth’s networks, and the members were appointed in September 2019 following an open call for experts. An inaugural meeting was held in November 2019 to establish the Earth Commission’s scientific approach, operating model, and expert working groups which will be appointed to undertake specific aspects of the analysis. In early 2020, the Commission participated in an important convening with the Global Commons Alliance to develop a prototype of science-based targets for nature. The Commission also convened a workshop with the broader biodiversity science community to synthesize the scientific evidence base to support the development of global biodiversity goals for the post-2020 global biodiversity framework of the Convention on Biological Diversity. By the latter half of 2020, all five working groups of the Commission will be launched, and a peer-reviewed publication on its conceptual framework will be produced.

Earth Targets

Future Earth coordinates transdisciplinary science within our research network through cross-cutting research themes. Since 2018, the concept of Earth Targets has been a main focus, recognizing the necessity of taking a whole Earth system approach to create solutions to global systemic challenges. Under this theme, there are two ongoing initiatives: the Earth Commission and Science-Based Pathways for Sustainability.

Science-Based Pathways for Sustainability

The Science-Based Pathways for Sustainability initiative seeks to mobilize knowledge needed to define and implement pathways for the Life-Supporting Sustainable Development Goals (SDGs) for water, climate, oceans, and land. The initiative’s methodological framework was developed together with a core team of scientists from the Future Earth community and is based on three key elements: (i) participatory scenario development, (ii) SDG interaction assessment, and (iii) transformations analysis. A pilot phase of the initiative was launched in France in May 2019, convening more than 130 participants from research and practice. Two multi-stakeholder workshops then held in October and November 2019 to explore pathways related to biodiversity and freshwater, and their initial outcomes were presented in various international conferences. Efforts were also made this year to expand activities into other countries and regions, including an upcoming national workshop organized by the Future Earth Philippines Programme, engagement from the German and UK National Committees for Future Earth, fundraising efforts in Canada, and ongoing discussions with regional partners in both Asia and Africa to implement the initiative and secure funding. Two additional workshops, focused respectively on land and oceans in France, as well as an international workshop on cross-scale interactions, are scheduled for late 2020.
Sustainability in the Digital Age

As we learn more about the complexity of global sustainability challenges, there is growing consensus that widespread societal transformations will be needed to urgently address them. Big data, artificial intelligence, blockchain, and other digital technologies are already driving societal transformations at a scale and pace unparalleled in history. The potential for leveraging the digital age to benefit people and the planet is massive. To seize the potential and minimize the risks, researchers, tech innovators, policy and business leaders, civil society, and citizens must collaborate to steer the transformations already underway towards the climate-safe and equitable world we want.

Societal Transformations for a Healthy and Equitable Planet

There is an emerging realization that in the face of global, interlinked challenges like climate change, biodiversity loss, and increasing inequality, adaptation simply isn’t enough. To meet these challenges head-on, we must completely transform the fundamental norms of our societies. Such efforts (starting with the two initiatives described below) are another ongoing focus of the Future Earth community’s collective approach to system change, from multiple and intersecting social, biophysical, and technological angles.

Sustainability in the Digital Age is an initiative building an international network of experts to explore and act on opportunities to leverage the digital revolution to enhance global sustainability and equity. Over the past year, Future Earth engaged over 250 experts from academia, business, government, and civil society to develop: a Research, Innovation, and Action Agenda: Digital Disruptions for Sustainability (D²S Agenda). This effort included convening the Expert Advisory Committee guiding the development of the D²S Agenda in August 2019 and hosting a workshop in September 2019 in partnership with the UK Office for AI, the International Observatory on the Societal Impacts of Artificial Intelligence and Digital Technologies (OBVIA), and Centre National de la Recherche Scientifique (CNRS). The latter workshop was supported as part of the Canadian Institute For Advanced Research (CIFAR)’s AI & Society Series in partnership with UK Research and Innovation (UKRI) and France’s Centre National de la Recherche Scientifique (CNRS). The D²S Agenda was officially launched in March 2020 and explores how four digital disruptors – unprecedented transparency, intelligent systems, mass collaboration, and mixed reality – are already shifting the dominant economic, governance, and cognitive systems that are maintaining society on an unsustainable and inequitable path. Within these three systems, powerful levers of systems change were identified, and the Agenda examines the potential transformative impacts of these levers, what’s needed to steer and scale them, and risks that might arise.

Exponential Roadmap 1.5

The 2019 Exponential Roadmap highlights 36 solutions that can scale exponentially to halve greenhouse gas emissions by 2030 worldwide. Scaling of solutions comes from sharp policy, climate leadership by companies and cities, and a finance and technology shift towards green solutions with exponential potential. Published in September, and launched at the 2019 United Nations Climate Summit in New York City, the Roadmap is also implemented by a high-ambition Meeting the 1.5°C Ambition. The narrative outlines why holding global average temperature increase to just 1.5°C above pre-industrial levels is important, shows how far we are from achieving this, and presents solutions to meet the ambition. In addition to partnering with Future Earth, the Exponential Roadmap initiative brings together technology innovators, scientists, companies, and NGOs such as WWF, Ericsson, Sitra Innovation Fund, Stockholm Resilience Centre, Mission 2020, KTH, Royal Institute for Advanced Research, and more.
This year, support from the European Space Agency in June 2019 helped improve understanding of environmental changes in mountains by identifying the most important climate variables – like temperature, precipitation, snow, radiation, wind and more – to monitor climate change and its impacts in high elevation contexts. A workshop in Bern, Switzerland, co-organized by the Mountain Research Initiative and the Group on Earth Observation’s Global Network for Observation and Information in Mountain Environments (GEO-GNOME), identified indicators and key criteria for data collection protocols and standards, and listed in-situ and remote-sensing methods feasible for application in high elevation regions.

In December 2019, ESA supported a workshop led by Future Earth Coasts in Estoril, Portugal, aimed at establishing a new community across different scientific disciplines and economic activities relating to the Atlantic basin, particularly from the South and Central Atlantic, for routine use of Earth observation data in support of the Sustainable Development Goals. The workshop coincided with the 3rd Marine Technologies Workshop 2019 organized by Instituto Hidrográfico, and brought together technicians and scientists from marine-related activities in Fisheries and Aquaculture, Spatial Planning, Coastal and Risk Management, Security, and Pollution.

European Space Agency Collaboration

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.
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.

Much of the strength of Future Earth lies within our community of Knowledge-Action Networks (KANs), national and regional entities, and ongoing collaborations with science funders and with early career scientists. Future Earth has also been hard at work 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.

Emergent Risks and Extreme Events

The Emergent Risks and Extreme Events KAN provides an open platform for scientific communities from multiple disciplines working on extreme events, disaster risk reduction, and governance to exchange information and engage in collaborative research activities. The Emergent Risks and Extreme Events KAN is a joint initiative of Future Earth, Integrated Research on Disasters (IRDR), and the World Climate Research Programme (WCRP). The network’s 2019 highlights include organizing the Herrenhausen Conference on Extreme Events: Building Climate Resilient Societies in Hanover, Germany. Over 130 scientists and practitioners from 30 countries convened to discuss the relations between climate extremes, societal resilience, and sustainable development goals, with the aim to identify major obstacles and how to overcome them, and to develop strategic agendas for research and for best-practice design and implementation. Additional highlights included a town hall calling for open collaboration in the KAN at the AGU 2019 Fall Meeting and publication of the book, Climate Extremes and Their Implications for Impact and Risk Assessment.

Finance and Economics

In 2019, the Finance and Economics KAN made significant efforts to plan the future of the network. The KAN prepared an Activities Plan and developed a call for membership of a network Development Team that will serve to increase the breadth and scale of activities. The KAN also successfully published a paper titled “Finance and Management for the Anthropocene” in Organization and Environment, and a book, Palgrave Studies in Sustainable Business In Association with Future Earth, which is intended to help reinvent business and economic models for the Anthropocene to engender sustainability and create ecologically conscious organizations. The network has begun collaboration with the Complex Systems Society to focus its work on data-intensive complex systems, while also participating in a workshop hosted by the Sleeping Financial Giants Initiative in Tokyo. Lastly, the network contributed to the “Finance: Making Money Work for Green Goals” chapter of the Our Future on Earth 2020 report.

Health

The Health KAN officially launched and held its inaugural meetings in Taipei City in May 2019. The Development Team, with co-chairs Prof. Anthony Capon and Prof. Kristie Ebi, gathered over 30 participants to discuss how to solve global common health threats in the face of climate change, biodiversity loss, land-use change, and other issues. Participants established a strategic governance plan to improve collaboration across national boundaries and activities to facilitate the promotion and protection of human health. Furthermore, a research agenda was developed, and a strategy for action and implementation of knowledge was also discussed. The GT launched a global call for the creation of a Steering Committee (SC) and a reorganization of the Advisory Group (AG) to drive work forward. The SC commenced its work in 2020, and made action-oriented contributions to reduce spread of COVID-19 and mitigate its impact through a widely distributed blogpost that was revised and submitted for a peer-review manuscript and developed into a policy brief. The SC also worked closely with the AG on formulating processes for a hosting institution and applied for funding under the Horizon 2020 call “Building a Low-Carbon, Climate-friendly Economy.”
Natural Assets

The Natural Assets KAN studies the functioning of the Earth system in the Anthropocene and aims at actively contributing to Sustainable Development Goal 15: Life on Land. In 2019-20, members of the Natural Assets KAN contributed to the biodiversity chapter of the Our Future on Earth 2020 report. The chapter titled “The Unravelling Web of Life” explores how society might negotiate a new global biodiversity framework through the Convention on Biological Diversity in late 2020. The development of post-2020 targets provides a critical opportunity to set out a new ambitious plan of actions to conserve and restore global biodiversity.

Ocean

In 2019, the Ocean KAN developed a strategic plan and governance document for the network, and participated in the first global planning meeting for the UN Decade of Ocean Science for Sustainable Development. Dr. Hector Moreira was named Chair of the Ocean KAN Development Team, and two postdoctoral researchers (funded through Future Earth’s PEGASuS) attended the inaugural meeting to contribute towards establishing a common vision, narrative, and the necessary knowledge needed to support sustainable development for the next decade (2021-2030).

Systems of Sustainable Consumption and Production

The Systems of Sustainable Consumption and Production network, headed by Dr. Paul Jepson, is working to address whole provisioning systems, including their social, economic, and cultural imperatives that impel consumerist lifestyles. The network presently supports a Working Group on the global food system, which aims to produce a report on the role of science and social engagement in shaping the future of the African continent.

Water-Food-Energy Nexus

The Water-Food-Energy Nexus KAN aims to foster the production of knowledge to better understand the interactions between water, food, and energy systems, as well as their trade-offs and synergies. One of the KAN’s 2020 highlights was a major contribution to Future Earth’s Our Future On Earth 2020 report. Network co-Chair Pamela Keith and Chair Jiaguo Qi co-authored a chapter titled “Food: Rethinking Global Security,” with contributions from the Asia Regional Center, also organized a pre-COP session on Water-Food-Energy Nexus research, as well as a publication on networking urban science, policy, and practice for sustainability. Funding for the network was obtained through the National Science Foundation (NSF) Accelnet call with the NATURA project, a project developing nature-based solutions for urban resilience in the Anthropocene. The network’s Development Team met in Canberra, Australia (November 2019), hosted by Future Earth Australia and the Australian National University, to define the network’s work agenda, key issues, and areas which can create and accelerate transformative change for sustainability. A preliminary list of key research priorities for cities, as well as a publication on transformations in cities, were drafted and are being developed. The KAN also organized a network vitality survey on how to better serve its community, exploring the feasibility of organizing webinars. Finally, the Urban KAN successfully applied for a session at the Sustainability Research & Innovation Congress 2020 in Rome.

Urban

In 2019, the Urban KAN Development Team played a pivotal role in shaping a report with the World Climate Research Programme, Global Research and Action Agenda on Cities and Climate Change Science, as an output from the Cities IPCC Science Conference. The network also produced a paper on networking urban science, policy, and practice for sustainability. Funding for the network was obtained through the National Science Foundation (NSF) Accelnet call with the NATURA project, a project developing nature-based solutions for urban resilience in the Anthropocene. The network’s Development Team met in Canberra, Australia (November 2019), hosted by Future Earth Australia and the Australian National University, to define the network’s work agenda, key issues, and areas which can create and accelerate transformative change for sustainability. A preliminary list of key research priorities for cities, as well as a publication on transformations in cities, were drafted and are being developed. The KAN also organized a network vitality survey on how to better serve its community, exploring the feasibility of organizing webinars. Finally, the Urban KAN successfully applied for a session at the Sustainability Research & Innovation Congress 2020 in Rome.
Future Earth Regional Entities: Updates from around the globe

Asia

This year the Asia Regional Center, in partnership with the Research Institute for Humanity and Nature (RIHN), launched the TERRA (Transdisciplinary Early Career Researchers in Asia) School, a short-term intensive program on capacity building, co-creation, and transdisciplinary research in practice. The program convened early career researchers in December 2019 to explore how to address the challenges facing humanity in Asia. In the new year, the Asia Regional Center hosted an international symposium with the Systems of Sustainable Consumption and Production Knowledge-Action Network on what food consumption and production might look like in a post-growth economy and how systemic transformations are needed for work, trade, and everyday life to enhance sustainability at local and global scales.

Other active networks and activities in Asia this year included the Science Council of Japan's Urgent Statement on Climate Change and a Call for Action, developed in collaboration with Future Earth members, several international conferences supported by the Chinese National Committee for Future Earth, and a 2019 Future Earth East Asia International Symposium organized by the Korea National Committee. The Future Earth Philippines Program conducted multiple national workshops to develop Knowledge-Action Projects, and a Philippine national workshop for the Science-Based Pathways for Sustainability Initiative is planned for late 2020. Future Earth Taipei supported the symposium and inaugural meeting for the health KAN in May 2019 and held a training workshop on a new regional research initiative, “Health Investigation and Air Sensing for Asian Pollution” which was endorsed as a Future Earth Asia Initiative is planned for late 2020. Future Earth Taipei also established seven working groups relevant to the KANs to promote thematic sustainability science and recommendations to the Future Earth Global Secretariat and the UK National Committee. The Romanian National Committee co-organized the meeting “Global Warming Impacts on Environment and Society” as part of a series of scientific conferences about climate change impacts, mitigation and adaptation measures in Romania that took place during December 2019 through February 2020. Also in February, the Romanian National Committee - a multidisciplinary climate change, air quality, environment, education, and research infrastructure program focused on the Northern Eurasian particularly arctic and boreal regions and China. The German Committee Future Earth expanded knowledge exchange in Europe this year through multiple activities. For example, its Working Group on Societal Resilience and Climate Extremes organized an international Herrenhausen Conference this year, with participation from more than 130 scientists and practitioners from 30 countries and UN organizations, to discuss the role of climate extremes as threats to human well-being and sustainable development. The Working Group on Sustainable Work published a position paper on the social-ecological transformation of the working society, and the German Committee Future Earth organized a live German-language webinar featuring authors and committee members for the launch of the Our Future on Earth 2020 report. The Irish National Committee has also been active in mobilizing the national sustainability community, e.g. through the production of a number of videos for the 2020 Earth Day, featuring Irish experts in the field. The Slovenian National Committee organized a symposium on Landscapes Diversification and Birdlife while Slovakian continues to host tour Future Earth Global Research Projects (GRPs) “PAGES, QMBA, GLF and bioDISCOVERY, and their related activities. The UK National Committee selected three core themes that will guide its work for upcoming years: Circular Economy 2.0; Just Transitions to Zero-Carbon Societies; and Earth Targets. The Global Environmental Research Committee, hosted via the UK Royal Society, convened to discuss Future Earth research and provided a report with recommendations to the Future Earth - Global Secretariat and the UK National Committee. The Romanian National Committee co-organized the meeting “Global Warming Impacts on Environment and Society” as part of a series of scientific conferences about climate change impacts, mitigation and adaptation measures in Romania that took place during December 2019 through February 2020. Also in February, the Romanian National Committee held its annual meeting and hosted a launch event for the publication, Our Future on Earth 2020. In Russia, the newly established National Committee ran a popular research funding competition on six big sustainability issues and developed a concept for a summer school on global challenges.

Multiple European National Structures participated in the development and dissemination of Future Earth 10 New Insights in Climate Science 2019. Individual activities of the networks also included the following highlights. Future Earth Finland organized a well-attended panel event on climate change and health at the University of Helsinki in November 2019, and continued the collaboration with the FEEX “Pan-European Experiment” study - a multidisciplinary climate change, air quality, environment, education, and research infrastructure program focused on the Northern Eurasian particularly arctic and boreal regions and China. The German Committee Future Earth expanded knowledge exchange in Europe this year through multiple activities. For example, its Working Group on Societal Resilience and Climate Extremes organized an international Herrenhausen Conference this year, with participation from more than 130 scientists and practitioners from 30 countries and UN organizations, to discuss the role of climate extremes as threats to human well-being and sustainable development. The Working Group on Sustainable Work published a position paper on the social-ecological transformation of the working society, and the German Committee Future Earth organized a live German-language webinar featuring authors and committee members for the launch of the Future Earth publication, Our Future on Earth 2020. The Irish National Committee has also been active in mobilizing the national sustainability community, e.g. through the production of a number of videos for the 2020 Earth Day, featuring Irish experts in the field. The Slovenian National Committee organized a symposium on Landscapes Diversification and Birdlife while Slovakian continues to host tour Future Earth Global Research Projects (GRPs) “PAGES, QMBA, GLF and bioDISCOVERY, and their related activities. The UK National Committee selected three core themes that will guide its work for upcoming years: Circular Economy 2.0; Just Transitions to Zero-Carbon Societies; and Earth Targets. The Global Environmental Research Committee, hosted via the UK Royal Society, convened to discuss Future Earth research and provided a report with recommendations to the Future Earth - Global Secretariat and the UK National Committee. The Romanian National Committee co-organized the meeting “Global Warming Impacts on Environment and Society” as part of a series of scientific conferences about climate change impacts, mitigation and adaptation measures in Romania that took place during December 2019 through February 2020. Also in February, the Romanian National Committee held its annual meeting and hosted a launch event for the publication, Our Future on Earth 2020. In Russia, the newly established National Committee ran a popular research funding competition on six big sustainability issues and developed a concept for a summer school on global challenges.
Latin America

Work in this region centers on the activities of the Inter-American Institute for Global Change Research (IAI), a strategic partner of Future Earth. In the last year, IAI has developed a new Science, Technology, Policy (STeP) Fellowship program to enhance science communication in policy-making and strengthen scientific input to government agencies in Latin America and the Caribbean. The program will cater to early to mid-career scientists interested in creating evidence-based policies to address and assist sound decision-making for challenges throughout the Americas. The IAI has also funded six transdisciplinary projects on the role of ecosystem services in adaptation to global change for human wellbeing. These projects create opportunities for students and early career researchers to gain knowledge in transdisciplinary approaches as well as working at the science-policy interface. In the autumn, IAI and Future Earth partnered on a joint session at the Transformations 2019 conference in Santiago, Chile and hosted a booth together at the AGU Fall 2019 meeting.

Middle East and North Africa (MENA)

In 2019, the Middle East and North Africa (MENA) Regional Center continued to host regional offices for both the GLP and iLEAPS GRPs. Looking forward, the Regional Center will be hosting a conference – in collaboration with the University of Bahrain – on “Water in the MENA Region: Preparing for a Changing World” in February 2021. The conference will bring together leading regional experts, professionals, and researchers to review the current state of water issues and recent trends, innovations, and practical solutions that address the challenges of maintaining water security in the region in a rapidly changing world.

Southern Africa

In 2019, the Future Earth Regional Office for Southern Africa (FEROSA) hosted a regional Stakeholder Platform, at the National Research Foundation (NRF) in Pretoria, South Africa attended by over 70 delegates from 11 African countries. This kicked off full operations for the office with a finalised Memorandum of Understanding (MoU) between the NRF and the Future Earth Global Secretariat, and the presentation of the FEROSA Operational Framework. The Operational Framework incorporates a research agenda focused on regional and global priorities, funding and governance frameworks, and will anchor FEROSA’s five-year strategic plan (2020-2025). The strategic plan will be informed by a situational analysis that will map the relevant research and outreach activities in the region. Other notable activities include hosting a panel session during the Innovation Bridge and Science Forum South Africa to ignite conversations about science and innovation for impact, and participating in an upcoming Southern African Program on Ecosystem Change and Society (SAPECS) working group meeting.

South Asia

The South Asia Regional Office of Future Earth, in collaboration with the Divecha Centre for Climate Change (DCCC) and the Indian Institute of Science (IISc), jointly carried out various outreach activities, organized workshops and conferences, engaged with stakeholders including government bodies and legislatures, and partnered with many national and international institutions in 2019. The headline event in 2019, the Water Future International Conference “Towards a Sustainable Water Future” was held in Bengaluru, India in September 2019. The Conference convened 700 participants from across the globe to discuss the current state of global water resource challenges and future pathways to accelerate the implementation of water-related SDGs. Other notable activities include the creation of the Governing Council for the Water Solution Lab, the creation of the South Asia Regional Office Governing Council and its inaugural meeting, and the international conference on “Digital Solutions to Accelerate Adaptation to Climate Change in Agriculture” in Bengaluru, India in January 2020, organized by MAIRS-FE and CCAFS. The South Asia office also hosted widely-attended launch events for the Our Future on Earth 2020 report.
Future Earth and the Belmont Forum have partnered to establish the first in a global congress series focused on Sustainability Research and Innovation (SRI2021). It will bring together the world’s foremost research and innovation communities to work across disciplines and sectors to support a global transformation to sustainability. The Congress will be hosted by Future Earth Australia and a consortium of leading Australian research institutions, selected through a competitive and open bidding process. While initially planned for June 2020, the global outbreak of COVID-19 and concerns over the health and safety of participants led conveners to postpone the Congress, which will now take place in Brisbane, June 12-15, 2021.

Over 150 quality submissions for session proposals came in throughout the year from all over the world, with approximately half from Future Earth communities. A broad program featuring diverse speakers from multiple countries, academic disciplines, and sectors of society is being developed with the support of an international program committee. The event is also prioritizing accessible virtual participation, gold-standard, independently verified carbon offsets for flights, and a thorough assessment of the overall environmental impact of the congress, including lodging and catering. In addition, SRI will offer multiple opportunities for virtual engagement in the run up to the Congress, including webinars, blogs, and Facebook live interviews. Finally, in preparation for the inaugural event, conference organizers convened a Town Hall at the AGU Fall Meeting in San Francisco (December 2019) to hear perspectives on what the essential elements are for better support of sustainability science and key design principles to incorporate into SRI2021.
Ocean Sustainability is a partnership between Future Earth, the National Center for Ecological Analysis and Synthesis (NCEAS), and the Global Biodiversity Center at Colorado State University, launched in early 2019. The Program provides support for two NCEAS working groups focusing on ocean-related sustainability challenges. The first centers on the establishment and monitoring of the Palau National Marine Sanctuary, and culminated in a final research report presented to the President and citizens of Palau on December 19th, 2019, which explored the ecological and socioeconomic effects of the sanctuary to date. The second working group is facilitating the implementation of a globally coordinated and sustained ocean observing system to assess the status and trends in ocean biodiversity around the world. PEGASuS II also supports two postdoctoral researchers, Drs. Erin Satterthwaite and Alfredo Gorro, working in collaboration with both NCEAS working groups and the OCEAN Knowledge-Action Network. Both are actively engaged in science-policy through the United Nations Decade of the Oceans for Sustainable Development.

PEGASuS III and IV will both launch in 2020. In PEGASuS III, Future Earth will partner with the African Academy of Sciences (AAS) and the Belmont Forum to support integrated research focused on establishing international transdisciplinary research teams focused on the development of science-based targets and pathways to the SDGs for African nations.

Earth Leadership Program

The Program for Early-stage Grants Advancing Sustainability Science (PEGASuS) was established to provide $2 million in direct support over a five-year period for Future Earth Global Research Projects, Knowledge-Action Networks, and new partners to collaborate, increase knowledge, promote innovation, and establish evidence-based solutions to the world’s sustainability challenges. PEGASuS aims to generate self-sustaining research projects that have real impacts on the health and well-being of human societies and the natural world.

The Earth Leadership Program is led by Dr. Sharon Collinge, a 2004 Leopold Leadership Fellow and full professor in the Environmental Studies Program at the University of Colorado Boulder. Applications for the 2021 North American cohort opened alongside the program’s launch, with additional cohorts planned for Latin America, Europe, and Oceania. Over the next year, the structure of the Earth Leadership Program will continue to evolve as it seeks to build greater connections among existing fellows, bring new fellows into the program, and build new programs around the world.

Earth Leadership Program

Knowledge To Impact
This year two global scoping processes were held seeking input from the scientific community on future CRAs. The first scoping call was focused on Systems of Sustainable Consumption and Production. It built on a joint Future Earth-Belmont Forum white paper outlining knowledge gaps and research priorities within the context that the global population is expected to reach 9.6 billion by 2050, and in view of finite resource availability and current unsustainable patterns of global development. The second was a scoping process inviting research priorities under the theme of Human Migration and Global Change. As we enter the Anthropocene Era, emerging drivers of migration such as climate change, unprecedented inequality, and modern forms of conflict are leading to new patterns and scales of human migration across the globe. Thus the topic of migration provides a strong anchor for social and natural sciences and presents excellent potential for transdisciplinary teams to address research questions related to this increasingly important field of study.

Future Earth works collaboratively with the Belmont Forum to help scope and shape its Collaborative Research Actions (CRAs), which are major funding opportunities for multinational, interdisciplinary research teams to address the world’s greatest sustainability challenges. Future Earth is the only institutional entity invited to directly propose new topics annually.

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.
Shape the narrative

Quality research can catalyze effective societal action, but it takes a dedicated push to get the latest scientific findings 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.

This year, in addition to publishing our regular Insights in Climate Science and Anthropocene Magazine, the Future Earth community contributed to the landmark United in Science report, a synthesis of the latest climate science compiled by the World Meteorological Organization for the Science Advisory Group of the UN Climate Action Summit 2019. We also launched a redesigned website with a more contemporary design, and our reach on Twitter exceeded 18K followers in 2019, as we aim to become a go-to place for sustainability knowledge.

Looking forward, Future Earth will continue to expand its communications efforts—including a strong digital media presence—to elevate the increasing scope and variety of products created by our research and innovation networks.

Anthropocene Magazine

Anthropocene, Future Earth’s flagship independent magazine, continues to be an outstanding showcase for on-the-ground solutions to sustainability. With the widest reach of Future Earth’s publications, its digital audience has grown to more than 50,000 visitors per month from more than 200 countries. Articles have been syndicated to Quartz (US), Le Monde (France), El Pais (Spain), Scroll (India), and Guokr (China). In the two years since its inception, Anthropocene has won three journalistic awards—including the 2019 Folio Eddie Award for editorial and design excellence across a full issue—and amassed more than $200,000 in membership donations. The fifth print edition is due out in 2020.

Anthropocene is close to formalizing a partnership with The Atlantic to scale up the visibility of select articles, as well as Stanford University to help launch a special event series bringing together leading voices in science and policy to better understand how humanity is reshaping vital planetary systems. These strategic partnerships will help Anthropocene expand its reach even further and solidify its role as a thought leader in the sustainability space.
The 10 New Insights in Climate Science series aims to synthesize and communicate the latest and most essential scientific findings on climate change published each year—a kind of climate science year-in-review for journalists, policy makers, and the general public.

The latest iteration, 10 New Insights in Climate Science 2019, was launched at the 25th Conference of the Parties (COP25) of the United Nations Framework Convention on Climate Change (UNFCCC) in a press conference with UNFCCC Executive Secretary Patricia Espinosa. The report summarizes recent advances in climate research across disciplines and draws on the scientific advances of many of our GRPs, KANs, and beyond. Major contributions from the Future Earth community include efforts from the Global Carbon Project, GMBA, the Health KAN, and strategic partner Mountain Research Initiative. The Future Earth National Committees helped distribute the report to national delegations, while the UNFCCC distributed it electronically to negotiators at the conference. This year's list focuses on equity and equality, nutrition, impacts on the most vulnerable, and social tipping points.

A sign of the report's growing importance within the policy community, the launch event was also attended by the Chilean Science, Technology, Knowledge and Innovation Minister Andrés Couve from the COP25 presidential council, as well as news agencies like Reuters. The 2019 report marks the third annual edition of the series, and was prepared in collaboration with The Earth League.

In company with the world’s leading climate science organizations, Future Earth was asked to contribute to the landmark United in Science report, a high-level climate science synthesis for the United Nations 2019 Climate Action Summit. The report provided official scientific input to the Summit and presented a unified assessment of the state of our Earth system under the increasing influence of anthropogenic climate change, of humanity’s response thus far and of the far-reaching changes that science projects for our global climate in the future. It was coordinated by the World Meteorological Organization (WMO) and compiled under the auspices of a Science Advisory Group co-chaired by Leena Srivastava and Petteri Taalas.

Future Earth's specific contribution to the report was a Summary of climate insights (2017-2019), prepared in collaboration with the Earth League, Global Fossil Fuel Emissions, and presented during the Summit by Johan Rockström and Rob Jackson (Global Carbon Project). Key messages of our summary were: Growing climate impacts increase the risk of crossing critical tipping points; There is a growing recognition that climate impacts are hitting harder and sooner than climate assessments indicated even a decade ago; Meeting the Paris Agreement requires immediate and all-inclusive action encompassing deep decarbonization, complemented by ambitious policy measures, protection and enhancement of carbon sinks and biodiversity, and effort to remove CO2 from the atmosphere.

Other key report contributors included the Intergovernmental Panel on Climate Change, and UN Environment (UNEP).
Our Future on Earth

The Our Future on Earth series aims to synthesize the year’s most newsworthy trends and top research from experts in the social, natural, and political sciences.

Our Future on Earth 2020, the inaugural report of the series, launched in February 2020 with a dozen chapters reflecting on timely topics like climate strikes, the rise of right-wing politics, and the changing media landscape. Creating the report was a global effort. Contributions were made by at least 14 of Future Earth’s GRPs and KANs, while the author team and Editorial Board represented over 20 different countries from the Global North and South. The report was translated into French, Spanish and Mandarin. Following the report’s release, nearly a dozen regional launch events and/or regional opinion pieces followed throughout the month of February, including events in South Africa, India, Asia, Senegal, and Europe. The report featured a special foreword from Gro Harlem Brundtland, reflecting the progress made on our common sustainable development path first introduced by the Brundtland Commission over 30 years ago. The report was covered by more than 200 international media outlets across 60 countries. Coverage included articles by The Guardian and Thomson Reuters, as well as op-eds published by Project Syndicate and The Conversation.

Global Risks Perceptions Initiative

Over the past 15 years, the framing of global risks has been strongly shaped by the World Economic Forum’s annual Global Risks Report, which surveys the perceptions of world leaders from business, academic, and policy spheres.

Yet, as global risks become increasingly complex and intertwined, our ability to accurately and legitimately appraise these risks requires a broadening of the communities assessing them. Future Earth’s Global Risks Perceptions Initiative strives to capture perceptions on risks from different scientific communities. By bringing together multiple viewpoints, this initiative aims to spark and inform a pluralistic dialogue around risks that demand a diversity of experience and knowledge.

The first edition of an annual report, the Risks Perceptions Report 2020, was officially launched on February 12, 2020, based on a survey of the global change science community. The perceptions of more than 200 scientists from 52 countries – with more than 50% of respondents from the Future Earth community – were captured in the report. When juxtaposed with results from the World Economic Forum’s 2020 Global Risks Report released in January, both rank environmental risks amongst the top risks in the coming 10 years. However, scientists perceive these risks as more urgent than the business community. Survey results and implications were published in Our Future on Earth 2020 and in a commentary in the AGU’s journal, Earth’s Future.
About Future Earth

Future Earth’s mission is to accelerate transformations to global sustainability through research and innovation. By harnessing the experience and reach of thousands of scientists and innovators from around the world, Future Earth is working towards a deeper understanding of complex Earth systems—such as climate, water, land, urban, economic, energy, health, biodiversity, and governance systems—as well as the development of evidence-based strategies for global sustainable development.

Who we are

Secretariat

Executive Leadership

Amy Luers, Executive Leadership
Fumiko Kasuga, Global Hub Director, Japan
Josh Tewksbury, Global Hub Director, USA
Sandrine Paillard, Global Hub Director, France
Wendy Broadgate, Global Hub Director, Sweden
Hein Mallese, Director, Asia Regional Center
Manfred A. Lange, Director, MENA Regional Center
Michael Neumai, Director, Southern Africa Regional Office
S.K. Sethwah, Director, South Asia Regional Office

USA

Josh Tewksbury, Global Hub Director, USA
Alfredo Giron, Postdoctoral Researcher, PEGASuS 2: Ocean Sustainability
Craig Starger, Research Enabling Lead
Apurva Dave, Research and Innovation Lead

Erik Satterthwaite, Postdoctoral Researcher, PEGASuS 2: Ocean Sustainability
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Kelley Simkins, Digital and Engagement Editor
Lakshmi Muralidharan, Finance Manager
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Maria Fernanda Enriquez, Administrative Officer and Global Sustainability Scholars Coordinator
Sharon Collinge, Executive Director, Earth Leadership Program
Veera Mitzner, Network Lead

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Giles Stoen, Science Officer

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Marcin Jarzabek, Science Officer
Yuki Hashimoto, Communications Officer

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Paula Monroy, Communication Coordinator
Sylvia Wood, Science Officer

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Cosma Cazé, Science Officer
Fanny Boudet, Science Officer
Hannah Moersberger, Deputy Director (starting January 2020)
Martina Antonakopoulou, Science Officer
Vincent Vial, Science Officer
Xavier Peres, Coordinator

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Fanny Boudet, Science Officer
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Martina Antonakopoulou, Science Officer
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Lisa Jacobson, Science Officer
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Steven Lade, Research Scientist, Earth Commission
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Therese Öreteg, Communications and Administrative Officer

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Xavier Peres, Coordinator

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Steven Lade, Research Scientist, Earth Commission
Susanna Dobrota, Coordinator and Administrative Officer
Therese Öreteg, Communications and Administrative Officer

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Jeannerie Fluet, Minister of the Environment, Canada
Jean-Marie Flaud, Ministère de l'Environnement, France
Juichi Yamagishi and Kazuhiko Takeuchi, Science Council of Japan
Shamsa Nain-Bedouelle and Mariam Bouamrane, UNESCO, France
Pavel Kabat, World Meteorological Organization (WMO), Switzerland
Rani Quites, Fonds de recherche du Québec (FRQ), Canada
Sophie Hebden, Research Coordinator - Earth Observations

Advisory Committee Members

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Anny Cazenave, International Science Institute, France
Asunción Lara St. Clair, DNV GL, Norway
Fausto Ferreira de Souza Dias, University of Brasilia, Brazil
Fataneh Denton, United Nations Economic Commission for Africa, Ethiopia
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Joy Shumake-Guillemot, WHO/WHO Climate and Health Office, Switzerland
Naoko Ishii, Global Environment Facility (GEF), Japan
Oyun Sanjaasuren, 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, University of Cambridge, South Africa

Our Future on Earth Launch Event, South Africa, January 2020
Financial summary

During financial year April 2019 - March 2020, 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 4.8 million EUR. This is a decrease of 0.6 million EUR from last year’s 5.4 million EUR. Activity expenses remain stable, with cost reductions occurring in the coordination function (which includes finance and operations).

During financial year April 2019 - March 2020, the consolidated revenue of Future Earth’s Global Hubs consisted of 80% public sourced funds, including national contributions, and 20% private-sector funding.

<table>
<thead>
<tr>
<th>Expenses by function</th>
<th>2019-2020</th>
<th>million EUR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research and Innovation</td>
<td>2.1</td>
<td></td>
</tr>
<tr>
<td>Networks and Regions</td>
<td>0.8</td>
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<tr>
<td>Communications</td>
<td>1.1</td>
<td></td>
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<tr>
<td>Coordination</td>
<td>0.8</td>
<td></td>
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<tr>
<td>Sum expenses</td>
<td>4.8</td>
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</table>

Global Hub expenses in percent (%) of total 4.8 million EUR

<table>
<thead>
<tr>
<th>Function</th>
<th>Expenses</th>
<th>Percent (%)</th>
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<tbody>
<tr>
<td>Research and Innovation</td>
<td>23%</td>
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<tr>
<td>Networks and Regions</td>
<td>17%</td>
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<tr>
<td>Coordination</td>
<td>16%</td>
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</table>

The following funders are thanked for their contributions to Future Earth and its activities. Funders of both earmarked projects as well as core funders for the Future Earth secretariat are listed under the global hub receiving the funding.

**National and local contributors**
- **Austria** (Federal Ministry for Science, Research & Economy)
- **Taipei** (Academia Sinica)
- **Finland** (Council of Finnish Academies)
- **Germany** (German Research Foundation)
- **India** (Indian National Science Academy)
- **Israel** (Academy of Sciences and Humanities)
- **Japan** (Ministry of Education, Culture, Sports, Science and Technology, MEXT)
- **Philippines** (Philippine Council for Industry, Energy and Emerging Technology Research and Development)

**US Global Hub**
- **Belmont Forum**
- **Colorado State University**
- **George Mason University**
- **Gordon and Betty Moore Foundation**
- **Leonardo Decaprio Foundation**
- **NASA**
- **NOMIS Foundation**
- **University of Colorado Boulder**
- **US Global Change Research Program**
- **US National Academies of Sciences, Engineering and Medicine**
- **US National Science Foundation**

**Japan Global Hub**
- **AEDS Environmental Foundation**
- **Kyoto University**
- **Ritsumeikan University**
- **Nagoya City University**
- **Research Institute for Humanity and Nature**
- **Science Council of Japan**
- **The University of Tokyo’s TokyoFuture for Future Initiatives**

**Canada Global Hub**
- **Université de Montréal**
- **University of British Columbia**
- **Concordia University**

**France Global Hub**
- **Alliance Nationale pour la Recherche en Environnement (AllEnvi)**
- **Agence Nationale de la Recherche (ANR)**
- **Centre National de la Recherche Scientifique (CNRS)**
- **Ministère de l’Enseignement supérieur, de la Recherche et de l’Innovation (MESRI)**
- **Sorbonne Université**

**Sweden Global Hub**
- **European Space Agency**
- **Mara Foundation**
- **Oak Foundation**
- **Porticus Foundation**
- **The Global Environment Facility**
- **The Swedish Ministry of Environment (via Swedish Research Council, FORMAS)**
- **The Swedish Ministry of Higher Education and Research (via the Swedish Research Council, Vetenskapsrådet)**

**Others**
- **Polytechnique Montréal**
- **Institut National de la Recherche Scientifique (INRS)**
- **ClimateWorks Foundation**
- **Mitra**
- **College and Institutes Canada**
Regional and National Structures

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 in addition to our global hubs we also have regional and national structures that propel research toward unique solutions to make progress on sustainability.

Regional Centers and Offices: National and Local Organizations:

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<tr>
<th>Regional Centers and Offices</th>
<th>National and Local Organizations:</th>
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<td>Asia Regional Center</td>
<td>Australia 10. Philippines</td>
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<td>Middle East &amp; North Africa Regional Center</td>
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<td>Japan 17. Taiwan</td>
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<td>Mongolia 18. United Kingdom</td>
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This year our Global Research Projects and Knowledge-Action Networks collectively produced hundreds of scientific publications. This included peer-reviewed papers, book chapters and major reports. Many 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, ocean, and land research. Other focus areas included health, governance, food, and more. The following is a selection of publications provided by our research networks, showcasing some of their key work as part of the Future Earth community this year.

Selected publications
April 2019 - March 31 2020

Earth System Governance


Elevating Mountains in the post-2020 Global Biodiversity Framework (GMBA)


Negative Emissions


integrated History and Future of People on the Earth (IHOPE)^


Integrated History and Future of People on the Earth (IHOPE)^


Integrated History and Future of People on the Earth (IHOPE)^


Integrated History and Future of People on the Earth (IHOPE)^


Leff, E. (2019). Ética sociocultural. De la ecología a un ethos cosmopolita de vida. Ética Sociocultural. ISSN: 1809-245X.


West, A.M., Rees, D., Rees, E., et al. (2019). Comparison of drift net catches in the central Taiwan Strait, Taiwan biennial open science meeting and the ‘TaiBIET’ C.S.F. synopses and from the activities of the working groups, regional programmes and the SPID steering teams.


Integrated Marine Biosphere Research (IMBeR) Class 1 publications. Specifically generated through/subject for IMBeR activities - for example, arising from activities such as the IMBeR activities – for CJK symposia and from the activities of IMBeR SPIS scoping teams.


54(9): 20-23.


Journal of Atmospheric & Earth Science, 3(0013).


