

Annual report 2020



International Institute for
Applied Systems Analysis
IIASA www.iiasa.ac.at

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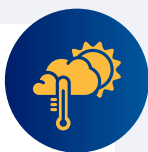
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Regional highlights

IIASA researchers collaborate with colleagues from member countries and partner institutions around the globe to develop holistic, systems-based solutions and provide policy advice for some of the most pressing problems society faces today.

IIASA is providing modeling support to **Argentina, China, and India** to develop their Long-term Climate Targets (LTS) and Nationally Determined Contributions (NDCs) to the Paris Agreement with the objective of strengthening climate related policymaking, while simultaneously strengthening the capacities in local institutions to carry forward this work.



NatureMap, an integrated global map of biodiversity, carbon storage, and other nature services, is now being applied in several countries, including **Brazil, Indonesia, and Mexico**. The work will contribute to decision making at the Convention on Biological Diversity and the Climate Change COPs taking place in China and the UK respectively.



Using a new analytical tool capable of simulating an optimal mix of public fund allocations and financial protection instruments for disaster risk reduction, IIASA researchers collaborated with colleagues in **Japan** to support the systematic analysis of public investment decisions in vulnerable **African** countries.



As part of the Peking University (PKU)-IIASA Postdoctoral Program, IIASA hosted two joint postdoc fellows working on Water-Energy-Land nexus modeling and on regional water security for the countries of the **Chinese** government's Belt and Road Initiative.



In a multi-institute collaborative effort, researchers explored the impact of different combinations of non-pharmaceutical interventions to curb the spread of COVID-19 on reducing deaths, health demands, and lowering healthcare costs in **Sweden**.



Innovative water modeling and scenario assessment tools developed at IIASA are helping policymakers in **East Africa** to identify the principal needs for effective water management policies and improve water management in the region.



An IIASA-led study used systems analysis methods to measure trade interdependencies between **US** states and found that the country's current food supply chain is often not optimized for using available natural resources.



IIASA works with the Ministry of Environment, Forest, and Climate Change in **India** (MoEFCC) to develop tools to assist Indian government agencies in evaluating targets for the Sustainable Development Goals (SDGs).



An IIASA-led study found that to ensure universal access to affordable, reliable, and modern electricity services in **sub-Saharan Africa** by 2030, the pace of electrification must more than triple.



In 2020, IIASA joined forces with SAS, a **global** leader in analytics, innovative software, and services, to help fight deforestation and protect the planet using the next generation of crowd-driven artificial intelligence (AI).



IIASA provided essential support in the development of the **EU's** Second Clean Air Outlook through model calculations carried out with the IIASA GAINS model.



Researchers created different scenarios of the effects of economic measures to tackle the COVID-19 crisis in **Austria** using a novel economic model developed at IIASA.



In **Israel**, a country suffering from chronic water shortages, IIASA researchers are co-developing a water resources management tool with Israeli colleagues.



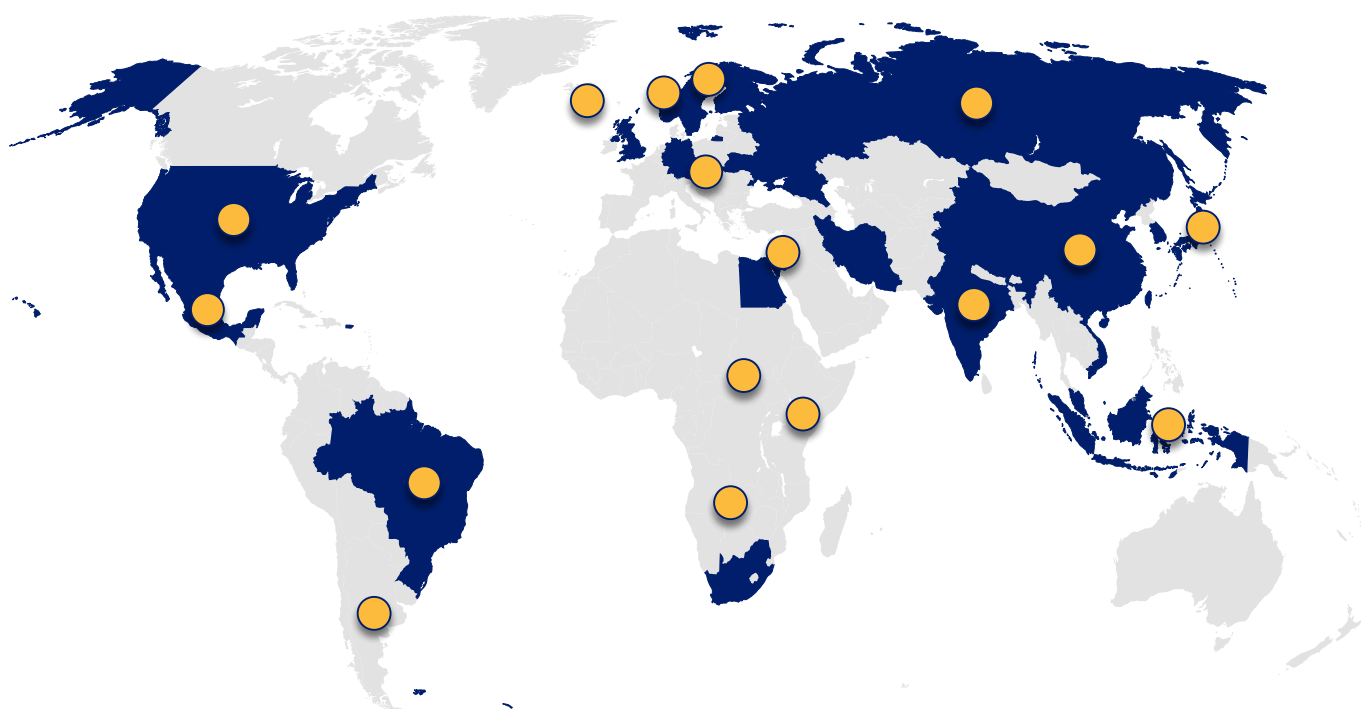
IIASA researchers are assisting with the development of a National Forestry Accounting Plan and Forest Reference Levels for **Iceland** and **Norway**.



IIASA cohosted an online symposium with the **Russian** Presidential Academy of National Economy and Public Administration to share recent research and discuss challenges that demographers may face in studying demographic consequences of COVID-19.



The highlights include selected activities only, they are not comprehensive and do not aim at providing an overview of IIASA's regional research and policy activities.





Leadership in applied systems analysis

The COVID-19 pandemic has vividly illustrated the interconnected nature of the world we live in today. Unprecedented economic, environmental, and social change, as well as increased complexity that brings with it a range of vulnerabilities and opportunities, means that only an integrated systems approach will prevent solutions for one problem causing unintended consequences elsewhere. Over the nearly five decades since its establishment, IIASA has come to be recognized as a global leader in this field.

Incentivizing cooperation on climate action

Many countries are failing to comply with the non-binding commitments of the Paris Agreement. An IIASA-led study offers clues on how to design an international climate agreement that could incentivize countries to cooperate.

Notwithstanding a general consensus that greenhouse gas emissions are too high, most governments would prefer other countries to reduce their emissions rather than reducing their own. The Paris Agreement is intended to solve this collective action dilemma over time, but according to many observers, this landmark accord is thus far proving insufficient.

The study advances the scientific feasibility analysis of an alternative approach to solving this problem in the form of emission reduction matching-commitment agreements, wherein participating countries can commit to reducing their emissions by an amount that is contingent upon the emissions reductions of other countries.

The study used a game-theoretic approach to model collective action in a one-shot “climate game” of two different countries. The model demonstrated how matching-commitment agreements can lead to a unique rational, stable, and efficient equilibrium outcome, at which the emissions of both countries are lower than they would have been in the absence of an agreement. Thus, such an agreement incentivizes countries to make matching commitments that in turn incentivize emissions

reductions and reduce emissions. Importantly, countries make matching commitments without knowing which commitments other countries will make. Moreover, at this equilibrium, both countries would be better off in terms of economic payoffs than they would have been without the agreement.

The research supports and extends previous work on the potential of matching-commitment agreements to help overcome a collective action problem. In particular, it goes beyond a standard simplification of many game-theoretic models that consider identical countries by allowing for countries that have different characteristics, such as expected damages from climate change. While this heterogeneity complicates the technical analysis, adding this aspect of realism to the model lends credence to the notion that the study’s optimistic results will also apply in the real world.

Another novelty of the study was that it compared the equilibrium enabled through a matching-commitment agreement with another equilibrium that arises in the absence of such an agreement - otherwise the two alternative equilibria were derived from the same assumptions on the behavior of countries. This makes the comparison more meaningful than previous works that considered another, less realistic benchmark scenario. A similar approach could in principle be used to tackle other public goods problems in situations where enforcement is problematic.





Building global disaster and climate resilience

In the last decade, floods have affected more people than any other type of disaster. IIASA researchers are working to strengthen the scientific basis for building disaster and climate resilience worldwide.

Sea level rise is one of the most severe impacts of climate change, threatening coastal communities, infrastructure, and agriculture. In 2020, IIASA-led research for the first time assessed the economy-wide effects of sea level rise globally, and in particular in G20 countries.

The findings show that global GDP losses up to 2050 in a scenario where warming is kept well below 2°C, as well as in a second one overshooting this target, are significant and similar given the effects of climate change already being experienced. Without further mitigation and adaptation, and assuming continued sea level rise, projected annual global economy-wide losses can amount to more than 4% by 2100. With ambitious mitigation and adaptation, the model results however show that this number can be reduced to below 0.5% of global GDP loss while accounting for the associated costs for adaptation measures and residual impacts. The results strongly argue for countries to further coordinate mitigation, adaptation, and climate resilient development, and consider where to build cities and situate important infrastructure.

Standardized measures of resilience that are applicable across geographical and socioeconomic

contexts are however not always readily available. To this end, IIASA researchers developed a standardized community resilience measurement framework for flooding, as well as a corresponding measurement tool modeled on and adapted from a so-called 'technical risk grading' approach. These tools can inform the way forward for better, more efficient, and increasingly robust standardized assessments of resilience to track progress and inform the implementation of the Paris Agreement, the Sendai Framework, and the Sustainable Development Goals.

To better understand community-level flood resilience, researchers also developed a typology of community flood resilience capacity based on community characteristics and five capitals (human, financial, natural, physical, and social). Their findings have important policy implications on the individual community level. The results, for instance, suggest that communities with lower flood resilience capacities and interactions can best build resilience by leveraging their relatively higher human capital capacities to strengthen their financial and social capitals. The study however also indicates that negative effects might occur in urban communities when co-benefits of natural and physical capital are not fully integrated. This emphasizes the importance of an integrative approach to management when implementing systematic flood disaster resilience metrics and development measures.



Modeling water to quench the future's thirst

IIASA researchers have developed a new large-scale, open source hydrological and water resources model to support and enable investigations by different stakeholder groups and scientific communities.

Population growth and continued economic development worldwide, especially in developing regions, are driving an unsustainable increase in water demand. This demand is estimated to increase significantly under the global, regional, and local impacts of climate change on water availability and its distribution.

Ensuring that uncertain supply can meet growing demand without compromising the sensitive aquatic environments from which water is derived, is a huge challenge that will require strategies and policies informed by science. The new large-scale IIASA hydrological and water resources model – the Community Water Model (CWatM) – can aid a more accurate assessment of water supply and demands from both people and the environment.

The model can simulate the movement, distribution, and management of water both globally and regionally, evaluating water availability both in terms of water demand and environmental needs. It includes an accounting of how future water demand will evolve in response to socioeconomic changes, and how water availability will be influenced by climate change. The

integrated modeling framework considers water demand from agriculture, domestic needs, energy, industry, and the environment. Because the modeling framework is general, it can also be adapted to address new interdisciplinary research questions. This opens the door to many potential applications to explore connections between the nexus aspects of energy, land, and water.

The model's novelty manifests in combining existing good practice in various scientific communities beyond hydrology itself, rather than providing entirely new concepts for modeling hydrological and socioeconomic processes. It has a modular structure that is open source and uses state-of-the-art data storage protocols as input and output data, while being community-driven to promote the team's work among the wider water community. It is flexible enough to change between scales, to be integrated with water quality and the hydro-economy, and to be linked with other IIASA models.

The Community Water Model will continue to be developed, incorporating more features to enhance the simulation of water availability in agricultural, urban, and groundwater contexts. The model is the first step towards developing an integrated modeling framework, encompassing both water supply infrastructure and demand management, and providing vital information to decision- and policymakers.



Building a sustainable future

A systems perspective will be crucial to systematically and comprehensively reducing human footprints and enhancing the resilience of natural and socioeconomic systems in pursuit of a sustainable future. IIASA has the credibility and flexibility to bring together teams of researchers that cover a wide range of disciplines, the latest scientific expertise, and the international as well as local knowledge required to explore pathways to realizing this ambitious goal.

Integrated action needed to curb biodiversity loss

Plant and animal species across the world are steadily disappearing due to human activity. A breakthrough IIASA-led study emphasizes that without ambitious, integrated action, turning the tide of biodiversity loss will not be possible by 2050.

Biodiversity – the variety and abundance of species, along with the extent and quality of the ecosystems they call home – has been declining at an alarming rate for many years. If this trend continues, there will simply not be enough nature left to support future generations. Balancing the demand of a burgeoning global population and economy with the need to stem the exploitation of Earth's natural resources is one of today's greatest challenges.

The study, which forms part of the 2020 World Wide Fund for Nature (WWF) Living Planet Report, set out to explore, for the first time, the actions required to reverse the current global biodiversity declines from land use change and illuminate what integrated future land use pathways to achieving this goal might entail. Using multiple models and newly developed scenarios, the study provides information on pathways that could realize the 2050 vision of the UN Convention on Biological Diversity.

According to the authors, action is needed in two key areas namely bold conservation and restoration with

increased management effectiveness; and food system transformation, including reduced food waste, diets that have a lower environmental impact, and further sustainable intensification and trade. Integrated action would need to happen concurrently in both areas to turn biodiversity loss from land use change around by 2050 or earlier.

Scenarios that combined increased conservation and restoration initiatives alongside transformations of the food system showed that opportunities for ambitious conservation and restoration efforts were greater, and potential adverse food security impacts defused. Finally, such transformative change in food and land use systems would also deliver significant co-benefits such as a marked contribution to ambitious climate mitigation targets, reduced pressure on water resources, reduced excess of reactive nitrogen in the environment, and health benefits.

The study offers a beacon of hope and shows that biodiversity declines from the largest threat to biodiversity to date can still be stabilized and the loss of nature reversed. However, to truly bend the curve of biodiversity loss, wholesale transformational changes in food production and consumption, as well as bolder, more ambitious conservation and restoration efforts must be undertaken in tandem with actions to address climate change.





Clean air for all is an attainable goal

Air pollution has serious health impacts and is considered the number one environmental risk factor for human health globally. According to IIASA research, achieving clean air is an attainable goal that would prevent millions of premature deaths every year.

The quality of the air we breathe impacts our health and wellbeing. Air pollution is currently the largest environmental risk factor for human health and has negative health effects even below the present World Health Organization (WHO) guideline values, which are exceeded by more than a factor of 10 in many parts of the world, and especially in developing countries.

In their study, IIASA researchers aimed to provide an overview of global air quality and the policies developed to mitigate its effects. The authors identified key determinants responsible for historic air pollution trends in different regions around the globe. Examples include, among others, economic growth, technological development, and environmental policy interventions. The study examined the interplay of these factors in the past and their impact on air quality in the decades to come, and found that by combining different policy areas beyond air pollution, clean air could indeed be achieved worldwide.

Clean air however needs integration across multiple policy domains, including environmental policies focusing

on pollution controls, energy and climate policies, policies to transform the agricultural production system, and policies to modify human food consumption patterns. The authors emphasize that none of these policy areas alone can deliver clean air, and interventions need to be coordinated between sectors. Such policy interventions would simultaneously deliver a wide range of benefits on other policy priorities, while also making substantial contributions to human development in terms of the Sustainable Development Goals.

The authors highlight that policy interventions were instrumental in decoupling energy-related air pollution from economic growth in the past, and further interventions will determine future air quality. They say that theoretically, a portfolio of ambitious policy interventions could bring ambient PM_{2.5} concentrations to below the WHO air quality guideline in most parts of the world, except in areas where natural sources such as soil dust, contribute major shares to, or even exceed the current guideline value.

With fundamental transformations of today's practices in many sectors, supported by strong political will, air pollution can be eradicated. In addition to local health benefits, achieving clean air would contribute to long-term transformational changes required for global sustainable development.

Climate change as a driver of migration

Environmental hazards affect populations worldwide and can drive migration under specific conditions, especially in middle-income and agriculture-dependent countries. Changes in temperature levels, increased rainfall variability, and rapid-onset disasters such as tropical storms play an important role in this regard.

Environmental migration is most pronounced in middle-income and agricultural countries and weaker in low-income countries where populations often lack the resources needed to move away. IIASA researchers contributed to research that makes it possible to identify geographical regions that may be especially susceptible to migration movements in the future.

The study revealed a number of interesting patterns including that impacts on migration vary by types of environmental hazards, and that different hazards can reinforce each other. While changing temperatures in a region, for instance, have the strongest impact on migration; rapid-onset disasters, rainfall variability, and anomalies can also play a role. Smallholder farmers especially, rely on steady climatic conditions and are more susceptible to changes and shocks, as they do not have sufficient capacity to adapt.

The researchers further note that the current narrative of climate refugees pushing towards Europe or the US may be too simplistic. In this regard, the study's findings

include compelling evidence that environmental changes in vulnerable countries predominantly lead to internal migration or migration to other low- and middle-income countries rather than cross-border migration to high-income countries. This implies that affected populations often migrate to places within their own country or region. Specifically, the results suggest that populations in Latin America and the Caribbean, several countries in sub-Saharan Africa, as well as Western, Southern, and Southeast Asia may be particularly at risk.

Given the expected rise of global average temperatures, the researchers believe that the topic of environmental migration will become even more important in the future. Consequently, interventions have to be tailored to actual situations on the ground that support affected populations and reduce vulnerabilities. But how can this be done?

According to the authors, the best way to protect those affected is to stabilize the global climate by rapidly reducing greenhouse gas emissions from burning fossil fuels, while simultaneously enhancing adaptive capacity by, for example, improving human capital. While migration can be an effective adaptation strategy for households, it can be involuntary and could have challenging consequences for migrants and their families, as well as the people at the places they end up.





Science into policy

Resolving complex, interconnected global problems, ranging from climate change to issues associated with an aging global population, requires an international approach. IIASA works closely with policymakers, as well as a wide range of academic institutions and international organizations around the world to provide decision makers with the evidence and tools they need to create robust policies with a strong scientific basis.

Toward just and inclusive energy transitions

Transitioning to sustainable energy systems is challenging due to the many different views, perceptions, and interests involved with regard to the process itself, and in terms of attitudes towards various energy generation technologies. IIASA researchers developed recommendations that consider the perspectives of multiple stakeholders in the governance of such transitions in three countries.

IIASA research based on extensive dialogue with stakeholders involved in energy policy development and its implementation in Mexico, revealed that there is little agreement on an institutional and regulatory framework for the deployment of renewable energy sources despite the widespread use of social impact assessments (SIAs) in the country. The researchers found that one of the reasons for the low efficiency of SIAs and the slow implementation of social management plans, was the low level of involvement of local communities and civil society. The study's findings aim to make energy policy stakeholders in Mexico aware of potential improvements in development and the implementation of SIAs through stakeholder engagement and the facilitation of compromise-oriented policy solutions at various governance levels.

Despite decades of efforts by the Nepalese government, the country has not been able to achieve its renewable energy goals. IIASA researchers wanted to explore the

hypothesis that uncertainty in energy policy and planning gaps were connected to the dominance of a limited number of stakeholders' views being taken into account, while other significant voices were being ignored. To this end, different stakeholder preferences around five alternative hydropower schemes and nine different hydropower perspectives applicable in the Nepalese context were analyzed. The aim was to prioritize the different options to help identify a suitable strategy or policy to maximize national benefits and help Nepal realize its massive renewable energy potential. This could in turn help the small mountainous country to meet its energy demand sustainably, while also stimulating economic activity and socioeconomic growth.

Another study focused on energy transition and associated stakeholder discourses in Austria. The researchers collected data through in-depth qualitative interviews with different stakeholder groups in three Austrian Climate and Energy Model Regions (Baden, Ebereichsdorf, and Freistadt). The data was consequently analyzed in order to identify elements and narratives of various discourses. The findings revealed major elements of hierarchical, egalitarian, and individualistic discourses that can be useful in the development and implementation of energy policy measures to turn awareness about energy transition into action, and to develop compromise solutions that consider the views of different stakeholder groups.





Innovations for sustainability in a post-pandemic future

COVID-19 has undeniably brought about unprecedented global change, but according to the latest report of The World in 2050 (TWI2050) initiative, the crisis could be an opportunity to create sustainable societies with higher levels of wellbeing for all.

TWI2050 is a global research initiative that brings together a network of more than 150 participants, including leading policymakers, analysts, and modeling teams from 60 organizations around the world to collaborate on developing pathways toward sustainable futures and the policy frameworks needed for implementing the Sustainable Development Goals (SDGs) and achieving transformational change.

In 2020, the initiative released its third report titled, *Innovations for Sustainability: Pathways to an efficient and sufficient post-pandemic future*, which outlines strategies to harness innovation for sustainability with a particular focus on human wellbeing. The publication aims to provide possible pathways to a sustainable post-COVID world that will divert from the 'old' alternatives that both transcend the planetary boundaries and leave billions behind.

According to the authors, the COVID-19 pandemic has demonstrated system-wide weaknesses in implementing an early and effective global response, but if the right lessons are learned, there will be significant opportunities to accelerate the societal consensus and political

reforms needed to achieve the transformation toward sustainability.

The report highlights the need for better governance for integrated SDG implementation, inclusive political institutions, and the importance of science, technology, and innovation in providing possible solutions for achieving a sustainable future for people and the planet. In this regard, it is suggested that small-scale, granular innovations can be expected to have faster adoption and diffusion, lower investment risk, faster learning, more opportunities to escape lock-in, more equitable access, higher job creation, and larger social returns on innovation investment, which are all advantages that could enable rapid change. The authors also emphasize the prioritization and renewal of the science-policy-society interface for evidence-based transformations built on a culture of trust, academic freedom, communication of accurate information, and a reinvigoration of global science organizations, pointing out that transnational crises require global context-sensitive responses. In this regard, investing financial resources and nonmonetary support to assist local and municipal actors and international organizations will be key.

The report's findings were presented at several high-level events throughout 2020, including at a virtual side event of the UN High-level Political Forum and the high-level segment of the United Nations Economic and Social Council (ECOSOC) 2020.

Making climate scenarios more accessible

Science-based information is critical for sound decision-making. IIASA researchers are helping to make climate scenarios more user-friendly to enable all kinds of decision makers to effectively incorporate the valuable information such scenarios provide into their decision-making processes.

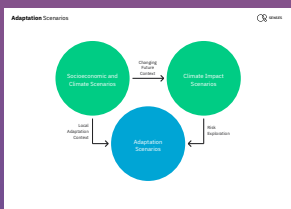
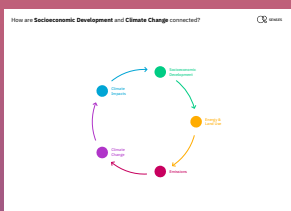
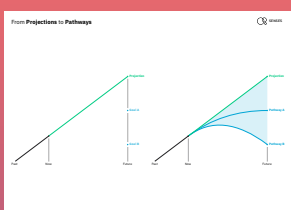
Climate scenarios have featured in scientific studies for many years. Primarily based on computer simulations, they are however rather complicated and results are scattered across scientific publications. In an effort to help policymakers base their decisions on the best information available, IIASA researchers and colleagues at a number of other institutions have developed tools to help non-scientists understand and communicate climate change scenarios.

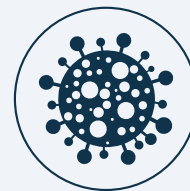
The SENSES platform is the first of its kind to provide the tools to use scenarios ranging from climate impacts to mitigation and energy options to a broader public beyond science. The platform offers a new way to access these scenarios so people can see for themselves what is at stake, and can base their decisions on the best information available. The scenarios can help policymakers and businesses, finance actors, and civil society alike to assess the threat of global warming and ways to limit it. The SENSES project (climate change

ScENario ServiceS) is part of the official European Research Area for Climate Services, supported by national ministries and the EU.

The NGFS Scenario Explorer, in turn, will enable financial specialists to work with scenario data. It hosts a set of transition scenario results selected for the Network for Greening the Financial System (NGFS) – a group of 66 central banks and supervisors around the globe who take an active interest in advancing the transition toward a sustainable world economy. The scenarios explore future changes to the energy system and the global economy if climate targets are met or not, and whether the transition to a low-carbon future happens in an orderly or disorderly fashion. The set of scenarios will inform the climate stress tests that key central banks like the Bank of England or the Banque de France are planning to apply to the financial institutions they regulate.

Finding solutions to tackle the climate challenge is something we can only do together. It is clear that the process needs to include many different voices and perspectives and enabling decision makers to use climate scenarios from science is one important element. These tools are the first step in providing a new form of climate service – climate change scenario services.





Contagious hope

Out of the carnage of COVID-19 has come a new appetite for change. An initiative by IIASA and the International Science Council (ISC) has identified how best to rebuild a world that is more resilient, sustainable, and just.



COVID-19 exposed our vulnerability. On top of the millions of deaths, its indirect effects have been paralyzing. The pandemic has halted health services such as childhood vaccination and cancer screening; increased food-related insecurity; and slowed efforts to bring clean energy to developing nations. Poorer countries and sections of society have been hit hardest by economic and social hardship, and around 100 million more people lived in extreme poverty in 2020 because of COVID-19.

The crisis also highlighted the compound and cascading nature of global risk. Governments have had to deal with a host of extreme events, from earthquakes to flooding to social unrest, along with COVID-19, straining the agencies that deal with such crises.

Systems analysis is the only approach that can investigate such compound problems and how to balance the objectives of resilience, sustainability, and equity. This prompted IIASA and the ISC to join forces to bring a transdisciplinary systems perspective to the COVID crisis. About 300 international experts from academia, business, NGOs, and government pooled their knowledge to identify systemic changes triggered by the crisis and how to guide recovery towards long-term sustainable development. The initiative focused on four interlinked areas: governance, science, energy, and food.

A fragmented approach to governance has hampered responses to the crisis. The initiative's recommendations include that the ongoing reform process should ensure that separate UN agencies work in a coordinated way, while governments should be empowered to

take a systems view. A global dialogue could engage policymakers, civil society, the private sector, and the scientific community to improve understanding of compound and systemic risks; while a science-based tracking mechanism could assess how recovery packages align with the Sustainable Development Goals.

The science system should become more agile, reliable, and policy-relevant. One option to improve agility would be setting up a system of expert research teams that can be activated on demand. The initiative recommends open science methods to restore trust and more widespread collaboration to capture the diversity of global contexts.

In terms of energy, we need to look beyond production and focus on cutting demand, for example, by repurposing urban spaces to provide for human wellbeing while reducing environmental footprints. This can build on innovations adopted during the COVID crisis.

The pandemic also underlines the entanglement of human and natural systems, especially in the field of food and nutrition. There is an urgent need to balance today's focus on efficiency of supply with a new emphasis on resilience and equity, to ensure that the future food system can deliver universal security and empower the most vulnerable groups.

COVID could become a crucible of reform. Governments, businesses, and citizens have been willing to respond constructively to the COVID crisis and take radical action. This is cause for optimism that we can undertake the transformative changes we need for a safe and healthy planet.



Program descriptions



In 2020 there were nine IIASA research programs carrying out research into the dynamics of global change. These programs used holistic approaches and effective, interdisciplinary collaborations to identify the multiple solutions needed to bring about a global transformation to true sustainability.

Advanced Systems Analysis

The Advanced Systems Analysis Program developed, tested, and made available new quantitative and qualitative methods to address problems arising in the policy analysis of socioenvironmental systems. The program's research aimed to support decisions in the presence of ambiguity of stakeholder interests, complexity of the underlying systems, and uncertainty.

[Scientific Recognition](#)
[2020 Publications](#)

Air Quality and Greenhouse Gases

Societies often respond to global long-term development challenges with policy decisions steered by local and near-term interests. The Air Quality and Greenhouse Gases Program developed and applied methods to reveal policy interventions whose immediate benefits from reduced pollution could enhance public support for the transformational changes required for global sustainable development.

[Scientific Recognition](#)
[2020 Publications](#)

Ecosystems Services and Management

The Ecosystem Services and Management Program used its integrated modeling framework and data systems to provide a trusted science base for land management policy processes throughout the world, aiming to improve human wellbeing and the environment through sustainable management of the Earth's natural resources.

[Scientific Recognition](#)
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Energy

The way society uses energy gives rise to major environmental, social, and economic challenges. The Energy Program identified viable solutions to these challenges, analyzed whether current policies are on track, and employed a systems perspective to examine interactions between different sectors and objectives. A central focus of the research was on energy strategies that help maximize synergies and minimize trade-offs between different societal objectives.

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Evolution and Ecology

The Evolution and Ecology Program aimed to enhance our fundamental understanding of the ecology and evolution of populations, communities, and ecosystems using new mathematical and computational methods. The program's research aimed to provide guidance on how common

goods could be managed to avoid collapses due to overexploitation and other human impacts placing the Earth's ecosystems under stress.

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Risk and Resilience

The Risk and Resilience Program addressed social-ecological risks that are embedded in complex systems and characterized by potentially cascading and irreversible consequences. Researchers focused on identifying risk drivers and assessing probabilistic outcomes, co-developed stakeholder-driven policy options, and co-designed governance regimes in the face of heterogeneous values.

[Scientific Recognition](#)
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Transitions to New Technologies

The Transitions to New Technologies Program aimed to further understanding of the drivers, constraints, impacts, and dynamics of technological change, particularly in areas that are key for global sustainability. The program disseminated policy-relevant research findings through high-level global fora and participated in major international cross-cutting research projects and assessments.

[Scientific Recognition](#)
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Water

The Water Program provided new methodological development and agenda setting research, seeking solution oriented policy assessments of complex water challenges that require interdisciplinary approaches. The program built collaborative partnerships with multi-sector stakeholders and contributed to capacity building for future water policymakers and managers.

[Scientific Recognition](#)
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World Population

The World Population Program applied multi-dimensional demography to strengthen the understanding of the central role the human population plays in the global environmental system and sustainable development. The program's researchers contributed to cutting edge science and collaborate with national and international agencies to deliver policy-relevant, high quality research.

[Scientific Recognition](#)
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Insights and interconnections: IIASA science highlights of the past decade

In 2011, IIASA set off on a ten-year strategic plan, aiming to use systems analysis to find solutions to global problems, improve human wellbeing and protect the environment. This effort focused mainly on three problem areas: food and water, energy and climate change, and poverty and equity (see Figure 1).

A decade of IIASA science has made crucial inroads into these problems and highlighted their profound interconnections as the following selected achievements show:

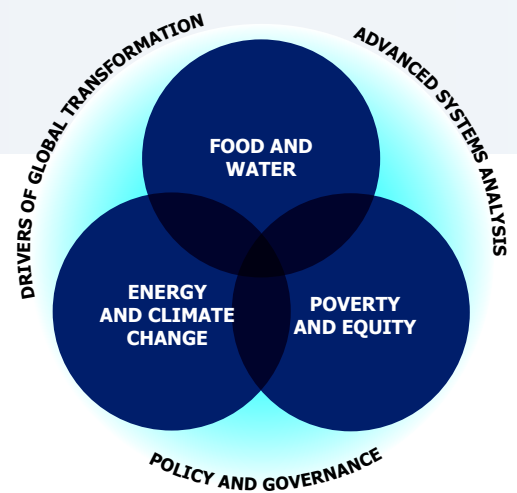
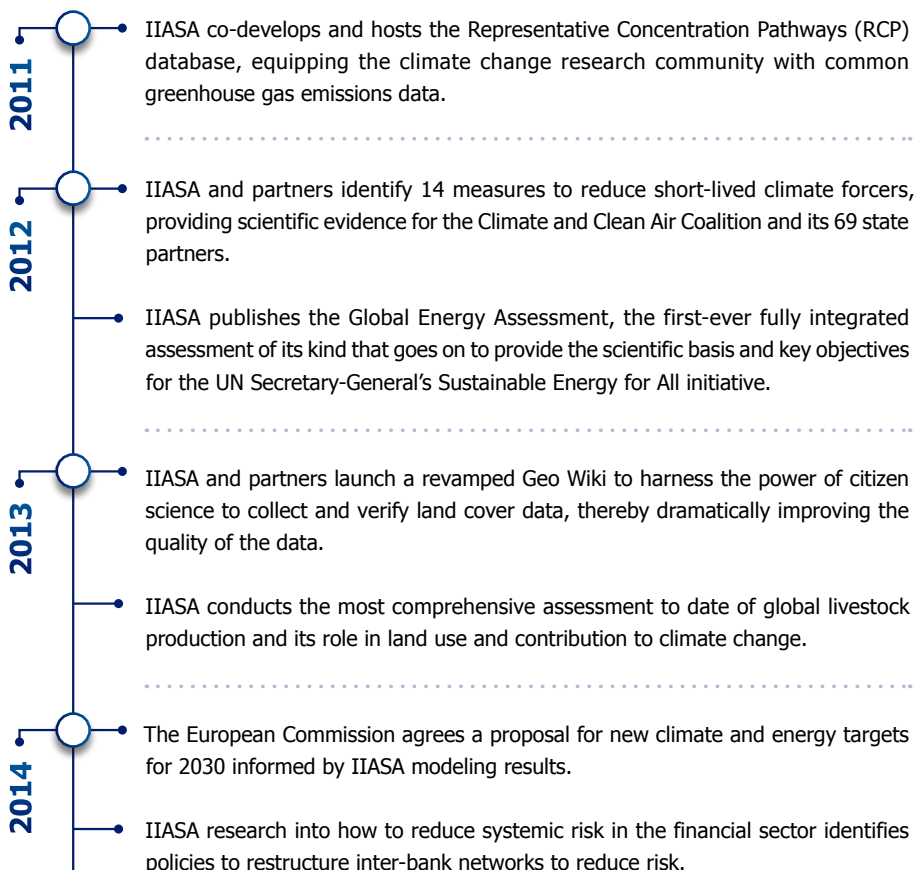


FIGURE 1:
The IIASA Strategy 2011-2020 focused research on three interlinked global problem areas



Expanding IIASA expertise for 2021–30

Building on the last decade of insights and advances, IIASA is embarking on a new strategy for 2021 to 2030 to become the primary destination for systems solutions to sustainability. Six new, interconnected research programs (see Figure 2) will combine new expertise and methods with existing IIASA strengths. Artificial intelligence and machine learning, among other techniques, will be applied to enhance the institute's toolset of advanced systems methods. Biodiversity research will combine with existing IIASA expertise on land, water, and food to improve our understanding of the intricate nexus of food production, conservation, water security, climate, and disease. In addition, a new focus on behavioral changes, lifestyles, equity, as well as governance and institutions will strengthen the institute's capacity to identify pathways to achieve the SDGs, as well as more resilient and just societies that leave nobody behind.

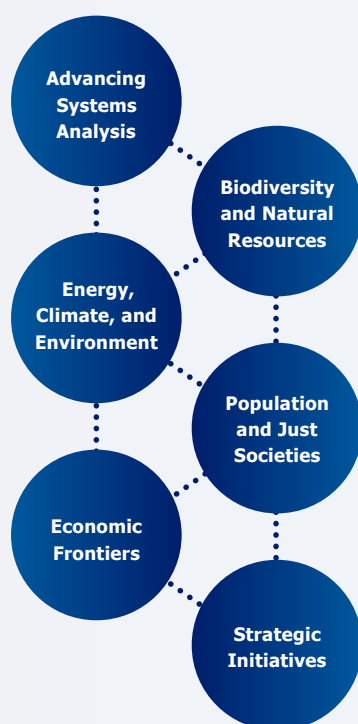
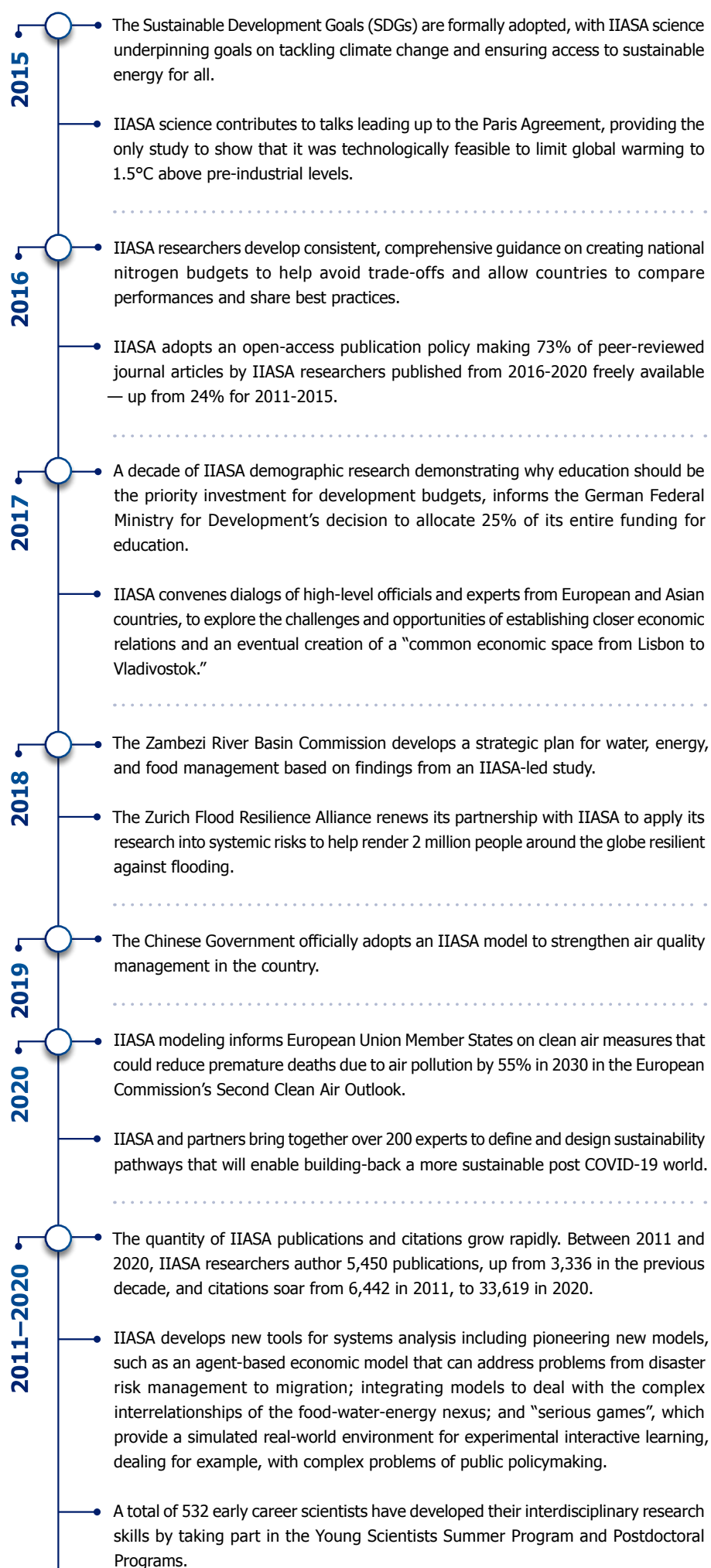


FIGURE 2:

The six new, interconnected IIASA research programs introduced in 2021



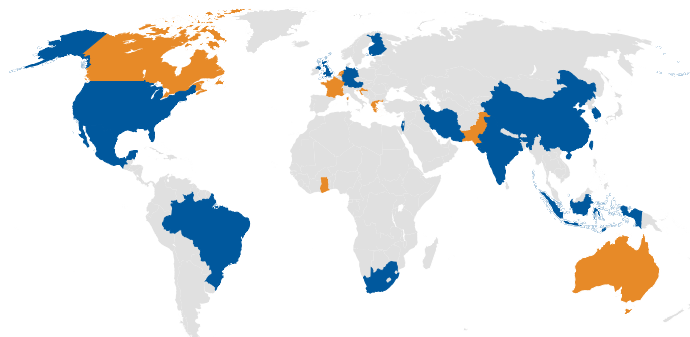


Education and training

Young Scientists Summer Program

For three months every summer, the flagship Young Scientists Summer Program (YSSP) provides an opportunity for PhD students to work alongside IIASA researchers. During the program, each participant is required to prepare a research paper. Many of these papers are published in prestigious journals. Since 1977, over 2,090 early-career researchers from over 90 countries have benefitted from the program. The 2020 program, which was held virtually for the first time, hosted 25 participants from 18 countries.

[2020 Participants and information](#)



Participants in capacity-building activities by member (blue) and non-member (orange) countries. Click to view participants.

2020 YSSP Awards

IIASA has instituted two annual awards for exceptional young scientists participating in the YSSP. The Peccei Award is awarded in recognition of rigorous research that makes a policy contribution, while the Mikhalevich Award is given to students who use mathematical tools to solve real-world questions. The recipients of these awards return to IIASA for another three months.

Setu Pelz from the Europa Universität Flensburg, Germany and Johns Hopkins University, USA received the Peccei Award for his study: "Impacts of grid electricity access on rural non-farm entrepreneurship and employment in Ethiopia and Nigeria".

Bernardo Buarque from University College Dublin (UCD), Ireland, won the Mikhalevich Award for his study: "Evolving the knowledge space: Towards a selection dynamics model of patent classes".

An honorable mention went to Janet Molina Maturano from Ghent University, Belgium, for her study on: "Responsible scaling of citizen science projects for farmers: Developing a SDGs-guided toolkit."

An honorable mention was also awarded to Simon Plakolb from the Technical University and the University of Graz in Austria, for his study on: "Using the Future State Maximization paradigm to analyze the emergence of socially sub-optimal mobility behavior".

Postdoc program

Postdoc opportunities at IIASA allow early career scientists to research a topic related to the institute's scientific agenda and hone their skills in systems analysis. Recognizing the expanding number of external funders wishing to partner with IIASA to support postdocs at the institute, in 2020 IIASA primarily focused its postdoctoral activities on these partnerships.

These programs are an effective way for NMOs and other interested institutions to increase the number of its nationals who are postdocs at IIASA, and to develop expertise in systems analysis among its

researchers. In 2020, IIASA had bilateral programs with the Brazilian Federal Agency for Support and Evaluation of Graduate Education (CAPES); Peking University, China; Israel; the National Research Foundation of the Republic of Korea; the Fonds du Recherche de Quebec, Canada; and the Natural Environment Research Council, UK.

In 2020, there were a total of 19 postdocs at IIASA.

[2020 Postdoc fellows](#)

Building systems analysis expertise

In 2020, IIASA scientists hosted or coordinated 76 events at IIASA, worldwide and increasingly virtually, including a number of workshops and activities designed to build capacity in systems analysis.

Examples include:

- A workshop to train researchers from China, Egypt, Israel, and Japan in using MESSAGEix—a framework for medium- to long-term energy system planning, energy policy analysis, and scenario development.
- An expert meeting of 18 partners from Scandinavia, the Mediterranean, the UK, and Austria to find solutions to pollution caused by shipping.

- An expert dialogue to explore research needs for informing China's mid- and long-term development, energy, and environmental strategies with the Energy Foundation China, and University of Maryland, USA.

- A training workshop on the GAINS model—a scientific tool to combat air pollution and climate change simultaneously—for researchers from India.

[All 2020 events](#)

Our people

HR strategy

The IIASA people strategy, *Creating a working environment for success – a Human Resources (HR) framework* approved in 2019 – details initiatives for creating an enabling environment that reaffirms IIASA as an institute of choice for researchers from around the world.

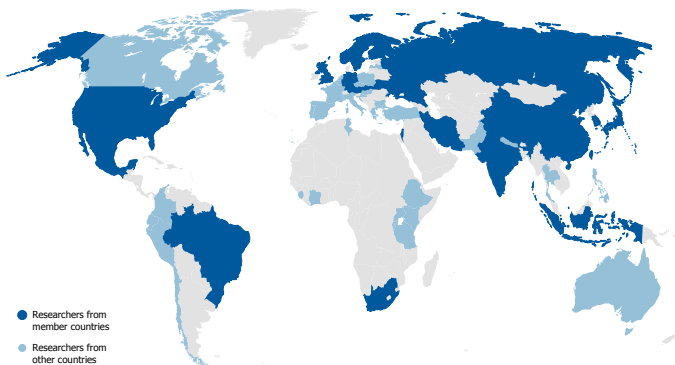
With the implementation of the IIASA people strategy underway, the Human Resources Department has changed its focus from an administrative support center to becoming a strategic partner for management across the institute.

Diversity and equality

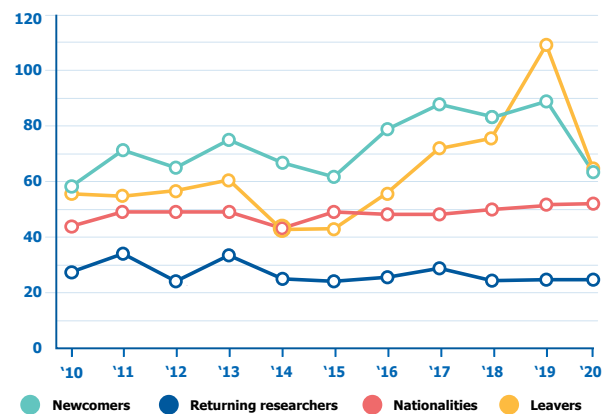
The institute is committed to providing a working environment in which discrimination on the basis of gender, race, color, national origin, age, disability, socioeconomic background, religious or political beliefs, family

circumstances, sexual orientation, or any other irrelevant distinction is prohibited.

In 2020, 367 researchers from 52 countries worked at IIASA. Of these, 72% (264) came from countries in which IIASA has a National Member Organization (NMO).



Number of researchers employed and the flow of existing researchers into and out of IIASA

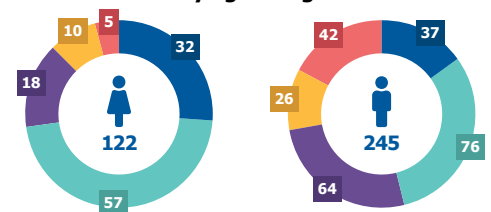


Leavers and newcomers do not include participants of the Young Scientists Summer Program—about 50 PhD students who spend 3 months researching at IIASA. Returning researchers previously had a contract at IIASA and return to work at the Institute.

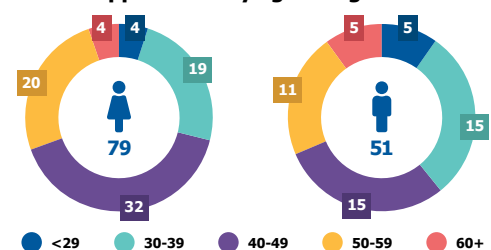
201
Full time
researchers

166
Part time
researchers

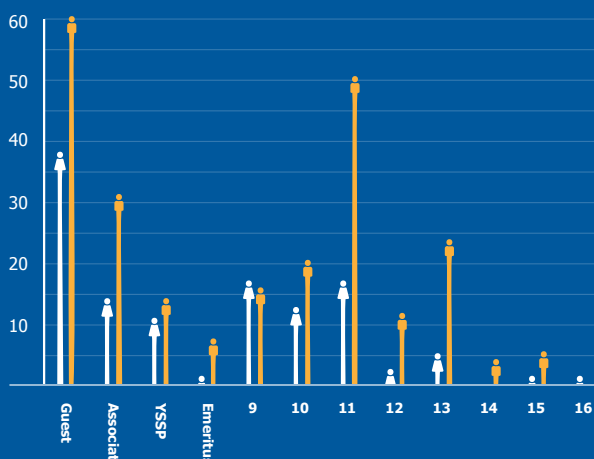
Researchers by age and gender in 2020



Support staff by age and gender

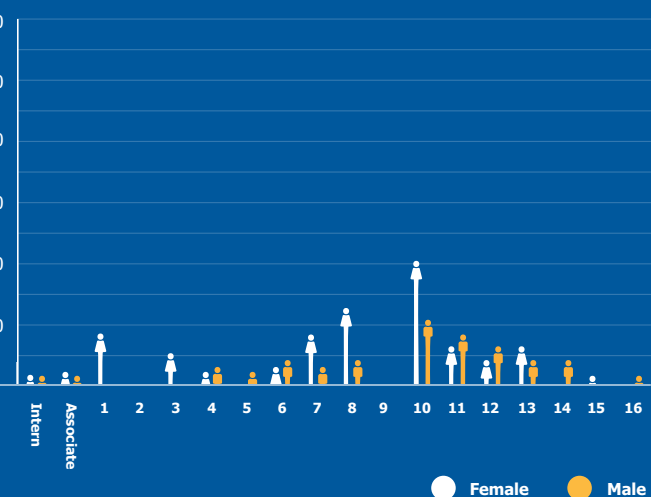


Researchers by level of employment and gender in 2020



Category 9 is junior scientific staff with a bachelor's degree or above, working as scientific support. **Categories 10-16** are experienced research staff (postdocs, research scholars, program directors, and the deputy director general for science), with an advanced university degree (minimum at level 10 is a Master's degree). Young Scientists Summer Program (YSSP) participants, associates, and guest research scholars are listed separately.

Support staff by level of employment and gender in 2020



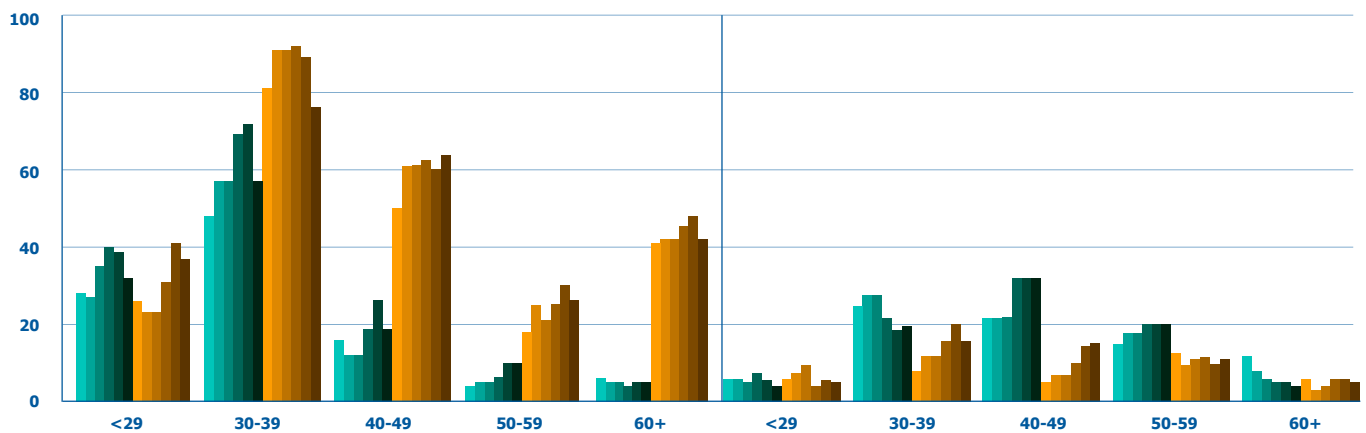
Categories 1-8 are general service staff in procedural or operational roles.

Categories 10-16 are professional staff with analytical, evaluative, and conceptual roles, with a degree or relevant work experience. Interns and associates are listed separately.

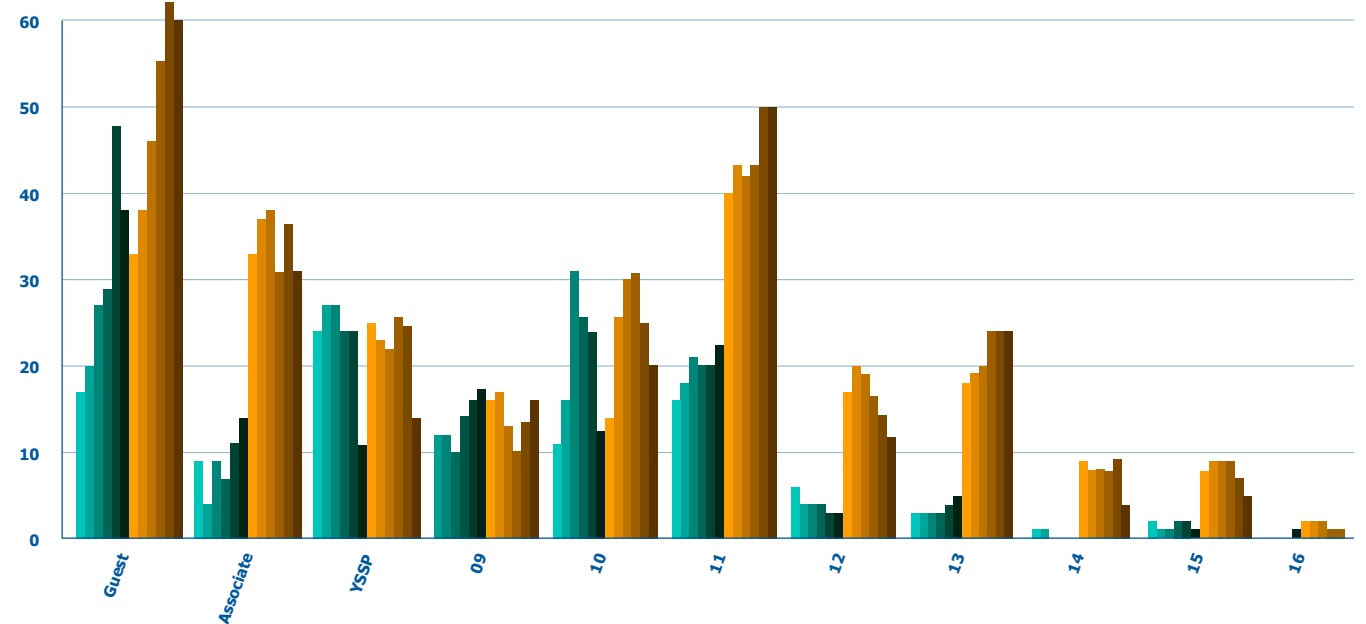
Age, gender, and employment at IIASA in 2020

Female 2015 '16 '17 '18 '19 '20 Male 2015 '16 '17 '18 '19 '20

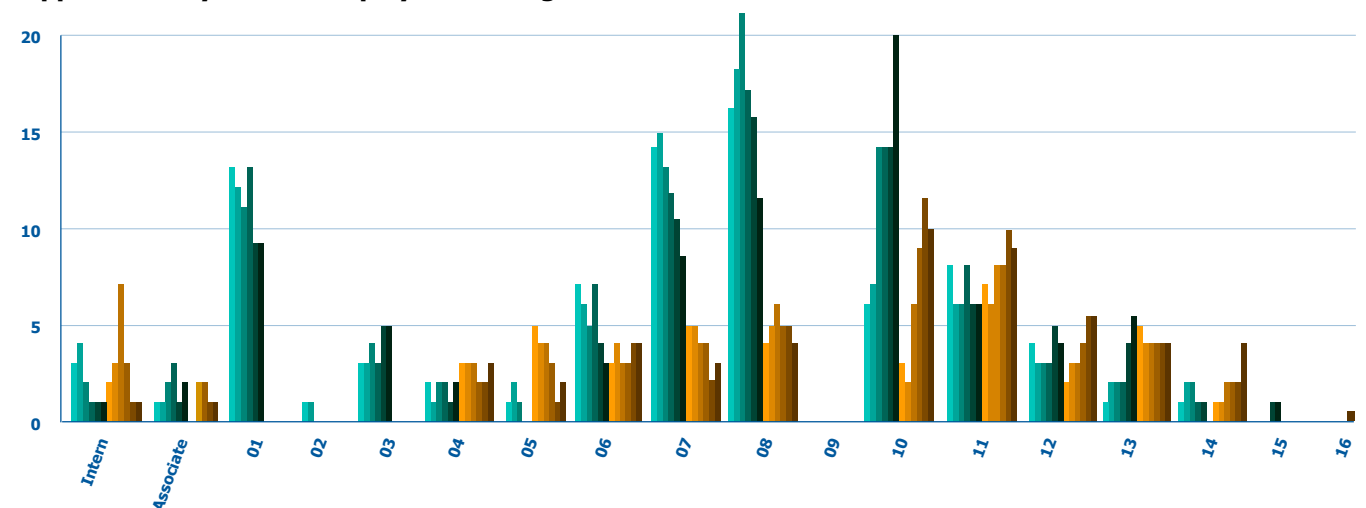
Researchers by age and gender



Researchers by level of employment and gender

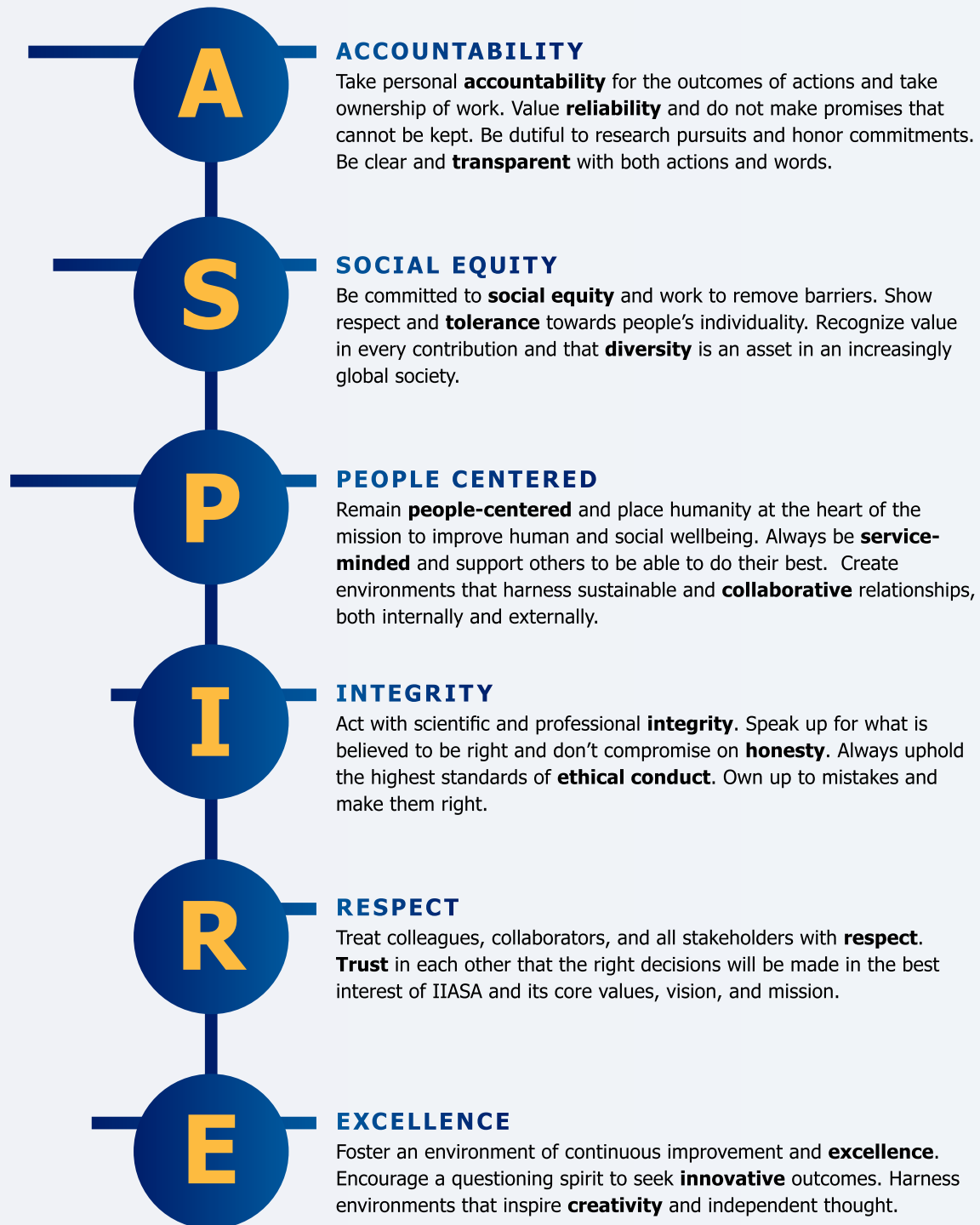


Support staff by level of employment and gender



Core values

IIASA has been bringing people from different countries and cultures together to work on common goals since its foundation. As a result, fostering a workplace culture that promotes diversity and inclusion permeates and underscores each of the institute's core values.



Contracts and administration

On the administration side, the Human Resources Department continues to support staff members throughout their affiliation with IIASA. This includes dealing with staff contracts, compensation and benefits, and advising on employment law and IIASA policies and procedures. The team also provides services in terms of onboarding, housing, and

supporting professional training and development.

In 2020, the Human Resources Department conducted an information campaign on the options and consequences of social security and insurance choices to give employees an informed basis for their decisions and to inform them about the various benefits these entail.

IIASA guidelines and regulations for good scientific practice

The IIASA guidelines and regulations for good scientific practice are intended to help avoid scientific misconduct, conflicts of interest and commitment, while promoting quality science. The institute recognizes

its responsibility to nurture an environment of mutual respect, tolerance, and ethical behavior according to the general principles outlined in these rules.

Training and development

In line with the new IIASA Strategy 2021-2030 and the IIASA People Strategy, 2020 saw the creation of a dedicated professional training and development fund at institute level to support employees with professional training and development activities. In addition to the vast

number of scientific training and development activities undertaken by researchers, professional development for all employees plays a significant role in capacity building at the institute and promotes employee performance, engagement, and career progression.

Leadership and management

The IIASA People Strategy deems high-quality leaders as key to supporting the institute's ability to thrive during the coming years and forthcoming periods of significant change. A vital aspect in its success, is the transparent selection of supervisors providing equal opportunity as well as the development of supervisors to deliver effective leadership across IIASA.

With the implementation of the new IIASA strategy 2021-2030, IIASA will see a major organizational change in its scientific programs. The year 2020 saw a large recruitment process to appoint program directors and research group leaders in line with the new structure taking effect as of 1 January 2021. In these new roles, managers will be required to provide research oversight and management for their respective programs and research groups. Through goal-oriented management and leadership they will ensure effective operations and collaborations within their own programs and groups. Furthermore all managers across IIASA will be expected to contribute to the institute's goals of enhancing diversity; attracting, retaining, and managing the best talent; enhancing career

development; reinforcing performance management; and providing inspirational and effective leadership at all levels.

To develop leaders, IIASA invested in formal leadership and management training for managers to expand their core leadership competencies.

The following focus areas were regarded as crucial:

- Leadership roles and developing unique leadership styles
- Emotional intelligence
- Roles and responsibilities (accountability)
- Legal framework (Austrian Labor law)

Other topics: Communication and feedback, and managing with intercultural sensitivity.

Performance management

The IIASA Strategy 2021-2030 presents the institute's commitment to provide an environment for research excellence and supporting staff to reach their full potential, by implementing best practice and fit for purpose operations. This approach is reinforced in the IIASA People Strategy, which has a defined goal of reinforcing performance management at the institute.

An effective process drives a high-performance culture and underpins many institutional outputs including career progression, succession

planning, merit increases, and employee retention, and engagement.

An interim soft approach to individual performance evaluation and yearly reviews was introduced in 2020, while a longer-term solution was sourced that would ensure alignment across the institute regarding all performance management factors. A new system will be launched in 2021 that should effectively meet the institute's future needs and provide support to facilitate performance management activities at IIASA.



Network and collaborators

In addition to the 367 researchers from 52 countries that worked at IIASA in 2020, the institute has an extensive network of collaborators, alumni, and visitors from across the globe.

681

research partners
in member countries

224

advisory boards and
steering committees that
include IIASA researchers

190

externally funded
projects where IIASA
was lead or partner

4,337

alumni from
100 countries

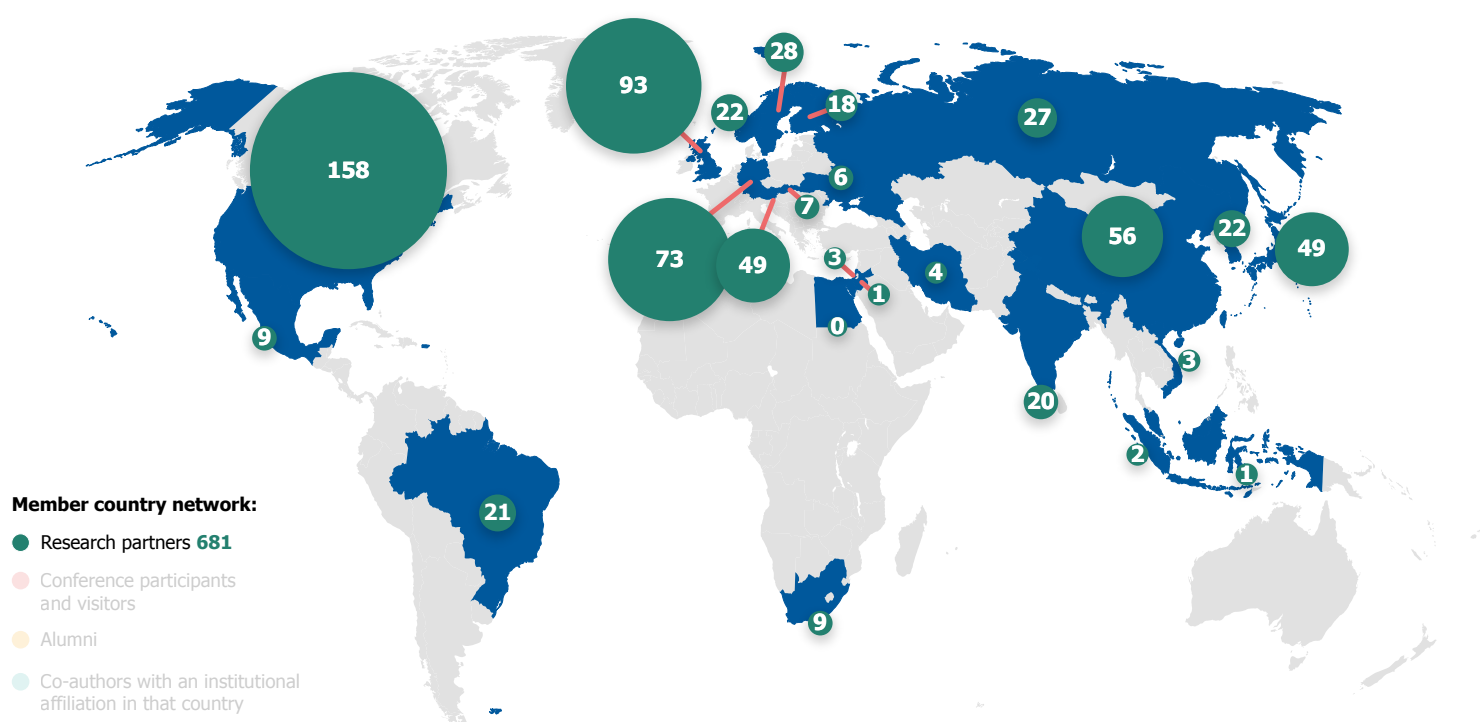
Conference participants, visitors, and research partners

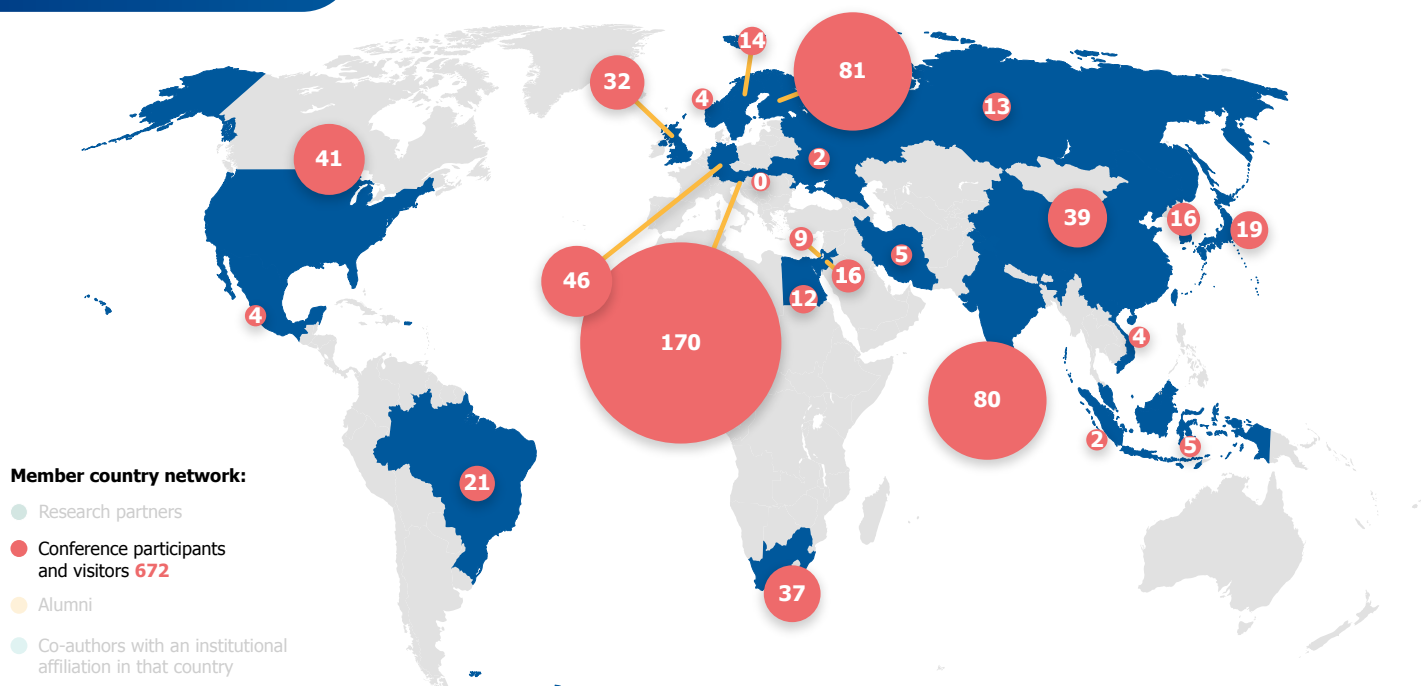
Despite the restrictions brought about by the COVID19 pandemic, 98 visitors came to IIASA to do research, collaborate with the institute's research programs, and attend IIASA events. Of these visitors, 79 were from member countries.

IIASA scientists hosted or coordinated 74 events worldwide. The

majority of these events took place virtually due to the COVID-19 pandemic. The events were attended by a total of 1,218 participants, of which 593 were identified as coming from member countries.

The IIASA global research network of over 680 partner institutes in NMO countries facilitates greater scientific cooperation.





Researcher mobility

International research collaborations underpin IIASA work. Apart from the high-quality research output and the subsequent impact of the research projects' findings, these research collaborations benefit IIASA member countries by improving the skills and expertise of its researchers. Working with IIASA gives a country's researchers access to complementary knowledge, new perspectives, new methodologies, new data, new partnerships, and new sources of funding.

The institute provides a range of incentives, as well as structures, for international research collaboration and encourages the mobility of global scientific talent. As IIASA gives preference to researchers from its member countries in research and capacity-building activities, membership of IIASA provides many new opportunities for scientists at all career levels.



In 2020, **Melissa Caldeira Brant de Souza Lima** was an IIASA guest research assistant and a PhD student at the Vienna University of Economics and Business, Austria.



Benigna Boza-Kiss was a research assistant with the IIASA Transitions to New Technologies Program and held a research position at the Central European University, Hungary.



Jessica Jewell was an IIASA guest researcher with the Advanced Systems Analysis Program, assistant professor at Chalmers University of Technology, Sweden, and an adjunct associate professor at the University of Bergen, Norway.



Samir K.C. was a researcher with the IIASA World Population Program and a professor at the Asian Demographic Research Centre, Shanghai University, China.



Junko Mochizuki was a researcher with the IIASA Risk and Resilience and Water programs and a Disaster Risk Management Specialist at the World Bank.

Science diplomacy

In September 2020, IIASA organized a session on science diplomacy at the EuroScience Open Forum (ESOF2020). The session aimed to introduce the Big Research Infrastructures for Diplomacy and Global Engagement through Science (BRIDGES) network to the wider science diplomacy community and to discuss emerging issues. Among the speakers at the session were the Director General of IIASA, the Director of The Abdus Salam International Centre for Theoretical Physics (ICTP), representatives of the European Molecular Biology Laboratory (EMBL), the European Commission Joint Research Centre (JRC), and the European Organization for Nuclear Research (CERN).

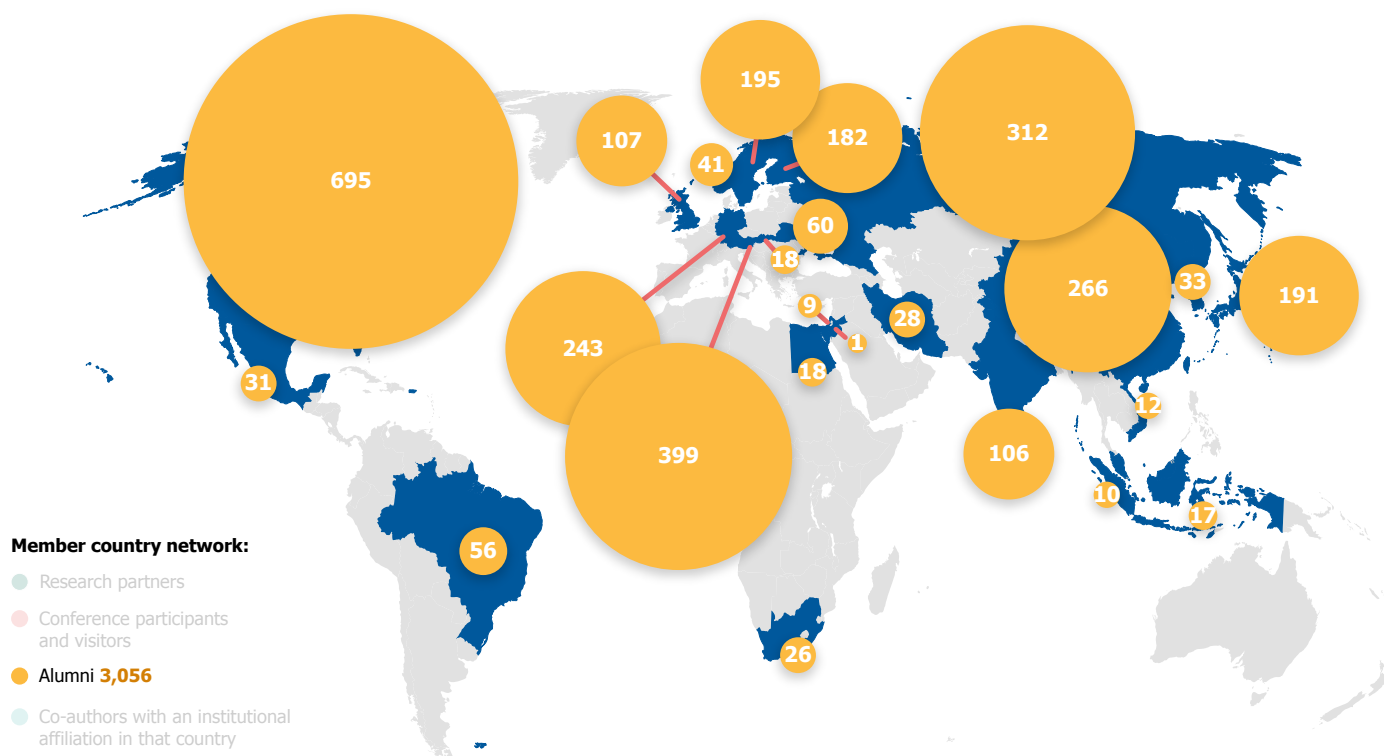
In November 2020 IIASA, in its capacity as secretariat of the BRIDGES network, organized a virtual Third BRIDGES Meeting. Representative of the European Southern Observatory (ESO) participated in the meeting

for the first time, thus bringing the number of BRIDGES members to twelve. The current members are: ICTP, JRC, EMBL, CERN, the European Southern Observatory (ESO), the European Space Agency (ESA), European XFEL GmbH, IIASA, the International Thermonuclear Experimental Reactor (ITER) Organization, The World Academy of Sciences (TWAS), the Square Kilometre Array Organisation (SKAO), and Synchrotron-light for Experimental Science and Applications in the Middle East (SESAME). Among the topics discussed during the meeting were the readiness, willingness, and preparedness of the scientific community to actively engage in building bridges between policy, science, and diplomacy, as well as policies on open access to scientific knowledge. The meeting helped to identify ways on how to move forward.

Alumni

IIASA has 4,337 alumni from 100 countries, of whom 25% are actively involved in the institute's scientific activities and many are leaders in academia, government, and the private sector. The Alumni Association coordinates exchange within this network.

In 2020, former YSSPer and alumna Leila Niamir joined the Global Young Academy, which empowers young researchers to lead international, interdisciplinary, and inter-generational dialogue with the goal to make global decision making evidence-based and inclusive.



Strategic partnerships and collaborations

In 2020, IIASA continued to prioritize partnerships with research collaborators and research users in its 22 member countries. These partnerships include formal collaborations between institutions as co-investigators on externally funded research projects, and informal cooperation between individual researchers working together on scientific publications.

The focus of IIASA research on finding solutions to challenges that cross international boundaries results in strategic collaboration with a range of international and regional organizations. New collaborations in 2020 included:

- A new partnership with the International Science Council that brought together over 200 thought leaders to define and design sustainability pathways that will enable building a more sustainable post-COVID-19 world.
- The start of a strategic partnership with SAS Institute Inc., the multinational developer of analytics software, to implement the next generation of crowd-driven artificial intelligence (AI) to help power AI algorithms in order to better track deforestation.
- Membership of Africa-UniNet, a research network to create a long-term, stable basis for international scientific cooperation between African universities and research institutions, and those based in Austria.

- A joint call with the Russian Foundation for Basic Research for collaborative research projects on pandemics.

In addition, IIASA signed Memoranda of Understanding with 17 organizations to facilitate research collaborations and the use of IIASA research by institutions in a number of countries, including Austria, Brazil, China, India, Russia, the UK, and the US, along with international organizations such as the United Nations Convention to Combat Desertification (UNCCD). In 2020, IIASA also became a founding partner of an initiative to organize the International Year of Basic Sciences for Sustainable Development in 2022 and to have it proclaimed as such by the UN General Assembly.

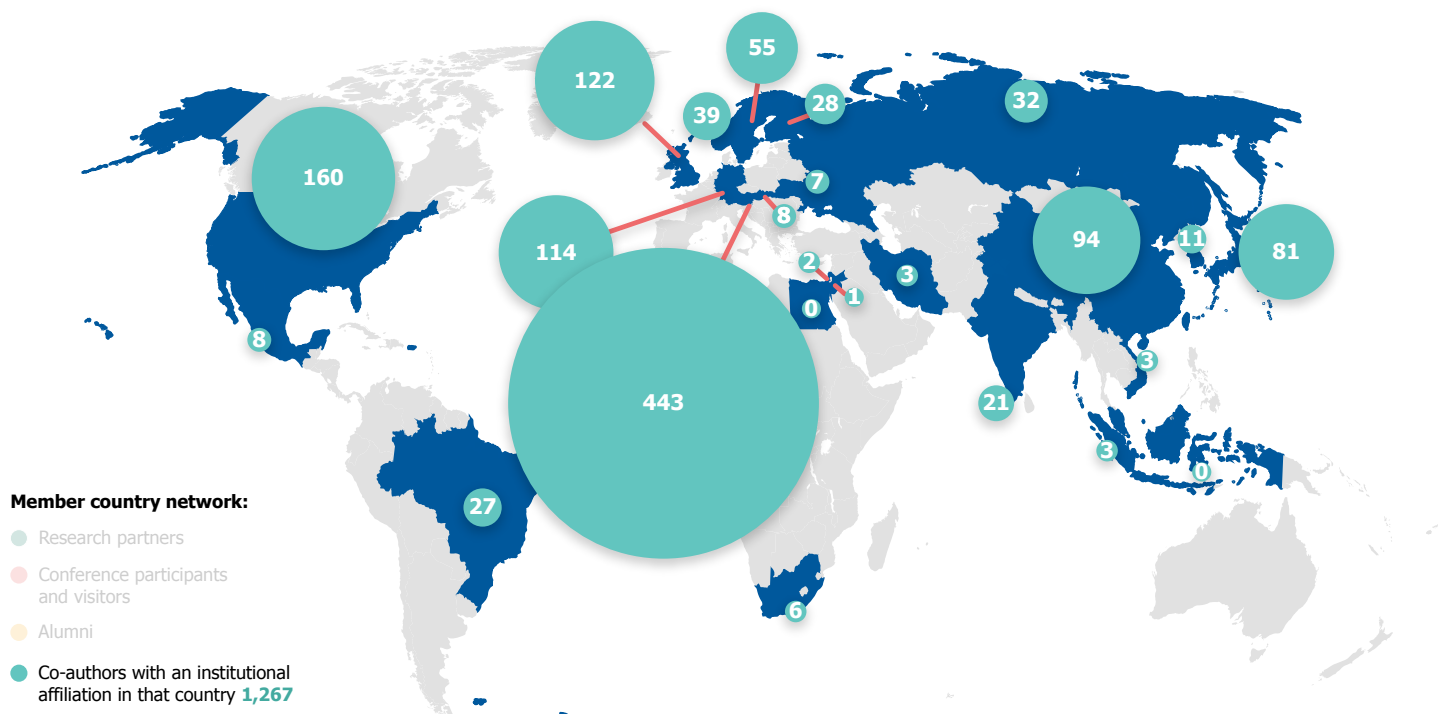
Established strategic partnerships were also progressed in 2020. Among these were:

- A joint report by IIASA and the Organisation for Economic Co-operation and Development (OECD) was published in February. The report demonstrated that putting systemic thinking at the centre of policymaking is essential to addressing global issues in an era of rapid and disruptive change.
- A four-year project led jointly by the Global Environment Facility (GEF), the United Nations Industrial Development Organization (UNIDO), and IIASA achieved its objectives in 2020. The study established partnerships with stakeholders in the Indus and Zambezi

basins to develop an integrated assessment modeling tool that can be used to identify long-term cost-effective solutions to meet water, energy, and land development goals in an integrated manner.

- A third report was released by the IIASA-led consortium, The World

in 2050 initiative, on innovations for sustainability and pathways to an efficient and sufficient post-pandemic future at the United Nation's High-level Political Forum on Sustainable Development in July.



Governance



IIASA is governed by a Council comprised of one permanent representative from each National Member Organization. Regulations concerning the institute's objectives, conditions of membership, internal structure, and the roles and responsibilities of the Council and management are outlined in the institutional Charter and the delegation of authority framework of Council, Council Committees and IIASA Management.

IIASA Research Plan
2016-2020

IIASA Strategic Plan
2011-2020

National Member Organizations

Each IIASA member country designates a National Member Organization (NMO) to represent the nation's scholarly community, and act as a bridge between their research and policy communities and the institute. There are three types of NMOs namely, national academies, national/government research funding agencies, and autonomous organizations

or committees. Each member country fulfills two main roles, which it enacts through its NMO. The first of these involves the governance of the institute through its representative Council member for IIASA, while the second requires the NMO to act as a link between IIASA and national stakeholders and research communities.

IIASA National Member Organizations (NMOs) and Council members

On 31 December 2020, IIASA had 24 member countries (two observers and one prospective member) represented by the following NMOs:

AUSTRIA The Austrian Academy of Sciences (ÖAW)
Council Member: Professor Dr. Christian Köberl

BRAZIL The Brazilian Federal Agency for Support and Evaluation of Graduate Education (CAPES)
Council Member: Professor Heloisa Candia Hollnagel

CHINA National Natural Science Foundation of China (NSFC)
Council Member: Professor Dr. Xincheng Xie

EGYPT Academy of Scientific Research and Technology (ASRT)
Council Member: Professor Dr. Mahmoud M. Sakr

FINLAND The Finnish Committee for IIASA
Council Member: Dr. Lea Kauppi

GERMANY Association for the Advancement of IIASA
Council Member: Professor Dr. Helga Weisz

INDIA Technology Information, Forecasting, and Assessment Council (TIFAC)
Council Member: Dr. Pradeep Srivastava

INDONESIA Indonesian National Committee for IIASA
Council Member: Professor Dr. Kuntoro Mangkusubroto

IRAN Iran National Science Foundation (INSF)
Council Member: Professor Dr. Eaman Eftekhary

ISRAEL The Israel Committee for IIASA
Council Member: Professor Dr. Moti Herskowitz

JAPAN The Japan Committee for IIASA
Council Member: Professor Dr. Kazu Takemoto

JORDAN (*prospective member*) The Royal Scientific Society (RSS) of Jordan
Council Member: Dr. Amna Jrrar

KOREA, REPUBLIC OF National Research Foundation of Korea (NRF)
Council Member: Dr. Kil-Choo Moon

MALAYSIA (*observer*) Academy of Sciences Malaysia (ASM)
Council Member: Professor Datuk Dr. Asma Ismail

MEXICO (*observer*) Mexican National Committee for IIASA
Council Member: Dra. Maria Elena Alvarez-Buylla Rocas

NORWAY The Research Council of Norway (RCN)
Council Member: Dr. Kirsten Broch Mathisen

RUSSIA The Russian Academy of Sciences (RAS)
Council Member: Academician Professor Vladislav Panchenko

SLOVAKIA Ministry of Education, Science, Research and Sport
Council Member: Ms. Anna Jurikova

SOUTH AFRICA National Research Foundation (NRF)
Council Member: Dr. Dorsamy (Gansen) Pillay

SWEDEN The Swedish Research Council for Environment, Agricultural Sciences and Spatial Planning (FORMAS)
Council Member: Dr. Ingrid Petersson

UKRAINE The National Academy of Sciences of Ukraine (NASU)
Council Member: Academician Professor Dr. Anatoly G. Zagorodny

UNITED KINGDOM United Kingdom Research and Innovation (UKRI)
Council Member: Dr. Sarah Webb

UNITED STATES OF AMERICA The National Academy of Sciences (NAS)
Council Member: Professor Dr. Michael Clegg

VIETNAM Vietnam Academy of Science and Technology (VAST)
Council Member: Professor Dr. Ninh Khac Ban

Membership of IIASA

The IIASA Charter stipulates that membership of the institute is open to one professional institution from any country as long as it represents the relevant scholarly community of that country, subscribes to the IIASA Charter, and meets the financial obligations of membership. The IIASA Council votes on each country's application to join the institute

and on whether to discontinue a country's membership. In March 2020, India and Slovakia rejoined IIASA, and in June 2020, Council welcomed Jordan as a prospective member. Further, Council decided to change the Mexican NMO membership status to observer in November 2020.

The IIASA Council

As the governing body of the institute, the IIASA Council is composed of one permanent representative from each NMO. The Council meets twice a year, in June and November. The Charter, the Council delegation of authority, and Council resolutions, document the role of Council, as well as its processes and decisions.

The Council is responsible for governance oversight, approval of the institute budget, approving strategies and governing principles, areas for IIASA research, as well as ensuring that IIASA activities are in line with institutional objectives, the provisions of the Charter, and the interests of NMOs.

The Council elects a chair and two vice chairs who act as officers of the Council. Michael Clegg (United States) has been the Council chair since September 2017. Lea Kauppi (Finland) has been the Council vice chair since January 2019 and Gansen Pillay (South Africa) has been the Council vice chair since January 2018.

The Council appoints the director general, the deputy director general for science, and the chief operations officer who, as the chief executive officers of the institute, are responsible for implementing the research program and managing the day-to-day operations. Council appointed Christiane Pohn-Hufnagl as the chief operations officer who joined the IIASA executive team on 1 July 2020.

During 2020, the IIASA Council exercised its oversight responsibilities through a committee structure comprising of an Executive Committee; a Finance, Risk, and Audit Committee; a Membership Committee; and a Research and Engagement Committee. In addition, an external Science Advisory Committee (SAC) and external auditors provided specialized input to Council.

IIASA would like to thank the following Council members who left the Council in 2020 for the invaluable service and advice: Professor Mauro Rabelo, Professor Sir Duncan Wingham, Dr. Enrique de Alba, and Academician Professor Anatoly Zagorodny.

Council Committee Membership

On 31 December 2020, the Council Committee membership was as follows:

Council Executive Committee

Michael Clegg (Council Chair)
Lea Kauppi (Council Vice Chair)
Gansen Pillay (Council Vice Chair)
Ingrid Petersson
Kirsten Broch Mathisen
Helga Weisz
Christian Köberl (ex-officio as host country representative)
Kil-Choo Moon (rotating member for 2020)

Council Finance, Risk and Audit Committee

Ingrid Petersson (Chair)
Kazu Takemoto (Vice Chair)
Christian Köberl
Vladislav Panchenko

Council Membership Committee

Helga Weisz (Chair)
Lea Kauppi (Interim Vice Chair)
Ninh Khac Ban
Kuntoro Mangkusubroto
Anatoly Zagorodny

Council Research and Engagement Committee

Kirsten Broch Mathisen (Chair)
Eaman Eftekhary (Vice Chair)
Kil-Choo Moon
Moti Herskowitz
Maria Elena Alvarez-Buylla Rocas
Heloisa Candia Hollnagel
Mahmoud Sakr
Sarah Webb
Xincheng Xie

Science Advisory Committee (SAC)

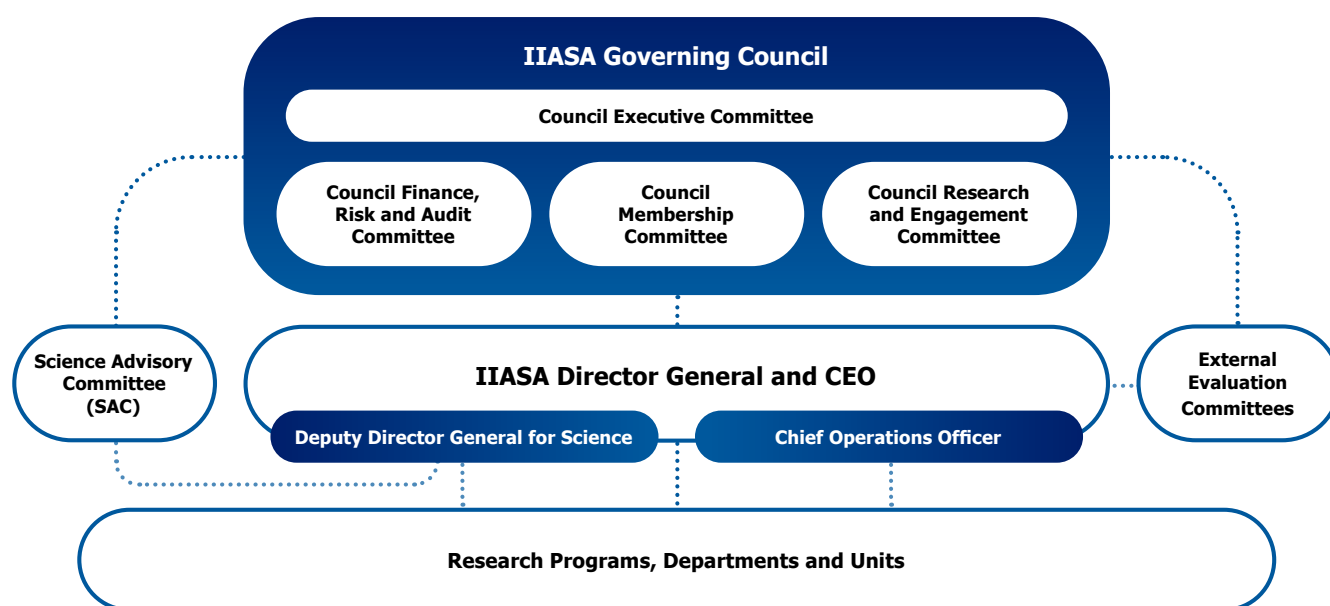
Another component of research oversight is the Science Advisory Committee (SAC). The SAC, established by the IIASA Council in 2002, is an advisory structure consisting of independent, eminent scientists appointed by the IIASA Council with the task of providing scientific guidance and a research assurance function for IIASA. In 2020, the SAC continued to provide independent, expert advice to the Council and

IIASA to ensure that the institute's work continues to meet the highest scientific standards and remains relevant to policymakers.

IIASA would like to thank the following SAC members who left SAC in 2020 for the invaluable service and advice: Professor Dr. Mirjam De Bruijn, Professor Nils Petter Gleditsch, Professor Roberto Schaeffer, Professor Dr. Igor Sheremet, Professor Dr. Karen Helen Wiltshire.



IIASA Governance and Decision Making Structure and its External Advisory Bodies



Science Advisory Committee (SAC)

On 31 December 2020, the SAC membership was as follows:

Professor Dr. Jim Hall - Chair
The Environmental Change Institute,
Oxford University
Oxford, UK

Dr. John R. Birge
The University of Chicago Booth
School of Business
Chicago, IL, USA

Professor Dr. Ruth Defries
Department of Ecology, Evolution,
and Environmental Biology
Columbia University
New York, NY, USA

Professor Dr. Bojie Fu
Research Center for Eco-Environmental
Sciences
Chinese Academy of Sciences
Beijing, P.R. China

Dr. Olga Kordas
KTH - Royal Institute of Technology
Stockholm, Sweden

Professor Dr. Christoph Meinel
Hasson Plattner Institute for Digital
Engineering
Digital Engineering Faculty of the
University of Potsdam
Potsdam, Germany

Professor Dr. Mari Elka Pangestu
The World Bank, USA

Professor Dr. Silvia Elena Giorguli Saucedo
El Colegio de México
Mexico City, Mexico

Dr. Youba Sokona
The South Centre and the University
of Surrey
Geneva, Switzerland

Professor Elke U. Weber
Princeton University
Princeton, NJ, USA

IIASA management

The most notable change at the IIASA executive level was the appointment of Christiane Pohn-Hufnagl as the chief operations officer (COO) by the IIASA Council. Pohn-Hufnagl joined the IIASA executive team on 1 July 2020, commencing her five-year appointment and replacing Jan Marco Müller. Pohn-Hufnagl is responsible for the overall coordination of IIASA services including finance, human resources, information technology, and facilities management, ensuring that IIASA researchers are supported by an environment that facilitates the delivery of world-class research.

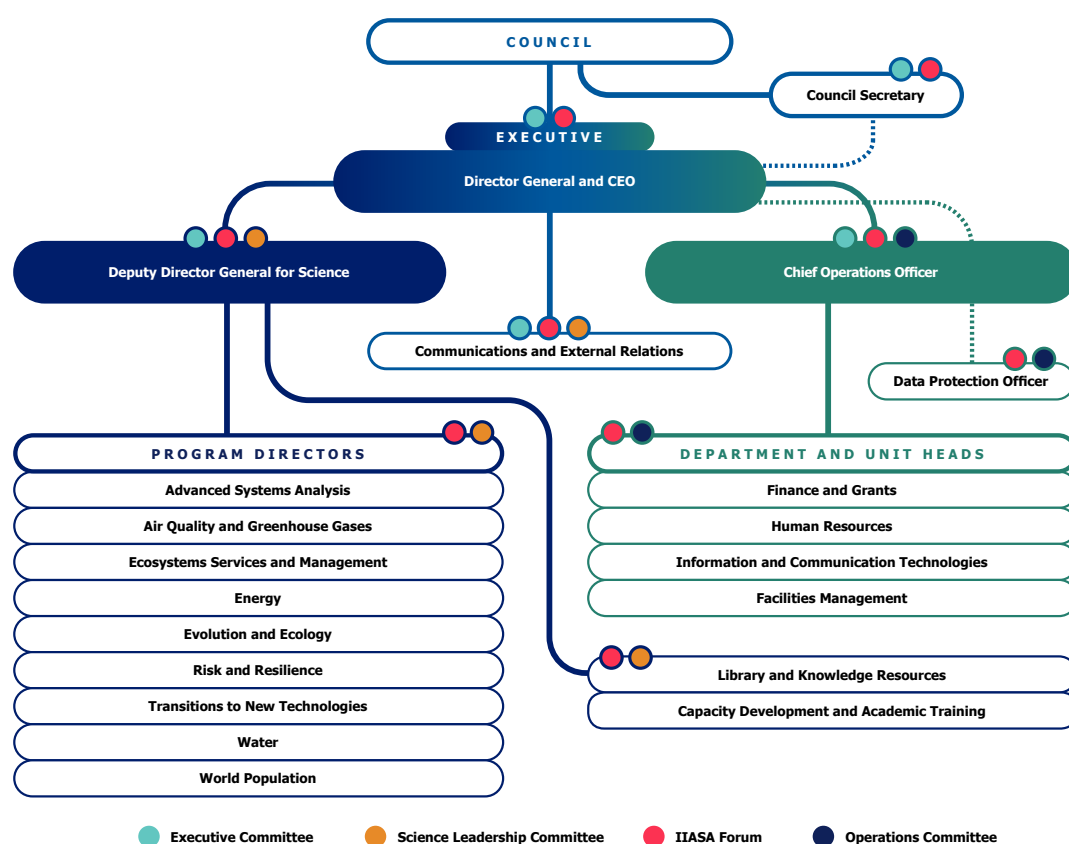
The following management changes at program and department level were made in 2020:

- Reinhard Mechler and Thomas Schinko were appointed as acting Risk and Resilience Program director and deputy program director respectively, on 1 January 2020, replacing JoAnne Linnerooth-Bayer.
- Raya Muttarak became the World Population Program deputy director on 1 January 2020, replacing Sergey Scherbov.



- Colin Adair replaced Monica Manchanda as the acting Finance and Grants Department head (previously Finance and Sponsored Research) on 1 January. The Office of Sponsored Research within the Finance and Grants Department was renamed to Grants Management.
- Fabian Wagner was appointed as Capacity Development and Academic Training dean on 1 February 2020.
- Shonali Pachauri assumed the role of acting Transitions to New Technologies Program director on 1 March 2020, replacing Arnulf Gröbler.
- Petr Havlik was appointed as acting Ecosystems Services and Management Program director on 1 April 2020, replacing Steffen Fritz.
- In addition to her appointment as the IIASA COO, Pohn-Hufnagl assumed the function of acting Human Resources Department head replacing Tanja Lassnig who was appointed legal counselor to the COO on 6 July 2020.
- Thomas Stemerink commenced his appointment as head of the Facilities Management Department (previously Technical Infrastructure) in July 2020, replacing Andreas Stigler.
- The External Relations, Communications, and Library Department was renamed as the Department of Communications and External Relations. The Library became a separate unit called Library and Knowledge Resources reporting directly to the deputy director general for science.

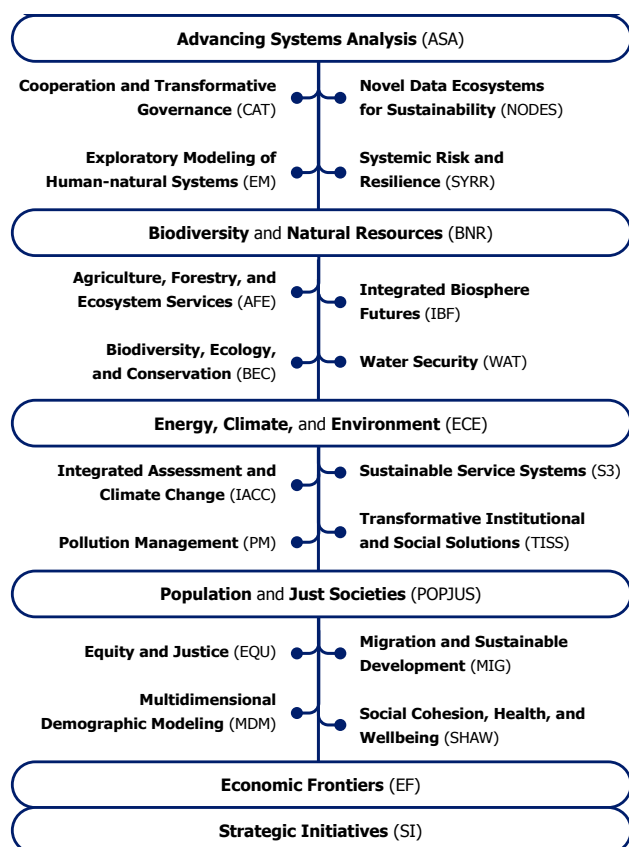
IIASA organization structure in 2020



IIASA Research Program Directors 2020

In 2020, IIASA completed the 2011-2020 strategic plan, *Research for a Changing World*. The Institute would like to recognize and acknowledge the research achievements and policy impact that the nine research programs (see pages 13-15) accomplished during this period. In 2020, the research programs were under the leadership of:

- Dr Markus Amann, Program Director, Air Quality and Greenhouse Gases Program.
- Dr Steffen Fritz and Dr Petr Havlik, Acting Program Directors, Ecosystem Services and Management Program.
- Professor Dr Arnulf Gröbler and Dr Shonali Pachauri, Acting Program Directors, Transitions to New Technologies Program.
- Professor Dr Wolfgang Lutz, Program Director, World Population Program.
- Dr Reinhard Mechler, Acting Program Director, Risk and Resilience Program.
- Dr Keywan Riahi, Program Director, Energy Program.
- Dr Elena Rovenskaya, Program Director, Advanced Systems Analysis Program and Acting Program Director, Evolution and Ecology Program.
- Dr Yoshi Wada, Program Director, Water Program.



← IIASA research structure from 2021

The old IIASA program structure came to an end in 2020 and the new program structure, which is aligned with the new IIASA strategy, commenced in January 2021. The new program structure comprises the following programs: Advancing Systems Analysis; Biodiversity and Natural Resources; Economic Frontiers; Energy, Climate, and Environment; Population and Just Societies; and Strategic Initiatives. In this regard, several notable research leadership appointments that took effect on 1 January 2021 were made. To support the program directors in providing research oversight and facilitating the functioning of the programs, IIASA also appointed research group leaders within each program.

The following appointments officially commenced on 1 January 2021:

- Advanced Systems Analysis Program Director, and Acting Evolution and Ecology Program Director, Elena Rovenskaya, was appointed as the new **Advancing Systems Analysis** Program Director.
The following research group leaders were appointed in this program:
 - Cooperation and Transformative Governance: Nadejda Komendantova
 - Exploratory Modeling of Human-natural Systems: Sebastian Poledna (Acting)
 - Novel Data Ecosystems for Sustainability: Ian McCallum
 - Systemic Risk and Resilience: Reinhard Mechler
- Water Program Director, Yoshihide Wada, was appointed as **Biodiversity and Natural Resources** Program Director.
The following research group leaders were appointed in this program:
 - Agriculture, Forestry, and Ecosystem Services: Florian Kraxner
 - Biodiversity, Ecology, and Conservation: Piero Visconti
 - Integrated Biosphere Futures: Petr Havlík
 - Water Security: Taher Kahil
- Michael Kuhn was appointed as **Economic Frontiers** Program Director.
- Energy Program Director, Keywan Riahi, was appointed as **Energy, Climate, and Environment** Program Director.
The following research group leaders were appointed in this program:
 - Integrated Assessment and Climate Change: Volker Krey
 - Pollution Management: Zbigniew Klimont
 - Sustainable Service Systems: Bas van Ruijven
 - Transformative Institutional and Social Solutions: Shonali Pachauri
- World Population Program Deputy Director, Raya Muttarak, was appointed as the **Population and Just Societies** Program Director.
The following research group leaders were appointed in this program:
 - Equity and Justice: Thomas Schinko (Acting)
 - Migration and Sustainable Development: Raya Muttarak (Acting)
 - Multidimensional Demographic Modeling: Samir K.C.
 - Social Cohesion, Health, and Wellbeing: Wolfgang Lutz (Acting)
- Ecosystems Services and Management Program Deputy Director, Steffen Fritz, was appointed as **Strategic Initiatives** Program Director.

In addition to the above, the following changes were made to the IIASA internal committee structure:

- The Directorate was converted into the IIASA Executive Committee (IEC) as the final decision-making body at the institute. It is tasked by the IIASA Council with providing an enabling environment for executing the mandate and strategic intent of IIASA as an international research institution, as well as to implement all Council and Council Executive Committee decisions and report on them as required. It is also mandated to provide an appropriate structure for the organization to fulfill its mission. The Members of the IEC are the director general (DG), the deputy director general for science, the chief operations officer, the head of the Department of Communications and External Relations, the Council secretary, and the DG executive assistant (secretary).
- The Internal Research Committee was converted into the Science Leadership Committee (SLC) to ensure and progress the ability of IIASA to achieve scientific excellence, relevance, and global/NMO impact. The committee advises the IIASA executive on all matters related to IIASA scientific operations. Members of the SLC comprise: the deputy director general for science (DDGS) (chair), the director general (ex officio), all program directors, head of the Library and Knowledge Resources Unit, the dean of the Capacity Development and Training Unit, the head of the Communications and External Relations Department, the DDGS executive assistant (secretary), as well as two members elected by the research staff for a two-year tenure.
- The Management Board was converted into the IIASA Forum to facilitate consultation and improve internal communication among all major stakeholders of the Institute: the director general (chair), the deputy director general for science, the chief operations officer, program directors, research group leaders, department heads, unit heads, managers, the Council secretary, Process, Quality and Sustainability manager, data protection officer, the DG executive assistant (secretary), as well as the Works Council (observer).
- The Department Head Committee was converted into the Operations Committee. It advises the IIASA Executive on all matters related to the institute's non-scientific operations. Members of the Operations Committee are the chief operations officer (chair), the director general (ex officio), the heads of the Human Resources, Finance and Grants, Information and Communication Technologies, and Facilities Management departments, the Process, Quality, and Sustainability manager, the data protection officer, the communications manager (observer), the legal counselor to the COO, and the COO executive assistant (secretary).

Policies and processes



Risk, internal control, and audit

Improving the effectiveness of organizational risk management, control, and governance processes remained one of the top priorities for the IIASA Council and Executive in 2020. IIASA maintains a comprehensive risk register, which is continuously reviewed and updated. As per the Risk Register Terms of Reference approved by the IIASA Executive Committee in November, the identification of potential risks is undertaken on a semiannual basis, while the review of existing risks is done bi-annually. Appropriate actions aimed at mitigating or removing organizational risks will continue to be undertaken to prevent potential negative impacts for IIASA.

Committed to bringing a systematic approach to evaluating and mitigating risks, the Finance, Risk and Audit Committee of the IIASA Council and the IIASA Executive established an internal audit function. The purpose of this function is to introduce a professional auditing of the

internal processes, governance, and internal controls at IIASA to ensure compliance with the regulatory framework and to enhance performance, organizational learning, and the efficiency and effectiveness of IIASA operations. Following a competitive tender process, an external company, KPMG, was selected to provide the institute with professional auditing services. The Internal Audit Charter and the Internal Audit Plan for 2020 were approved by the mandated committee of the IIASA Council in September and implemented by the IIASA Executive and KPMG. The first audit started in October and focused on the accounts receivable and the dunning process. The recommendations of this audit will be implemented by mid-2021. The second audit started in late November and was aimed at evaluating the process of allocating staff costs to externally funded projects at IIASA.

Delegation of authority and conflict of interest

With the aim of improving the efficiency, transparency, and effectiveness of the decision-making processes in all issues related to human resources management at the institute, the IIASA Executive adopted the Human Resources Delegation of Authority Framework in November. It assigns appropriate levels of involvement in the decision-making process to

the relevant internal stakeholders at IIASA ensuring efficient decision making while retaining an apt segregation of duties, and thus minimizing potential conflict of interest. Further delegation of authority frameworks will be developed for IIASA operations, finance, and procurements.

Financial policies

The Finance, Risk, and Audit Committee of the Council supervises the institute's accounting and auditing activities, the annual payments of National Member Organization contributions, the realization of royalties and other revenues, and the annual financial reports. IIASA is also legally obliged under the Austrian Association Act and Austrian Commercial Law to have its accounts externally audited on an annual basis. The institute's statutory financial statements are presently audited by BDO Austria. In addition, some external funders require that the projects they contribute to are individually audited, with around 35 project audits being carried out in 2020. The European Commission (EC), a major contributor to the institute's external funding, also performs second-level audits on already externally audited EC projects. To date, four major second-level audits on twelve projects were carried out in 2009, 2011,

2015, and 2017 respectively. All of these were successfully concluded. A second level audit is ongoing at the time of writing on a European Research Council (ERC) project that concluded in 2019.

At IIASA, financial policies and procedures are in place for:

- Sponsored research and budgeting for proposals.
- Procurement, business travel, organizing conferences, and visits from external collaborators and stakeholders.
- A budget planning and oversight process.
- The procedures and approval processes are facilitated and documented through the IIASA Management Information System.

Information technology

The Information and Communication Technologies (ICT) Department manages the institute's IT services supporting business operational and scientific research needs, including personal computers and mobile devices, servers, data networking systems, and related equipment. The team runs

more than 70 physical servers supporting 100 virtual machine servers and a 20-node (80-core) computer cluster. In addition, the department manages a total of 520 TB of usable data storage and data backup systems, and support software for office automation and scientific models.



In 2020, the ICT Department's focus quickly shifted from providing on-site services to supporting the entirety of IIASA working from remote environments located around the world, while also working remotely themselves. Activities in 2020 included:

- Expanding the institute's remote IT access capabilities.
- Promoting remote meeting and webinar capabilities by establishing the institutional Zoom infrastructure and promoting the use of Microsoft Teams.
- Providing scientific computing facilities dedicated to the first virtual Young Scientists Summer Program (YSSP).

- Implementing a dedicated Oracle Database hardware appliance with 10 TB of fast solid-state disk storage improving the performance and support to the institute's models and tools.
- Focusing on improving IT security, established continuous external scanning of IIASA public IT systems, as well as conducting expert health-check reviews of critical security systems.
- Adhering to procurement best practices, renegotiated multi-year contracts for the institute's worldwide mobile telephone program and the photocopier/printer fleet, introducing environmentally friendly and cost saving "Follow Me" printing.

Data protection and privacy

In 2020, IIASA focused on the training and awareness of staff members in relation to data protection. All new staff members now receive a newcomer data protection briefing as part of their onboarding process. Additionally, the first round of data protection awareness training was sent to all staff members. The aim of the training is to highlight the most common issues in relation to handling personal data. IIASA also established a legal framework to share data with NMOs. This helps to

highlight the return of investment for NMOs while staying compliant with GDPR requirements. In 2020, IIASA also dealt with several privacy challenges that arose from COVID-19. Among others, the institute had to address questions regarding the use of virtual conference and meeting tools, as well as the GDPR compliant tracking and prevention of COVID-19 cases among staff members.

Intellectual property and copyright

IIASA follows the specifications in the IIASA Staff Rules and Regulations and the rules and procedures laid out in the institute's patent and software policies. The Patent Policy ensures that any invention made in the course of research activities at IIASA is used to bring about the widest possible benefits. The Software Policy defines and protects the intellectual property rights for software developed by IIASA staff, and outlines the processes for commercialization, licensing, and distribution. In 2020, a task force on open access to models and tools was established

to develop a policy on open access to IIASA models and tools including software readiness and maintenance, intellectual property rights, model documentation, and quality control. The new policy is expected to be finalized in 2021.

In addition, a new Scientific Publications and Copyright Policy was introduced in 2020 to take into account the latest developments in academic publishing, open access publishing, and the use of creative commons licenses to expand the sharing and uptake of IIASA research.

Data management and archive policies

The IIASA rules laid out in its policies on Good Scientific Practice and Conflict of Interest, constitute the institute's current data archiving standard. To comply with the requirements of research funders and other collaborators, IIASA policy stipulates that all primary research data must be retained for a minimum of 10 years, thus ensuring the

reproducibility of findings and results. In addition, model-based work, model specifications, and methods of analysis have to be sufficiently documented, ideally in a peer-reviewed publication or its official supplement.

Legal compliance

IIASA is legally registered as a "Verein" (association) in Austria with registration number ZVR-Nr 524808900 and is subject to the laws and jurisdiction of its host country, Austria. IIASA monitors relevant laws and regulations and updates the IIASA rules and regulations to stay compliant with an evolving legal environment.

With the installation of fire detectors in the General-Purpose Building in 2020, all requirements bringing the IIASA buildings up to date and in

line with Austrian fire safety regulations have been completed. At the general fire inspection, which is mandatory every five years, no major deficiencies were reported.

With the completion of the electrical inspections at all IIASA buildings and the overhaul of the elevator at the Schloss, an important step was taken to further enhance the safety of the institute's electrical infrastructure. The final report is expected in the first quarter of 2021.

Health and safety

The Facilities Management (FM) Department mastered a series of challenges in the year 2020. Besides the mandatory monitoring of legal obligations in respect to health and safety regulations at the workplace, FM implemented multiple protective measures necessitated by the COVID-19 pandemic. Executing the internal SARS-CoV-2 action plan, ten thousand facemasks, thirteen dispensers, and over two hundred liters of disinfectant were stockpiled and distributed across the premises. While introducing short-time work for the greater part of the year for almost the whole department, FM was still able to continue providing the minimum required services for IIASA staff members.

Apart from these extraordinary measures taken due to COVID-19, the following health and safety projects were implemented:

- Several modern adjustable tables were acquired to meet the needs of staff members that exceeded the standard ergonomic requirements.

- Following the retirement of the IIASA general practitioner Dr. Schuster, Dr. Jan-Peter Böckmann was found available to provide future medical services for IIASA staff members at his practice in Laxenburg.
- The FSME (tick shot) vaccination for all IIASA staff members in September was a great success and FM is looking forward to offer the same services again in 2021. The yearly flu immunization campaign unfortunately had to be canceled due to COVID-19.
- In cooperation with the institute's external service provider, Health Consult-Sicherheitstechnik GmbH, the documentation provided by the health and safety officer again exceeded the legal requirements as regulated by Health Consult's quality management policy ISO 9001. The departments is also proud to announce that no major incidents were reported in 2020.

Infrastructure developments

Despite the sudden and unforeseen outbreak of the COVID-19 pandemic in the first quarter of 2020, the Facilities Management Department was still able to complete the majority of the infrastructure projects scheduled for 2020. This included the renovation of all windows in the apartment area, the ongoing refurbishment of office floors, and the complete overhaul of the restrooms on the first floor of the Schloss Building. Additionally, with the renovation of the Environment meeting room, a new fully functional multimedia meeting room for IIASA staff members is available in the Park Wing.

As per the long-term investment plan, the heating system in the General Purpose Building was overhauled entirely. With the installation

of two new boilers and a steering system, which can now be operated remotely, an expected CO₂ reduction of up to 15% is projected.

A new access control system was installed in October 2020 and will be further extended in 2021. The newly introduced key cards feature a multitude of additional functions, such as allowing the holder to execute printing orders at all IIASA printers.

The department concluded 2020 with the acquisition of a new platform truck and the planned disposal of two older vehicles. FM will further contribute to meeting the IIASA obligation to reduce the environmental footprint of the institute.

Environmental performance

The increasing volume and complexity of waste associated with modern society demands an appropriate waste management infrastructure. To meet the IIASA obligation to reduce the environmental footprint of the institute, a comprehensive and practical waste recycling system was proposed in December 2020, taking into consideration the ideas brought forward by the IIASA Sustainability Champions. The system will be implemented in the first quarter of 2021.

Following the installation of the smart control system in the main heating system of the Schloss building in 2019, the heating system in

the General Purpose Building was also significantly upgraded in late 2020. Both upgrades are expected to deliver considerable CO₂ savings.

As part of the "green conferences" initiative, IIASA has been supporting the increased use of tap water instead of bottled mineral water at all meetings and conferences organized at the institute. IIASA tap water was also examined by an external company, resulting in a report confirming that the institute's tap water is chemically, physically, and biologically of top quality. The institute's water was additionally evaluated by IIASA water experts in early 2020, with similar results.



Publications and outreach

A revised IIASA Scientific Publications Policy was introduced in 2020 and sets forth the principles governing the various types of publications used by the institute to communicate its research results to external audiences. It provides more detailed guidance regarding open access, (creative commons) licenses, funder acknowledgements, and good scientific practice.

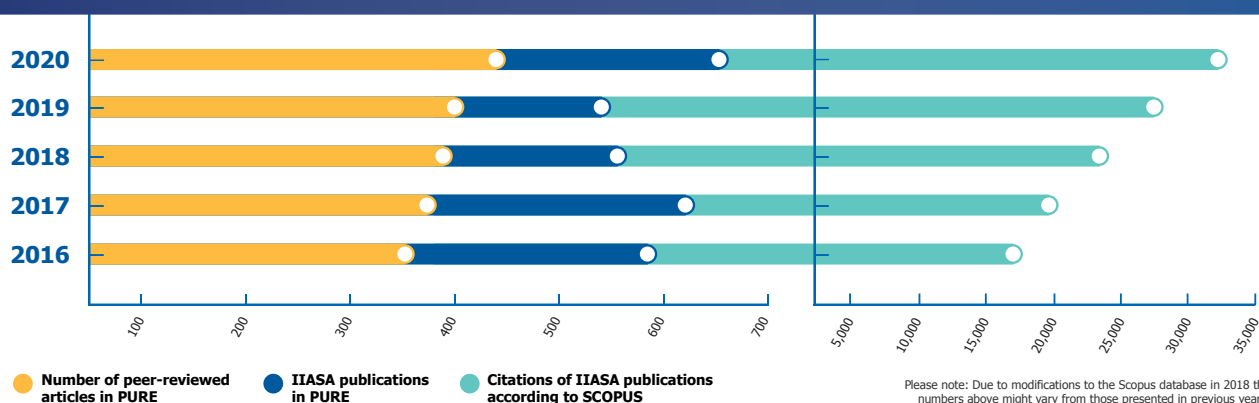
IIASA researchers published more widely in 2020 than in any previous year, with 439 journal articles published and 81% publicly available in the IIASA Publications Repository (PURE) (see charts). Open access

publishing was facilitated through renewed publishing agreements with major publishers including Elsevier, MDPI, Springer, Taylor and Francis, and Wiley in 2020. Readership of IIASA publications also grew in 2020 with 33,691 citations and 335,791 downloads from PURE. Female researchers coauthored 137 out of a total of 439 peer reviewed papers in 2020 (31%).

2020 Publications

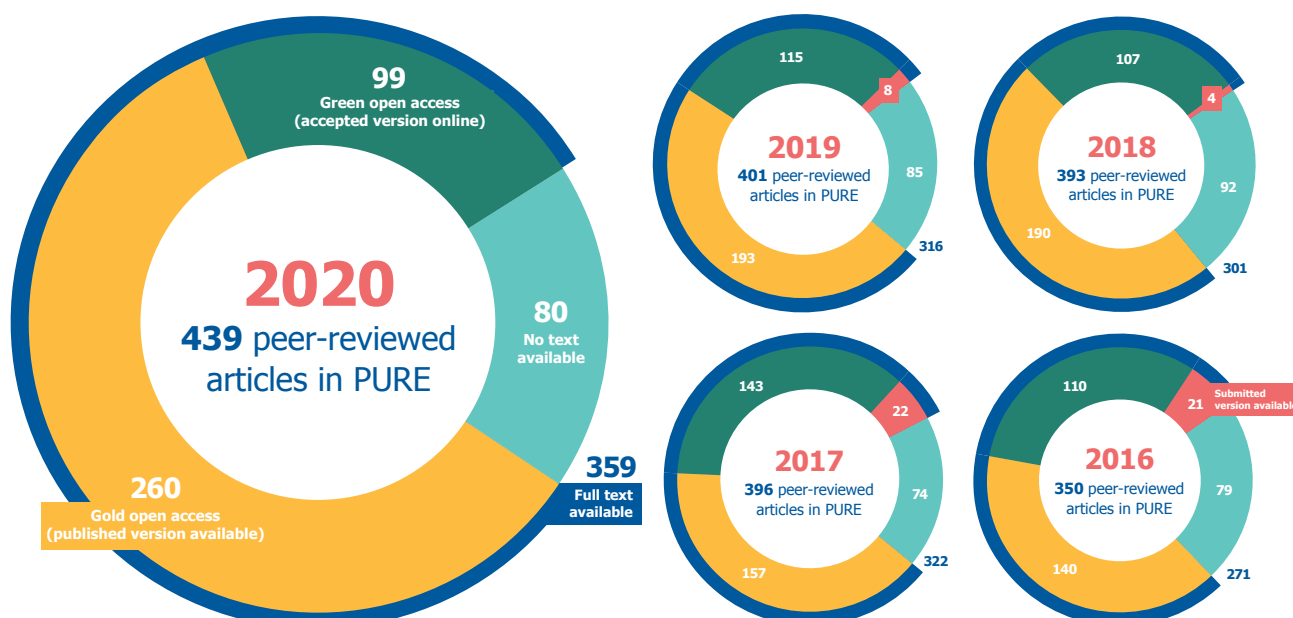
439 journal articles published...

in collaboration with **2,702** coauthors → from **1,089** different institutions → in **61** countries and regions around the world



186 H-Index

This h-index measures the productivity and impact of the 5,163 publications by IIASA authors in the SCOPUS database of peer-reviewed literature. Of these 186 have been cited more than 186 times.



Open Access—Data and Models

Launched in 2019, an institutional research data repository, DARE, continues to provide open access and a persistent citable identification URL for a growing number of IIASA datasets for a minimum of 10 years, thereby guaranteeing the reproducibility, traceability, and validation of critical research produced by IIASA. In 2020, a comprehensive survey

was undertaken into IIASA models and tools to inform the development of a new policy on open access to models and releasing scientific software at IIASA, which is expected to be introduced in 2021.

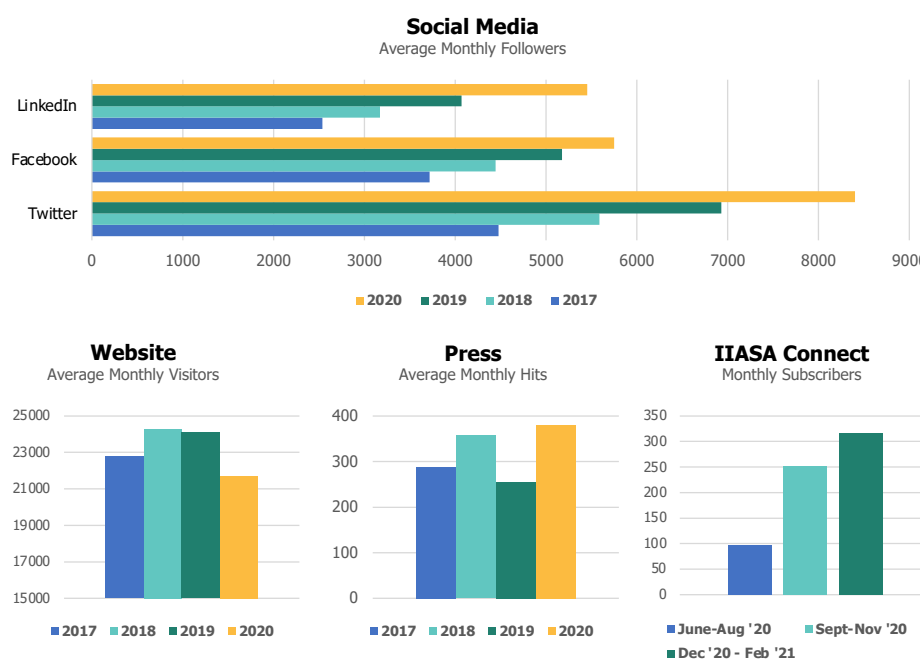
[2020 Data](#) ➔

Outreach

Coverage of IIASA continued to grow in 2020, according to a wide range of indicators (see figures). IIASA uses a range of channels to reach a diverse global audience including the research community, policymakers, funders, and the general public. This includes press releases, the Nexus blog, newsletters, social media, policy briefs, and the institute's flagship biannual Options magazine. Both the institute's social media followers and media coverage grew strongly in 2020, both in terms of reach and engagement resulting in 8,401 followers on Twitter, 5,455 on LinkedIn, 5,748 likes on Facebook, and more than 1,300 subscribers on YouTube in 2020. Work also began on both a new IIASA website and a new IIASA intranet to revamp their content and technology for launches in 2021.

Stakeholder engagement was strengthened through new ways of working with the IIASA National Member Organizations (NMOs) including consultations on NMO research priorities and training initiatives on IIASA models (e.g., CATSIM – catastrophe simulation model). As business travel and physical events plummeted in 2020 due to the COVID-19 pandemic, IIASA launched a new online platform, IIASA Connect, to

build a global community of system analysts. The platform proved to be very popular among the IIASA network, and saw subscriber numbers quickly growing to over 300 members worldwide within the first six months after launch. In addition, a new series of impact case studies was launched to demonstrate the uptake of IIASA research findings by business, governments, and intergovernmental organizations.





Financials

The institute's annual budget in 2020 was €22.4 million, of which 50% was from research funding agencies in member countries in Africa, the Americas, Asia, and Europe. These diverse sources of income enable IIASA to perform research that is truly independent. The institute receives additional funding from contracts, grants, and donations from governments, international organizations, academia, businesses, and individuals. Between 2019 and 2020, this additional funding decreased slightly from €11.6 million to around €11.2 million.

2020 saw a continuation of the institute's fiscal strategy of reserve

replenishment, with net assets increasing to just short of €8 million. Total income decreased slightly from €23.1 million in 2019 to €22.4 million in 2020, with total expenditure increasing marginally from €22.0 million to just under €22.1 million. At €17.2 million, 78% of the institute's total spending in 2020 was on research and scientific services, while spending on administration services and institute governance remained mostly stable. IIASA operated within its financial means in 2020, with the positive change in net assets serving to strengthen fiscal reserves and prepare the institute financially for its upcoming 50th Anniversary.

Summary of the Statement of Activities as at 31 December 2020

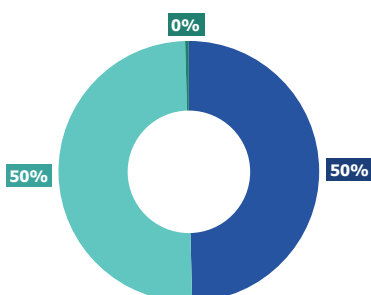
	31.Dec.20	31.Dec.19
INCOME		
Membership Contributions	11.105.500	11.349.713
Contracts and Grants	11.187.497	11.599.290
Other income	101.876	138.868
TOTAL INCOME	22.394.873	23.087.871
EXPENDITURES		
Research	14.348.539	15.415.571
Advanced Systems Analysis	1.055.378	921.995
Ecosystems Services & Management	5.259.969	5.496.214
Energy	1.584.333	1.613.796
Evolution and Ecology	349.536	320.145
Air Quality and Greenhouse Gases	1.732.007	1.916.510
Risk and Resilience	1.153.155	1.073.561
Transitions to New Technologies	631.295	701.684
World Population	904.171	1.205.091
Exploratory and Special Projects	84.300	344.315
Water	1.292.590	1.178.752
Sustainability Nexus Research Cluster	59.650	103.668
Programs and Fellowships for Young Scientists	242.155	539.840
Scientific services	2.872.277	2.833.018
Institute governance	1.468.277	1.291.774
Administrative services	2.120.965	2.060.834
Depreciation	356.598	351.242
Provisions	147.328	0
Other expenses	764.437	54.969
TOTAL EXPENDITURE	22.078.421	22.007.408
<i>Change in net assets</i>	<i>316.452</i>	<i>1.080.463</i>

Summary of the Statement of Financial Position as at 31 December 2020

	31.Dec.20	31.Dec.19
NON-CURRENT ASSETS		
Property, plant and equipment	1.078.453	866.202
TOTAL NON-CURRENT ASSETS	1.078.453	866.202
CURRENT ASSETS		
Inventories	15.500	22.610
Work in progress	1.956.258	2.833.849
Receivables and prepayments	5.230.858	4.551.678
Cash and cash equivalents	9.731.902	10.843.318
TOTAL CURRENT ASSETS	16.934.518	18.251.455
TOTAL ASSETS	18.012.971	19.117.657
NET ASSETS		
Restricted funds	1.286.130	1.073.879
Unrestricted funds	6.706.243	6.602.042
TOTAL NET ASSETS	7.992.373	7.675.921
NON-CURRENT LIABILITIES		
Provisions	1.372.900	1.715.354
TOTAL NON-CURRENT LIABILITIES	1.372.900	1.715.354
Prepayments	5.596.987	7.064.227
Provisions	1.862.405	1.553.468
Other liabilities	1.188.306	1.108.687
TOTAL CURRENT LIABILITIES	8.647.698	9.726.382
TOTAL LIABILITIES	10.020.598	11.441.736
TOTAL LIABILITIES AND NET ASSETS	18.012.971	19.117.657

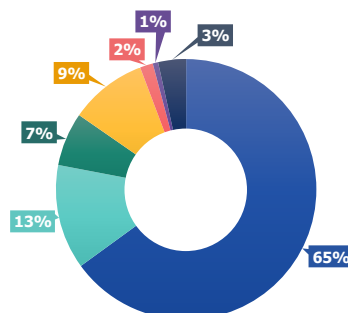
INCOME

- Membership Contributions
- Contracts and Grants
- Other income



EXPENDITURE

- Research
- Scientific services
- Institute governance
- Administrative services
- Depreciation
- Provisions
- Other expenses



Donations

The YSSP Fund provides funds for a scholarship that is awarded to promising young researchers without National Member Organization support, often from developing countries, to participate in the three-month IIASA Young Scientists Summer Program (YSSP).

The purpose of the Women in Science Fund is to provide a platform of financial support to IIASA women connected to science at all career levels. Conceived by the IIASA Women in Science Club, the fund offers different avenues of support and relies solely on donations to fulfill its mission.

The Peter E. de Jánosi Postdoctoral Fellowship Fund, set up in honor of former IIASA director, Dr. de Jánosi, offers selected postgraduate students the opportunity to participate in the IIASA Postdoctoral Program.

The institute continues to receive generous support through the non-governmental organization Friends of IIASA, which enables US residents to make tax deductible donations to the institute.

IIASA thanks all its supporters for their generosity in 2020 and is grateful for their commitment and belief in the mission of the institute.

Research funding agencies

In 2020, IIASA membership contributions were provided by the following agencies:

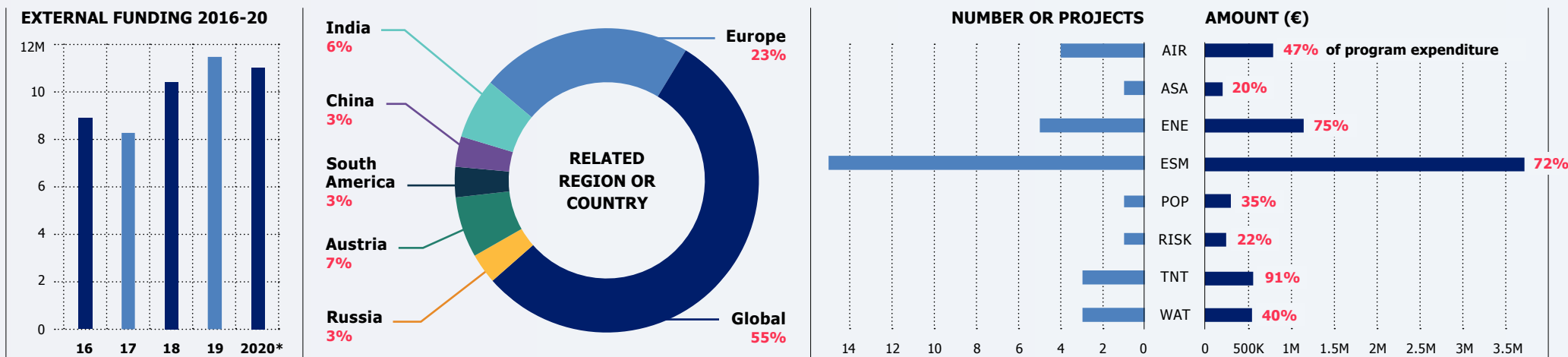
- The Austrian Academy of Sciences (OEAW)
- The Brazilian Federal Agency for Support and Evaluation of Graduate Education (CAPES)
- National Natural Science Foundation of China (NSFC)
- Ministry of Finance, Egypt
- Academy of Finland
- Federal Ministry of Education and Research (BMBF), Germany
- The Technology Information, Forecasting and Assessment Council (TIFAC), India
- Ministry of Finance, Indonesia
- Ministry of Science and Technology (MOST), Israel
- Ministry of Finance, Japan
- National Research Foundation of Korea (NRF)
- The Research Council of Norway (RCN)
- Russian Academy of Sciences (RAS)
- Ministry of Education, Science, Research and Sport, Slovakia
- National Research Foundation (NRF), South Africa
- The Swedish Research Council for Environment, Agricultural Sciences and Spatial Planning (FORMAS)
- The National Academy of Science (NAS), Ukraine
- Natural Environment Research Council (NERC), UK
- National Science Foundation (NSF), USA
- Vietnam Academy of Science and Technology (VAST)

Contracts and grants





Projects over €100,000 initiated in 2020



* A forecast only, the final audited figure will be entered when the full annual report is finalized in June.

PROJECT	AMOUNT (€)	FUNDER	REGION OR COUNTRY	AIR	ASA	ENE	ESM	POP	RISK	TNT	WAT
European Union BIOdiversity and CLIMate strategies Assessment (EU-BIOCLIMA)	672.265	European Commission, DG Climate Action	Europe				●				
Farmer clusters for Realising Agrobiodiversity Management across Ecosystems (FRAMEwork)	482.500	European Commission	Global				●				
Energy Demand changes Induced by Technological and Social innovations (EDITS)	423.399	Research Institute of Innovative Technology for the earth (RITE)	Global			●					
Evaluation, control and Mitigation of the EnviRonmental impacts of shipping (EMERGE)	399.750	European Commission, DG Executive Agency for Small and Medium-sized Enterprises (EASME)	Europe	●							
Development of a European Biodiversity Observation Network (Europa BON) to integrate existing data streams and effectively monitor the status of Europe's ecosystems (EuropaBON)	327.500	European Commission, DG Executive Agency for Small and Medium-sized Enterprises (EASME)	Global				●				

PROJECT	AMOUNT (€)	FUNDER	REGION OR COUNTRY	AIR	ASA	ENE	ESM	POP	RISK	TNT	WAT
Assessment on development of sustainable aviation fuels (ALTERNATE)	324.688	European Commission, DG Executive Agency for Small and Medium-sized Enterprises (EASME)	Europe				●				
Support for the implementation of the provisions on ILUC set out in the Renewable Energy Directive, Lot 1 (ILUC-HCS)	317.150	European Commission, DG Environment	Global				●				
QuantMig: Quantifying Migration Scenarios for Better Policy (QuantMig)	308.081	European Commission, DG Executive Agency for Small and Medium-sized Enterprises (EASME)	Europe					●			
Alternative Pathways toward Sustainable development and climate stabilization (ALPS) Project	264.491	Research Institute of Innovative Technology for the earth (RITE)	Global			●				●	
Development of an integral model for assessing carbon emissions and removals by Russian forests (IMGGAR-II)	260.000	Joint Stock Company SUEK	Russia				●				
Identifying drivers of Cropland yield stress with high resolution in-situ and Satellite data in Austria (CropSat(a))	249.508	Austrian Research Promotion Agency (FFG)	Austria				●				
Climate change induced water stress – participatory modelling to identify risks and opportunities in Austrian regions (WaterStressAT)	249.016	Austrian Climate Research Program (ACRP)	Austria						●		●
Digital platforms, fair competition and sustainability transformations: Plausible futures (DigFaSt)	204.244	Higher School of Economics (HSE)	Global		●						
Modeling work to support the NGFS (BoE - NGFS)	186.000	Bank of England	Global			●					
Earth Commission Modeling Working Group 2 (ECMG Phase 2)	178.645	Rockefeller Philanthropy Advisors	Global							●	
Protecting forests by catalyzing corporate and financial reforms (Orbitas)	175.620	Norwegian Agency for Development Cooperation (NORAD)	Global				●				

PROJECT	AMOUNT (€)	FUNDER	REGION OR COUNTRY	AIR	ASA	ENE	ESM	POP	RISK	TNT	WAT
Klimaschutzwirkung von Naturschutz- und Wirtschaftswäldern (FOR4CLIM)	158.125	DBFZ German Biomass Research Center	Europe				●				
Sustainable aviation fuel potential in South America (SUAVSAM)	156.048	WWF South Africa	South America								●
Science-based silviculture: Ecophysiological modelling for process understanding and improved management (Silviculture II)	155.197	Knut and Alice Wallenberg Foundation	Global				●				
Quantitative Analysis and Evaluation Model of Global Energy Low-carbon Development Potential and Benefit Based on Energy Use Technology and Resource and Environment Constraints and Its Application Research (GEIDCO Phase 2)	153.317	Global Energy Interconnection Development and Cooperation Organization	China			●					
Multiple Impacts CACalculations Tool (MICAT)	146.900	European Commission, DG Executive Agency for Small and Medium-sized Enterprises (EASME)	Europe	●							
Cooperative programme for Monitoring and Evaluation of the Long-range Transmission of Air Pollution in Europe (CIAM 2020 METNO)	142.971	Norwegian Meteorological Institute (Met Norway)	Europe	●							
Water and land management trajectories – best bet options for sustainable agricultural intensification (WaterLand_Cap)	141.619	International Water Management Institute (IWMI)	Global								●
Joint Modelling Initiative for Preparing Low Carbon Development Scenarios for India up to 2050 (SPIPA India)	128.016	Deutsche Gesellschaft fuer International Zusammenarbeit (GIZ) GmbH	India			●					
Direct Air Capture to Fuel (ADEPT)	125.359	ClimateWorks Foundation	Global				●				
RFS-IIASA Rapid Spatial Analysis (Global Landscapes)	123.422	The Nature Conservancy	Global				●				
Climate change and commodity futures market (CROPF)	123.000	Austrian National Bank, Anniversary Fund (OeNB)	Global				●				

PROJECT	AMOUNT (€)	FUNDER	REGION OR COUNTRY	AIR	ASA	ENE	ESM	POP	RISK	TNT	WAT
Earth Commission Modeling Working Group (ECMG)	121.244	Rockefeller Philanthropy Advisors	Global							●	
Automatically generating agricultural ground reference training data using crowd sourcing and citizen science (Crowd2Train)	109.804	European Space Agency (ESA)	Global				●				
Fostering development: Agricultural technological change and economic growth (FPROD)	109.000	Austrian National Bank, Anniversary Fund (OeNB)	Global				●				
Technical Assistance to the Air Quality Management Modelling project in the Indo-Gangetic Plain (GAINS-IGP)	104.104	The World Bank	India	●							

NATIONAL MEMBER ORGANIZATIONS:

On 31 December 2020, IIASA had 24 member countries (2 observers and one prospective member) represented by the following National Member Organizations:

AUSTRIA	The Austrian Academy of Sciences (ÖAW)
BRAZIL	The Brazilian Federal Agency for Support and Evaluation of Graduate Education (CAPES)
CHINA	The National Natural Science Foundation of China (NSFC)
EGYPT	Academy of Scientific Research and Technology (ASRT)
FINLAND	The Finnish Committee for IIASA
GERMANY	Association for the Advancement of IIASA
INDIA	Technology Information, Forecasting and Assessment Council (TIFAC)
INDONESIA	Indonesian National Committee for IIASA
IRAN	Iran National Science Foundation (INSF)
ISRAEL	The Israel Committee for IIASA
JAPAN	The Japan Committee for IIASA
JORDAN (<i>Prospective</i>)	The Royal Scientific Society (RSS) of Jordan
KOREA, REPUBLIC OF	National Research Foundation of Korea (NRF)
MALAYSIA (<i>Observer</i>)	Academy of Sciences Malaysia (ASM)
MEXICO (<i>Observer</i>)	Mexican National Committee for IIASA
NORWAY	The Research Council of Norway (RCN)
RUSSIA	The Russian Academy of Sciences (RAS)
SLOVAKIA	Ministry of Education, Science, Research and Sport
SOUTH AFRICA	National Research Foundation (NRF)
SWEDEN	The Swedish Research Council for Environment, Agricultural Sciences and Spatial Planning (FORMAS)
UKRAINE	The National Academy of Sciences of Ukraine (NASU)
UK	United Kingdom Research and Innovation (UKRI)
USA	The National Academy of Sciences (NAS)
VIETNAM	Vietnam Academy of Science and Technology (VAST)