ENGAGEMENT WITH MEMBER COUNTRIES

JAPAN

INFOSHEET 2021-2025

Highlights of interactions between IIASA and Japan

National Member Organization (NMO)

The Japan Committee for IIASA

Council Member

Kazuhiko Takemoto

NMO Secretary

Yatsuka Kataoka

Selected partners

Over 60 Japanese organizations have collaborated with IIASA. The top ten most active collaborators include:

- Global Environmental Action (GEA)
- Graduate University for Advanced Studies (SOKENDAI)
- Institute for Global Environmental Strategies (IGES)
- Japan Agency for Marine-Earth Science and Technology (JAMSTEC)
- Kyoto University
- National Institute for Environmental Studies (NIES)
- Okinawa Institute of Science and Technology Graduate University (OIST)
- Research Institute for Innovative Technologies for the Earth (RITE)
- Ritsumeikan University
- University of Tokyo

Areas of research collaboration

- Enhancing Japanese expertise in applied systems analysis and raising a new generation of talented researchers in Japan.
- Helping to strengthen city governance and facilitate city transformation.
- Developing tools and approaches to explore the feasibility of decarbonization pathways and identifying opportunities to strengthen climate policies and climate resilience.
- Exploring how technological innovation and social change can reduce energy and material demand while maintaining human wellbeing.
- Mainstreaming emerging research themes into policy-relevant publications and international processes, including those led by the IPCC.
- Conducting research to identify policies that improve air quality, protect public health, and reduce greenhouse gas emissions in Asia.

Capacity building

Five doctoral students from Japan or studying in Japanese institutions have participated in the IIASA Young Scientists Summer Program in 2021-2025.

Publication output

IIASA has co-authored over 300 publications with institutions in Japan, and its researchers from Japan have authored over 145 publications.

Scientific exchange

Over 90 participants from Japan have joined IIASA events. Researchers, advisors, and diplomats from Japan have visited IIASA over 50 times. IIASA scientists have visited Japan over 100 times. More than 10 Japanese nationals have been employed at IIASA in the period 2021-2025.

International Institute for Applied Systems Analysis
IIASA

Engagement with Member Countries: Japan

IIASA Info Sheet 2026

The electronic version of this document is available at
https://iiasa.ac.at/members/japan

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IIASA Info Sheets provide succinct summaries of IIASA activities. They do not necessarily reflect the views of IIASA staff, visitors, or National Member Organizations.

This Info Sheet summarizes the recent interactions of IIASA with Japan in the years 2021-2025 and will be regularly updated in the following years. It includes highlights with links to further information but is not meant to be a comprehensive report on all interactions. Feedback and updates are encouraged and should be sent to the External Relations Department.

EU Ecolabel www.ecolabel.eu
FSC

1. Introduction

The International Institute for Applied Systems Analysis (IIASA) was established in 1972 as an international, independent, non-governmental, multidisciplinary research institute located in Laxenburg near Vienna, Austria. As of September 2026, IIASA has 19 national members and one regional member, representing 37 countries across Africa, the Americas, Asia, and Europe. Over the years, IIASA made **groundbreaking research contributions** with real-world impacts on global decision-making and continues to prepare for an increasingly complex future.

As one of IIASA's founding organizations, the Japan Committee for IIASA has helped foster a highly productive relationship between IIASA and Japan. Ministry of the Environment of Japan (MOEJ) funds IIASA's annual membership fee and NMO activities. Through its long-standing engagement with IIASA, Japan has demonstrated its commitment and support of global science and science diplomacy, using scientific collaboration to build international partnerships, strengthen trust, and address shared global challenges.

In the years 2021-2025, research collaborations between IIASA and Japan involved over 60 Japanese organizations and led to over 300 joint scientific publications. Current collaborations aim to address several of Japan's strategic priorities associated with research and innovation. Those efforts are primarily focused on enhancing expertise in applied systems analysis in Japan and harnessing its power to tackle the climate crisis, improve air quality in Japan and in the broader region, ensure energy security, enhance city governance, and facilitate the green transition, as well as transitions to new technologies. IIASA also offers several capacity building opportunities for young Japanese researchers. Finally, IIASA acts as a global hub for science diplomacy, supporting the country's goals with regard to the internationalization of Japanese research by facilitating international research partnerships with other countries in the region, as well as all over the world, and offering a platform for global engagement.

2. IIASA's Unique Value Proposition for Japan

We are navigating an era of unprecedented complexity, marked by a global polycrisis that includes global environmental changes, disruptive technologies, conflict, migration pressures, and geopolitical tensions. Addressing these interconnected challenges requires innovative solutions that balance sustainability with development priorities. IIASA's global membership network positions the institute as a strategic platform for science diplomacy, enabling cooperation across geopolitical boundaries and bringing together diverse expertise to inform policy and advance solutions to challenges that no country can solve alone.

Japan is an established global leader in science, technology, and innovation, as well as a key player in the international arena with strong commitments to the principles of sustainability and multilateralism. Acting as an international hub for advanced cross-disciplinary research and a pioneer in industrial transformation, Japan also made major contributions to international development cooperation with an emphasis on sustainability and resilient, self-reliant development. In support of those efforts, IIASA provides Japan with a strategic high-leverage platform that supports science-based policymaking on complex global, regional, and national challenges; strengthens national analytical capacity; and amplifies influence in global science and policy processes.

IIASA is actively co-developing evidence-based solutions to inform policy in priority areas aligned with Japan's **GX2040 Vision** and the **7th Basic Plan for the Promotion of Science and Technology**. Drawing on its expertise in science diplomacy and interdisciplinary systems analysis, IIASA works across interconnected areas such as sustainable development, climate action and the green transition, biodiversity preservation, digital transformation, energy and resource systems, population dynamics, urban dynamics, and health. Through this integrated, evidence-based approach, IIASA is keen to support Japan in advancing its strategic priorities, translating scientific knowledge into actionable policy, and strengthening its position as a key global hub for science, technology, and innovation, while contributing to progress toward its national ambitions and broader global goals. Continued membership is therefore best understood not only as an institutional affiliation, but as a strategic investment that amplifies Japan's scientific and policy leadership while strengthening capacity development, knowledge exchange, and education for the next generation of scientific and policy leaders.

IIASA provides a valuable portfolio of resources and connections to support these efforts:

- IIASA offers advanced research capabilities, cutting-edge analytical tools, and methods to empower its partners and collaborators in shaping policy-relevant solutions at regional, national, and local levels.
- IIASA uses systems analysis as a formal approach to studying the multiple synergistic factors contributing to the global polycrisis (e.g. climate, pandemic, economic) across sectors (e.g. energy, agriculture, forestry, health, water, environment) and other complex problems.
- IIASA uses the most advanced methodologies in systems analysis with a special recent focus on AI, for example by integrating AI in agent-based models (ABMs), to better understand the drivers and impacts of the global polycrisis and offer data-driven solutions.
- IIASA opens doors for its partners to tap into additional global funding opportunities and resources, multiplying the value of their domestic STI investments into broader global opportunities and impact.
- IIASA provides access to state-of-the-art large-scale applied models (regional and global scale), which can complement the traditional work conducted at the national level.
- Operating in an independent, apolitical, and research-focused international environment, IIASA remains nimble in addressing global challenges.
- IIASA research is focused on addressing real-world problems in partnership with decision makers, community members, and practitioners from the countries involved to ensure that results contribute to policy.
- IIASA offers its expertise, data and modeling tools to partners in Japan, facilitating knowledge transfer and capacity building to strengthen national and sub-national policy making.
- IIASA collaborates with Japan to develop and strengthen scientific networks by co-coordinating global initiatives that connect scientific hubs worldwide and foster the inclusion of underrepresented groups, particularly from the Global South, in the international scientific community.

IIASA is a neutral space for international scientific collaboration. Under the protection of Austrian law, and through the institute's core science diplomacy mandate, scholars from nations currently involved in conflicts work together peacefully, collaboratively, and constructively at IIASA. The Institute plays a leading role in setting the research agenda within the international scientific community. It connects national scientific communities to a dynamic global network of researchers, policymakers, and practitioners through capacity building, in-person meetings, workshops, joint research initiatives, tool development, collaborative projects, and virtual webinars.

IIASA offers an opportunity for its member countries to broaden their global partnerships through inclusive, multilateral collaboration, providing access to a wide network of international partners.

In the last decade, IIASA helped to establish several centers of excellence for systems analysis in different parts of the world, partnering with local researchers to advance the discipline. Those include the North Africa Applied Systems Analysis Centre (NAASAC) in Egypt, the South African Systems Analysis Centre (SASAC) in South Africa, the Archimedes Center in Israel, and the Asian Demographic Research Institute (ADRI) in China. These centers help IIASA create a community of professionals that shares experiences nationally and is well connected, both regionally and internationally, to enable impactful policymaking at all levels.

IIASA also provides a variety of capacity development opportunities for future leaders in science, politics, business, and culture through its **Young Scientists Summer Program (YSSP)**, a variety of **Summer Schools**, and its **Postdoctoral Fellowships**. These programs provide individualized and cohort-based mentoring to early career researchers, students, and advanced practitioners from around the world to apply systems thinking to global challenges under the mentorship of world-leading experts. Their collaborations produce policy-relevant research focused on their home countries and help them to become proficient in the scientific and diplomatic skills needed to operate at the highest levels of international science and policy. In addition, the **Raiffa Academy**, anchored at IIASA, can serve as a catalyst for research, the development of methodological toolkits, and professional development, while also providing support for negotiation processes and preparations. It builds on IIASA's world-class research in systems analysis methods and supports the Institute's renewed emphasis on Science Diplomacy. IIASA also welcomes senior researchers, senior policymakers, and leaders from around the world to **bring their sabbatical to IIASA** and become a Guest Affiliate of the Institute, for a duration of three to twelve months.

Continued collaborations between Japan and IIASA will be essential to sustaining these efforts, advancing collaborative research, delivering policy-relevant insights, and strengthening global partnerships to reinforce the importance of science diplomacy. As Japan navigates complex, evolving, and increasingly interconnected challenges, IIASA is keen to continue serving as a vital partner in shaping innovative, science-based solutions to address Japan's domestic and international priorities.

3. Highlights of IIASA Research Projects and Collaborations with Japan

IIASA actively collaborates with Japanese researchers and institutions on targeted projects that aim to address national strategic priorities. Below are a few selected examples of IIASA projects with Japanese partners from across the different IIASA research programs and their research groups.

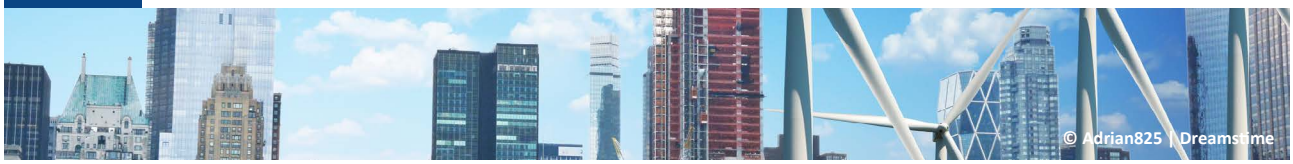
ALPS



As part of the Alternative Pathways Toward Sustainable Development and Climate Stabilization (ALPS) project, IIASA scientists and colleagues from the Research Institute for Innovative Technologies for the Earth (RITE) explored ways to improve the representation of technological change in integrated assessment models (IAMs) to inform climate policy choices.

The research project was focused on investigating long-term responses to climate change risks and supporting the international framework and strategy for green growth. It analyzed low energy demand scenarios with potential social changes to be induced by recent development of the Internet of Things (IoT) and sharing economy, which could reduce energy demand. As part of the project, IIASA researchers actively participated in the annual high-level ALPS International Symposium in Tokyo, Japan.

ASPIRE



The Assessment of Innovative Energy Technologies and Exploration of Decarbonized Energy System Using Novel Global Energy System Model (ASPIRE) is a joint effort between IIASA and the Asia-Pacific Integrated Model (AIM) team, led by Kyoto University. The project aims to evaluate innovative decarbonization technologies, such as synthetic fuels utilizing atmospheric carbon dioxide, hydrogen, and ammonia production from renewable energy, high-performance batteries, and energy-saving measures in the transport, building, and industry sectors, energy poverty and access, in the context of developing a decarbonized energy system, and extending to climate impacts.

The IIASA and AIM teams will combine their expertise in modeling energy demand and supply, as well as scenario data management and good modeling practice. Through collaborative research between Japan and IIASA and a three-tiered exchange program to promote knowledge sharing, this project aims to nurture and empower young researchers at the international level, elevating the Japanese team to become a leading research team globally. In addition, the project is expected to enhance Japan's industrial technology policies on an international scale, positioning the country advantageously.

Building on the project's research and collaborative activities, ASPIRE has already contributed to **further studies** exploring the evolution of the integrated assessment modeling community toward a more open, transparent, and collaborative approach.

AQNEA



The Development of a Collaborative, Integrated Management Framework to Improve Future Air Quality in Northeast Asia (AQNEA) project focused on studying air quality under various future carbon mitigation and air pollution control strategies using multiple Integrated Assessment Models (IAMs) from participating regional and international institutions in Northeast Asian countries, including South Korea, China, Japan, North Korea, Mongolia, and the Asian part of Russia. The project was building on the IIASA **GAINS** and **MESSAGE** models, as well as the **AIM-JAPAN** model from the National Institute for Environmental Studies (NIES) and Kyoto University.

Additionally, the AQNEA project conducted a study to project air quality in Northeast Asia for the year 2050 using Chemical Transport Models (CTMs) under different scenarios. The findings provide insights into how each country's policies might affect both their own environment and those of neighboring countries. This information is expected to serve as valuable input for future policy development and adjustments in this area.

EDITS



The **Energy Demand Changes Induced by Technological and Social Innovations (EDITS)** network, founded in 2019, brings together researchers, experts, modelers, and policy analysts from energy systems modeling, environmental psychology, the social sciences, and energy efficiency and sufficiency research to advance multidisciplinary knowledge and methods related to low energy- and material- demand. Its central aim is to show how high wellbeing for all can be achieved with much lower energy and resource use. Within the framework, IIASA **collaborates** with the Research Institute of Innovative Technology for the Earth (RITE) and more than 40 other partners from all over the world. The project is described in more detail on page 12.

ELEVATE



The Enabling and Leveraging Climate Action Towards Net Zero Emissions (ELEVATE) project is aimed at developing new scientific insights to support the preparations of Nationally Determined Contributions (NDCs) and national climate policies focused on achieving net-zero emissions in line with the Paris Agreement. The project is developed by a transdisciplinary consortium of national and international climate research teams interacting actively with policymakers and other stakeholders in climate policy and the Sustainable Development Goals (SDGs). ELEVATE brings together a unique multidisciplinary consortium of 20 partners, including Kyoto University.

ENGAGE

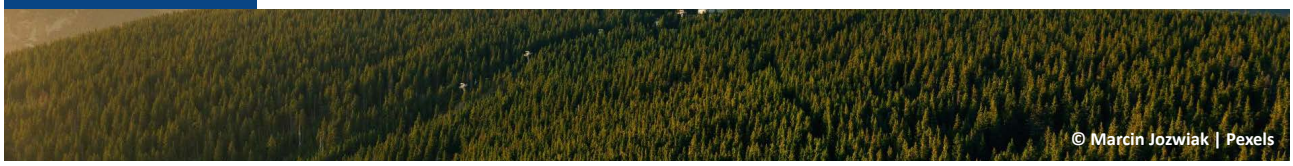


Exploring National and Global Actions to Reduce Greenhouse Gas Emissions (ENGAGE) was a global consortium of international and multidisciplinary leading research groups, coordinated by IIASA, focused on co-producing knowledge for designing cost-effective, technologically sound, socially and politically feasible pathways that can meet the objectives of the Paris Agreement. As part of this project, IIASA actively collaborated with the National Institute for Environmental Studies (NIES), the Research Institute of Innovative Technology for the Earth (RITE), Kyoto University, and over 20 other international partners around the world.

The project was focused on knowledge co-production through an iterative stakeholder dialogue process, including workshops, surveys, and frequent interactions and feedback among scientists, policy makers, civil society, the private sector, and other key stakeholders. ENGAGE helped quantify avoided climate change impacts through analysis of the exposure to climate change and the associated costs for individual sectors and regions at different levels and timing for global peak temperature. The findings of the ENGAGE project team have been collated in a **Summary for Policymakers**.

As part of the project, a particular focus was on quantifying the benefits (or trade-offs) of climate policies on biodiversity, food, poverty, water, air quality, health, and employment, particularly for vulnerable populations. As one of the outcomes of the project, a **publication** was developed to assess the land-use implications of climate mitigation pathways consistent with the 1.5°C target. The study highlights the benefits and trade-offs of early climate action, demonstrating how rapid emissions reductions can help avoid drastic long-term shifts in land use, improve food security, and reduce water stress, while also identifying near-term challenges for agriculture, forests, and ecosystems. The publication was subsequently cited in the IPCC Sixth Assessment Report (AR6) as one of the key sources.

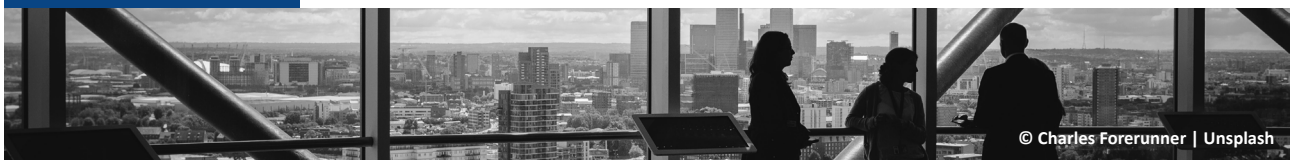
NEWPATHWAYS



The New Pathways for Equitable Climate Action in Line with the Paris Agreement and Sustainable Development (NEWPATHWAYS) project seeks to inform and support the dissolution of barriers that have kept global emissions and fossil fuel use at high levels in order to strengthen climate action and limit global warming. As part of the project, IIASA collaborates with Kyoto University, as well as over 20 other partners from around the world.

The project aims to inform solutions for strengthening climate action by combining the development of next-generation global and national low-emission transformation pathways with an analysis of opportunities, risks, synergies, and trade-offs associated with these pathways using knowledge from social sciences, economics, and policy analysis. The project emphasizes co-creation with stakeholders from the private and public sectors to ensure the relevance of outcomes and improve accessibility to tools. Dissemination efforts include policy briefs, high-level policy meetings, and international conferences, aiming to engage a broad audience and ensure the practical application of project findings.

Urban Futures Hub


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The IIASA Urban Futures Hub is a cutting-edge research initiative dedicated to studying and assessing how cities and urban systems can lead climate change mitigation and adaptation efforts from local to global scales. This Hub brings together experts from various disciplines within and beyond IIASA to collaborate on assessing cities and climate change across diverse domains and scales.

Within the framework of the Urban Futures Hub, IIASA works closely with Japan as part of the project focused on cities transformation and city governance. This work is described in more detail on page 12.

4. Selected Examples of IIASA Models, Tools, and Data

IIASA develops a wide range of advanced models that integrate scientific knowledge across disciplines to address complex global challenges. These models are designed to capture the interconnected dynamics between human, environmental, and technological systems, providing robust tools for exploring alternative futures and informing evidence-based policy decisions.

Several IIASA models cover key areas of strategic priority for the government of Japan and are extensively used by the Japanese partners of IIASA. Below are a few selected examples from across the different IIASA research programs and their research groups.

AR6 Scenario Explorer and Database



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This Scenario Explorer presents an ensemble of quantitative, model-based pathways underpinning the Sixth Assessment Report (AR6) of Working Group III by the Intergovernmental Panel on Climate Change (IPCC), titled “Climate Change 2022: Mitigation of Climate Change.”

As part of the IPCC’s Sixth Assessment Report (AR6), authors from Working Group III on Mitigation of Climate Change undertook a comprehensive exercise to collect and assess quantitative, model-based scenarios related to the mitigation of climate change. Building on previous assessments, the calls for scenarios in AR6 have been expanded to include energy, emissions, and sectoral scenarios from global to national scales, thus more broadly supporting the assessment across multiple chapters. The scenario ensemble contains over 3,000 quantitative scenarios with data on socio-economic development, greenhouse gas emissions, and sectoral transformations across energy, land use, transportation, and industry. These scenarios derive from 188 unique modeling frameworks and over 95 model families that are either globally comprehensive, national, multi-regional, or sectoral.

GAINS



The Greenhouse Gas and Air Pollution Interactions and Synergies (GAINS) model assesses emission and pollution reduction strategies that combat air pollution and climate change simultaneously. GAINS estimates historic emissions of 10 key air pollutants and 6 GHGs for each country based on data from international energy and industrial statistics, emission inventories and data supplied by countries themselves. It assesses emissions on a medium-term time horizon, with projections being specified in five-year intervals through the year 2050. The model is continuously refined to improve representation of key sources and new mitigation opportunities, as well as address new emerging challenges.

Scientists in many nations around the globe use the GAINS model to assess emission reduction potential in their regions. For example, Ministry of the Environment of Japan (MOEJ) and IIASA have jointly advanced the co-benefits approach by using the GAINS model to identify policies that simultaneously improve air quality, protect public health, and reduce greenhouse gas emissions in Asia. The results have informed policy dialogues under the Asian Co-benefits Partnership and supported the development of integrated air quality and climate strategies across Asia.

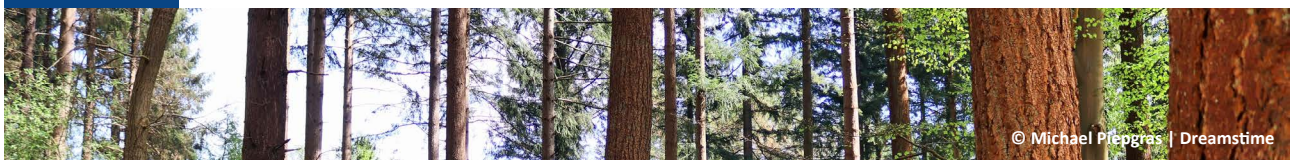
Geo-Wiki



The Geo-Wiki Project is a global network of volunteers who participate in Earth observation driven citizen science through the Geo-Wiki tool. The Geo-Wiki portal offers all citizen scientists the opportunity to participate in environmental monitoring of the Earth's surface by evaluating satellite and aerial images in detail. By using these innovative techniques, Geo-Wiki has been used to successfully integrate citizen-derived data sources with expert and authoritative data. Data can be input via desktop or mobile devices, with campaigns and games used to incentivize input. These innovative techniques have been used to successfully integrate citizen-derived data sources with expert and authoritative data to address pressing policy-related questions.

Since its inception, Geo-Wiki has grown rapidly, with currently over 22,000 registered users having contributed more than 18 million image classifications from around the world. Furthermore, the Geo-Wiki toolbox has expanded to include numerous applications which help to address a variety of global challenges (e.g. land use change, food security, pollution, and more).

GLOBIOM



The IIASA Global Biosphere Management Model (GLOBIOM) is used to analyze the competition for land use between agriculture, forestry, and bioenergy, which are the main land-based production sectors. The model can provide scientists and policymakers with the means to assess, on a global basis, the rational production of food, forest fiber, and bioenergy, all of which contribute to human welfare. The partial-equilibrium model represents various land use-based activities, including agriculture, forestry, and bioenergy sectors.

The model is built following a bottom-up setting based on detailed grid-cell information, providing biophysical and technical cost information. This detailed structure allows a rich set of environmental parameters to be taken into account, and its spatial equilibrium modeling approach represents bilateral trade based on cost competitiveness.

The model is used extensively to support sustainable development and climate mitigation in Japan and has been linked with several Japanese models, such as the AIM-BIO and AIM-Hub.

MESSAGEix



The IIASA Model for Energy Supply Strategy Alternatives and their General Environmental Impact (MESSAGE) has been a central tool in energy-environment-economy systems analysis in the global scientific- and policy arena. It provides a flexible framework for the comprehensive assessment of major energy challenges and has been applied extensively for the development of energy scenarios and the identification of socioeconomic and technological response strategies to these challenges.

The modeling framework enables the development of robust technology strategies and related investment portfolios to meet a range of user-specified policy objectives. It played a major role in the Intergovernmental Panel on Climate Change (IPCC) assessment reports; it provided marker scenarios of the Representative Concentration Pathways and the Shared Socioeconomic Pathways; and underpinned the analysis of the Global Energy Assessment. It is currently known as MESSAGEix.

The model is used extensively to support sustainable development and climate mitigation in Japan and has been linked with several Japanese models, such as the AIM-BIO and AIM-Hub.

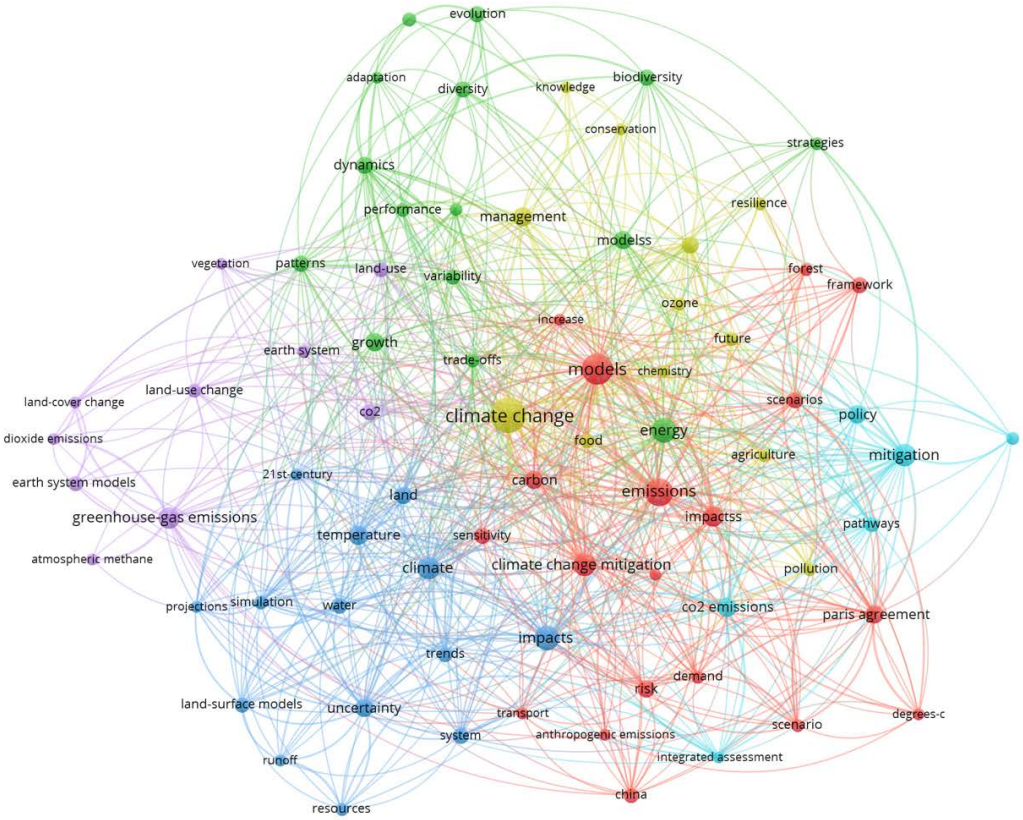
5. Key Data on IIASA Engagement with Japanese Policy

IIASA is not just a research partner but a trusted source of knowledge and a policy resource for the Japanese government, directly supporting the delivery of the country's strategic priorities across different sectors and scales.

Citations in policy, regulatory, strategic, practice, and other documents, including parliamentary publications, are among the key indicators of research impact on public policy, law, and services. IIASA research is highly cited both within the scientific community and in policy documents, with IIASA researchers consistently recognized among the world's most **highly cited researchers** in the years 2021-2025.

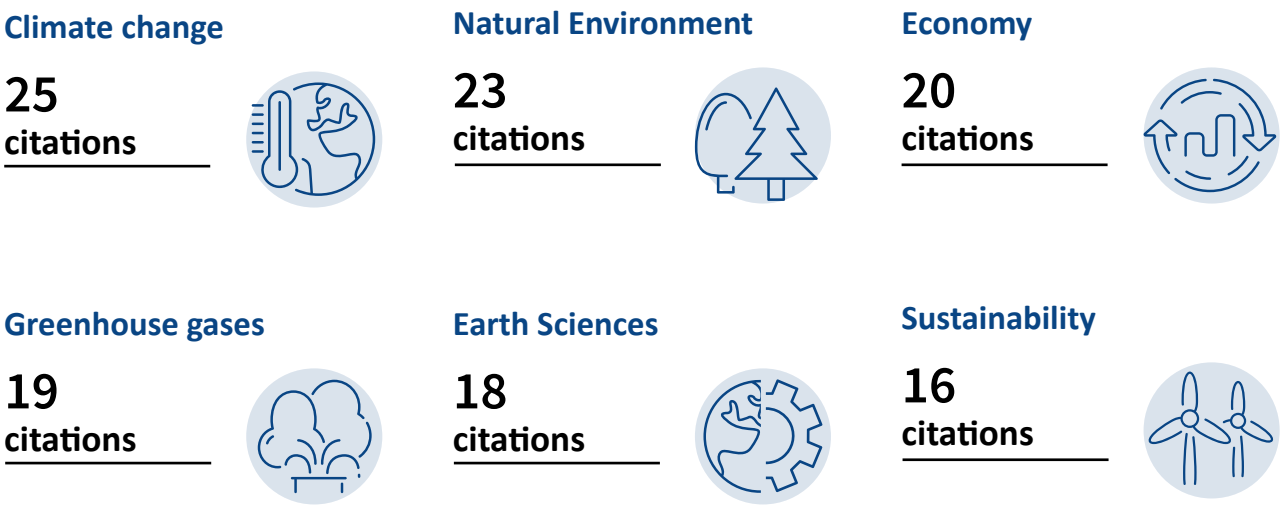
During those years, IIASA researchers coauthored over 2,400 scientific articles in the fields of environmental, social, earth and planetary, agricultural, and energy sciences, which gathered over 70,000 citations. Out of those publications, over 300 were coauthored in collaboration with Japanese institutions. IIASA publications were cited over 50 times in local and national policy documents in Japan.

Figure 1. Key topics of IIASA publications produced in collaboration with Japanese organizations in 2021-2025 (Source: Web of Science)



Main policy subject areas addressed by the Japanese Government citing IIASA researchers include climate change, natural environment, economy, greenhouse gases, Earth sciences, carbon dioxide, sustainability, nature, energy, agriculture, technology, biodiversity, artificial intelligence, and health.

Figure 2. Key policy areas in which the Government of Japan cites IIASA research (Source: Overton)



Government sources citing IIASA research in the years 2021-2025 include:

- Ministry of the Environment (6 citations or 12%)
- Ministry of Education, Culture, Sports, Science and Technology (5 citations or 10%)
- Ministry of Agriculture, Forestry and Fisheries (5 citations or 10%)
- Ministry of Economy, Trade and Industry (4 citations or 8%)

Funders of IIASA research cited in policy documents

The main funders of the research cited in Japanese policy documents were the German Research Foundation (Deutsche Forschungsgemeinschaft); Japan Society for the Promotion of Science (JSPS); UK Natural Environment Research Council (NERC); the US National Science Foundation (NSF), and the European Commission.

6. How the Government of Japan Benefits from IIASA Research

We present a few selected case studies illustrating how Japan benefits from policy-relevant research conducted at IIASA. The case studies showcase how the Institute's expertise in modeling and systems analysis helps the government of Japan address the country's interconnected priorities with regard to climate change mitigation and adaptation, the Green Transition, societal and technological transformations, air pollution, etc.

Strengthening city governance and enabling city transformation

The **IIASA Urban Futures Hub** is a cutting-edge research initiative dedicated to studying and assessing how cities and urban systems can lead climate change mitigation and adaptation efforts from local to global scales.

The Hub brings together experts from various disciplines within and beyond IIASA, who work collaboratively as part of several different projects, focused on assessing cities and climate change across diverse domains and scales. Within this framework, IIASA and the Japan Committee for IIASA collaborate on the Joint Research Project on City Transformation, supported by Ministry of the Environment Japan (MOEJ), to strengthen Japan's contribution to the IPCC 7th assessment cycle.

The project was kicked off in 2023 at the 28th Conference of the Parties of the UNFCCC (COP28) in Dubai, United Arab Emirates. It aims to bridge the gap between professional knowledge on city governance and the scientific community, with a particular focus on understanding multi-level governance in cities in relation to climate change, the role of cooperation, and the contribution of city networks.

During Phase I (2023–2024), the project launched an international research initiative to compile a fast-track comprehensive **report on Cities Transformation**. An **expert workshop and a public seminar** were held in Tokyo, Japan, in February 2024, providing a platform to discuss the report's findings and explore future research directions. The event, co-organized by the Ministry of the Environment of Japan (MOEJ), the Institute for Global Environmental Strategies (IGES), and IIASA, brought together authors of the report and selected members of the IPCC Bureau.

In Phase II (2024–2025), the project shifted its focus toward city governance as a key research theme. This work has been advanced by the IIASA team in close collaboration with several Japanese research partners. As part of this phase, a **second stakeholder workshop** and public seminar were held in Yokohama, Japan, in March 2025, further strengthening the dialogue between researchers and practitioners. The project is currently in Phase III (2025–2026), continuing to build on two core thematic areas: city governance and city-scale modeling and scenarios.

Exploring low energy and material innovations on the demand-side to support human wellbeing

The **Energy Demand Changes Induced by Technological and Social Innovations (EDITS)** network is a major international interdisciplinary initiative **jointly coordinated** by IIASA and Japan's Research Institute of Innovative Technology for the Earth (RITE), with funding from Japan's Ministry of Economy, Trade and Industry (METI), and hosted by IIASA. Through the EDITS network, researchers from different disciplines and countries collaborate on energy-demand modeling, methodological development, and innovative approaches to understanding the links between technology, behavior, infrastructure, wellbeing, and sustainable development. Rather than focusing only on the decarbonization of energy supply, EDITS examines how changes in the way people live, travel, work, build, and consume can reduce energy and material demand while supporting human wellbeing and the Sustainable Development Goals (SDGs).

The aim of the experts and researchers forming the EDITS network is to identify gaps and opportunities to improve the modeling, analysis, and communication of demand-side solutions for climate mitigation and the SDGs. A broad Model Complementarity Exercise, conducted as part of EDITS, will contribute to the IPCC's Seventh Assessment Report (AR7) and support the "High with Low" paradigm, demonstrating how demand-side interventions can be both cheaper and faster, as well as more efficient in improving well-being, reducing inequalities, and delivering benefits beyond climate mitigation, including enhanced energy security, progress towards the SDGs, and reduced material needs.

As of October 2026, EDITS has 200 members from around 80 organizations worldwide. The network operates through annual meetings at IIASA, quarterly online meetings, working groups around sectors and cross-cutting themes, including data, scenarios, and wellbeing. In addition, EDITS runs fast-track, high-impact research projects.

One of the primary functions of the initiative is grounded in its ability to connect conceptual and methodological innovation with policy-relevant analysis. Japan's engagement in the initiative is reinforced by METI's regular participation in the EDITS conference at IIASA headquarters, providing opportunities for dialogue between researchers and policymakers and helping to strengthen the links between scientific insights and policy priorities.

The IIASA-RITE partnership also creates direct opportunities to bring this research into international policy discussions. Since 2021, the two institutions have **regularly presented** EDITS research at the UN Climate Change Conferences (COPs) through side events organized at the Japanese Pavilion or as UNFCCC side events. These events helped bring together researchers, government representatives, and other stakeholders to discuss how demand-side solutions can be implemented in practice.

The collaboration has also expanded beyond the COP process. In 2023, EDITS collaborated with the Global Forum on Sustainable Energy (GFSE) to run a **solutions platform** at the International Vienna Energy and Climate Forum (IVEF). In 2025, IIASA researchers participated in the International Conference of Planetary Actions for Sustainability (IPAS) in Tokyo, presenting selected EDITS results on topics including decent mobility, wellbeing, and energy security.

Designing solutions to address climate change and air pollution

In the years 2021-2025, IIASA also had several impactful collaborations with a focus on air pollution, involving Japanese research institutions and government ministries, that fed into major reports and assessments focused on clean air solutions and air pollution.

In 2023, IIASA, the Ministry of the Environment of Japan (MOEJ), and the Institute for Global Environmental Strategies (IGES) co-organized a session within the framework of the Better Air Quality (BAQ) Conference. The session showcased collaborative research projects addressing air pollution, climate change, and other Sustainable Development Goals (SDGs), with a particular focus on the potential co-benefits of proposed interventions in Asia. Researchers presented the results of two MOEJ-IIASA collaborative projects, focusing on the interactions between urban and rural air pollution in Asia, and the multiple potential co-benefits associated with coordinated cross-sectoral action, as well as SDG-compliant national and regional decarbonization strategies. This work ultimately contributed to the **"Clean Air and Climate Solutions for ASEAN"** report, published by the United Nations Environment Programme (UNEP) and co-authored by several IIASA scientists. The report sets out a strategic approach to improving air quality while addressing climate change across the ASEAN region. It serves as both a roadmap and a call to action for ASEAN countries, encouraging policymakers, businesses, and communities to adopt science-based solutions toward a healthier and more sustainable future.

In 2025, IIASA researchers also led the development of The North-East Asia Clean Air Partnership (NEACAP) Policy Analysis Report titled **"Success and Challenges in Addressing Air Pollution in North-East Asia: A Call to Strengthen Regional Collaboration"**, which was is a joint research effort under the North-East Asian Subregional Programme for Environmental Cooperation (NEASPEC). The report examines recent progress and challenges in managing air pollution in North-East Asia, focusing on China, Japan, Mongolia, and the Republic of Korea, incorporating inputs from the NEASPEC member governments, including Ministry of the Environment of Japan (MOEJ). The report shows that several countries in the region have made significant strides, not only in improving air quality, but also in public health and ecosystem services. It also highlights that challenges faced by the region can be turned into opportunities by strengthening regional collaboration on environmental data management and other agreeable need areas, as well as leveraging synergies between air quality, climate, and other development priorities to craft more cost-effective policies.

7. How IIASA is helping Japan develop the next generation of leaders in science and policy

Raising the next generation of researchers and decision makers is central to IIASA's mission, and highly relevant to Japan's ambition of strengthening skills, innovation, and global influence in the fields of research, technology, and innovation. Through its flagship training programs, IIASA provides young Japanese researchers with a unique platform to apply systems thinking to the context of their home country and translate their research into real-world impact.

Participation not only equips early-career scientists with advanced methodological expertise and experience using IIASA's world-class models but also provides access to a truly international network of peers, policymakers, and practitioners. These opportunities act as a bridge between research and practice: participants return with new skills, perspectives, and professional connections that help strengthen the expertise at their home institutions, as well as the national talent pool.

IIASA Young Scientists Summer Program (YSSP)

For over 50 years, IIASA hosts up to 50 doctoral students from around the world as part of its Young Scientist Summer Program (YSSP) — a three-month course designed for advanced PhD students working on a topic that is compatible with ongoing research at IIASA and who wish to explore the policy implications of their work. Participants work under the direct mentorship of experienced IIASA scientists in a unique interdisciplinary and international research environment. YSSP fellows produce a paper serving as the first step toward a publishable journal article and have the opportunity to build contacts for future collaboration within the institute's worldwide network.

Many of the former YSSP participants return to IIASA as staff members, others hold esteemed positions in their home countries and research institutions all over the world. In the period 2021-2025, five early-career researchers from Japan (or affiliated with Japanese institutions) participated in the program.

YSSP'25

Koga Yamazaki (Kyoto University) carried out research with a focus on "The Impact of Changes in Nitrogen Gas Emissions in Climate Change Mitigation Scenarios on Air Quality in Eastern Asia" under the supervision of the IIASA Energy, Climate, and Environment Program.

YSSP'24

Shotaro Mori (Kyoto University) carried out research with a focus on "Multi-Model Analysis on Energy System Achieving a Complete Phase-Out of Fossil Fuels" under the supervision of the IIASA Energy, Climate, and Environment Program.

YSSP'23

Takuya Higashitani (Tokyo University of Agriculture and Technology) carried out research with a focus on "Passenger Electric Vehicle Diffusion Model Considering Home Charger Selection" under the supervision of the IIASA Energy, Climate, and Environment Program.

Shiya Zhao (Kyoto University) carried out research with a focus on "Exploring the Synergies and Tradeoffs Between Deep Climate Mitigation and Poverty Alleviation: Incorporating Household Heterogeneity into a

Global Macro-Energy Model" under the supervision of the IIASA Energy, Climate, and Environment Program. She currently holds a joint appointment between Kyoto University and IIASA, working as a Research Scholar in the Integrated Assessment and Climate Change Research Group of the Energy, Climate, and Environment Program.

YSSP'22

Osamu Nishiura (Kyoto University) carried out research with a focus on "Macroeconomic and Household Impacts of Energy Transformation Pathways for Paris Agreement Temperature Goals" under the supervision of the IIASA Energy, Climate, and Environment Program.

Summer Schools

Each year, IIASA also offers early career researchers the opportunity to participate in IIASA Summer Schools, most notably, the Summer School for Systems Modeling. As part of this course, IIASA provides systematic guidance on the development and use of mathematical and computer models, addressing uncertainties in data and processes, exploring solution spaces, and distilling viable options for taking policy action. The participants not only get to study and try out different modeling methodologies, such as agent-based modeling or network analysis, but also learn about the best practices of modeling. The two-week course is designed for master's and PhD students, as well as post-doctoral researchers who wish to use or develop models broadly related to the sustainability agenda. It is open to newcomers but also to those who have already been exposed to modeling and would like to add depth to their experience. It is also open to systems researchers who would like to gain a better understanding of the available tools. Many examples discussed are taken from IIASA's portfolio of tools and methods, ranging from ecological models, socioeconomic systems, to integrated assessment tools of energy, air, water, biodiversity, and food.

In 2024, two participants affiliated with the University of Tokyo participated in the summer school.

Postdoctoral Fellowships

IIASA also offers a range of (bilateral) postdoc opportunities for early career researchers. These include fully funded research positions of up to two years to study topics related to the IIASA research agenda. IIASA offers immersion in world class research, development of core research skills, and also skills related specifically to systems thinking and systems analysis, as well as exposure to international processes, organizations, and networks.

Workshops for Schools

In January 2024, around 30 students accompanied by their teachers from the Japanese International School in Vienna **visited IIASA** to learn about the work of the institute and its history. After a tour of the premises, Muneta Yokomatsu, a senior research scholar in the Systemic Risk and Resilience Research Group of the IIASA Advancing Systems Analysis Research Program, gave the participants an overview of the history and mission of IIASA. He then led a workshop on systems thinking, tailored specifically for the younger audiences, teaching them about complex issues such as environmental management and climate change through a discussion of the life cycle analysis of a bar of chocolate.

This visit was part of IIASA's broader outreach initiatives focused on helping the younger generation understand the broader implications of their choices and actions, as well as equipping them with valuable problem-solving skills and holistic understanding.

Scientists from Japan Leading Research Efforts at IIASA

Japanese researchers at IIASA play a crucial role in advancing the Institute's global scientific agenda while ensuring that issues of critical relevance to Japan remain part of the conversation. They are active contributors to international research and global dialogue with a focus on climate change, natural resources, digitalization, energy, sustainable development, risk and resilience.

Kentaro Aoki is a Guest Research Scholar in the Agriculture, Forestry, and Ecosystem Services Research Group of the IIASA Biodiversity and Natural Resources Program. He has also been serving as a visiting professor at Cooperative Research Center, Shinshu University, Japan. He first came to IIASA in 2003, as a participant in the Young Scientists Summer Program. His current primary research interest is to harmonize ecological services of natural resources and economic activities toward green development together with sustainable energy applications.

Shinichiro Fujimori is a Senior Guest Research Scholar in the IIASA Energy, Climate, and Environment Program and a Professor at Kyoto University. He is also a visiting researcher at the National Institute for Environmental Studies (NIES). His main fields of scientific interest include integrated assessment modeling in climate change mitigation as well as its impact and adaptation. He is involved in development of the Asian-Pacific Integrated Model (AIM). In the years between 2021-2025, he was consistently **ranked** among the world's most cited researchers.

Hayato Goto is a Guest Research Scholar in the Sustainable Service Systems Research Group of the IIASA Energy, Climate, and Environment Program. He is a researcher at Toyota Central R&D Labs and is taking over the role of Takuya Hara at IIASA.

Takuya Hara is a Guest Research Scholar in the IIASA Energy, Climate, and Environment Program. He works on the MESSAGEix global integrated assessment modeling framework, specifically to extend the submodule of the transport sector. He is also a researcher at Toyota Central R&D Labs. His work experience includes estimates of global biofuel production potential, vehicle population projection, and techno-economic analysis of vehicle technologies. His recent research activity is focused on techno-economic analysis of renewable power systems, mainly to identify mechanisms that determine the optimal solution and economic feasibility of the system.

Muneta Yokomatsu is a Senior Research Scholar jointly associated with the Systemic Risk and Resilience Research Group of the IIASA Advancing Systems Analysis Program and the Water Security Research Group of the Biodiversity and Natural Resources Program. He joined the Equity and Justice Research Group in 2022 and later moved to the two groups above. His research fields include the economic analysis of climate-related risk management, where he has developed methods of cost-benefit analysis of disaster prevention and infrastructure provision; and social network analysis, where he has focused on the dynamics of network formation of people in a local community.

Yoshihide Wada and **Junko Mochizuki** were full-time regular staff for part of the 2021-2025 period. They made major contributions to IIASA's work with a focus on water management, systems modeling, and disaster risk reduction.

Selected Leading Personalities from Japan Associated with IIASA

Keigo Akimoto, Principal Research Scientist, Research Institute of Innovative Technology for the Earth (RITE). He is a prominent collaborator of IIASA, who is the founder and has been instrumental in shaping the EDITS network, as well as the ALPS project.

His Excellency Keiichiro Asao, Minister of the Environment and Minister of State for Nuclear Emergency Preparedness of Japan. In 2025, he **visited IIASA** to meet with the IIASA Director General Hans Joachim (John) Schellnhuber and discuss IIASA's future scientific direction and its evolving role and contributions in advancing global science diplomacy.

Tomoko Hasegawa, Professor, Ritsumeikan University. She is a prominent collaborator of IIASA, who was involved in several projects, such as the **Scenario Compass Initiative**.

Takaaki Ito, Executive Director of Zero Carbon and GREEN x EXPO Promotion Bureau from City of Yokohama. He is involved in the IIASA-Japan Cities research collaboration.

Mikiko Kainuma, Research Advisor, Institute for Global Environmental Strategies (IGES). She is involved in the IIASA-Japan Cities research collaboration.

Miho Kamei, Policy Researcher, Institute for Global Environmental Strategies (IGES). She is involved in the IIASA-Japan Cities research collaboration.

Nobuo Mimura, Professor Emeritus, Specially Appointed Professor, Ibaraki University. He is involved in the IIASA-Japan Cities research collaboration.

Takahiro Nagata, Deputy Leader, Research Institute of Innovative Technology for the Earth (RITE). He is a prominent collaborator of IIASA.

Naoko Onishi, Senior Researcher, Research Institute of Innovative Technology for the Earth (RITE). She is a prominent collaborator of IIASA, who has extensively contributed to the work of the EDITS network.

Yoshiyuki Shimoda, Professor, Osaka University. Director, Research Institute of Innovative Technology for the Earth (RITE). He is a prominent collaborator of IIASA.

Masahiro Sugiyama, Professor, University of Tokyo. He is an expert on long-term climate policy. He is a prominent collaborator of IIASA, who has extensively contributed to the work of the EDITS network.

Kiyoshi Takahashi, Director and Head, Economics and Policy Studies Section, National Institute for Environmental Studies (NIES). He is a prominent collaborator of IIASA.

Togo Uchida, Executive Director, Local Governments for Sustainability (ICLEI) Japan. He is involved in the IIASA-Japan Cities research collaboration.

Wataru Fujisaki, Vice Principal Research Scientist, Research Institute of Innovative Technology for the Earth (RITE). He is a prominent collaborator of IIASA.

Yohei Yamaguchi, Associate Professor, University of Osaka. He is a prominent collaborator of IIASA, who has extensively contributed to the work of the EDITS network.

8. Looking Ahead: The Future of IIASA-Japan Collaborations

This Info Sheet summarizes recent research collaborations between IIASA and Japan. There is significant potential to further intensify the IIASA-Japan relationship through developing a range of new joint activities including:

- **Developing new IIASA applied systems analysis models for the Japanese context:** Japanese institutions are actively utilizing several IIASA modeling tools. There is a possibility to develop new bespoke versions of other IIASA global models to further enable researchers and policymakers assess complex global problems and their impact on Japan in a holistic and integrated way.
- **Conducting international assessments in areas of mutual strategic interest:** Japan was a significant contributor to **IIASA Global Energy Assessment** which brought together over 500 specialists to transform the way society thinks about, uses, and delivers energy. More recently, the collaborations between Japan and IIASA contributed to the development of the **Sixth Assessment Report (AR6) of the IPCC**, and this cooperation continues through ongoing contributions to the Seventh Assessment Report (AR7). The new IIASA Vision will empower its members to collectively initiate new large-scale interdisciplinary projects of high relevance to the regions where its members are located in areas of mutual priority.
- **Forging new partnerships between IIASA and Japanese institutions to win grants from international research funders:** IIASA research expertise and international research network makes it highly competitive in its applications for international research funds. About half of IIASA funding comes from additional funds through contracts, grants, and donations. IIASA and Japan actively collaborate as part of Horizon Europe projects and there is significant potential to scale up these efforts and secure grants from other international research funders to conduct research in areas of mutual interest, such as climate change, environmental protection and conservation, pollution, demography, and health.
- **Fostering multilateral collaborations through science diplomacy:** Japan can use IIASA as a platform to broaden its global partnerships, further its research internationalization agenda, and engage in science diplomacy activities. Past and ongoing collaborations between IIASA and Japan have helped establishing major international scientific networks, such as the **Integrated Disaster Risk Management (IDRiM) Society** and the **EDITS network**, which focus on areas of mutual priority. In addition, the **Raiffa Academy**, a new initiative anchored at IIASA, is specifically designed to act as a hub of a global network of researchers, government officials, and decision analysts promoting the application of decision science and negotiation analysis methodologies in the development of solutions to complex policy challenges.
- **Academic training opportunities for young Japanese scientists:** Further collaborations can help enhance participation by young Japanese PhD and postdoctoral students in **IIASA capacity development programs**. As part of their experience at IIASA, early-career researchers from Japan can gain hands-on experience in applying systems analysis to both national and global challenges, working side by side with leading experts from around the world. This immersion in an international, interdisciplinary setting equips participants with skills in modeling, scenario development, and science-policy engagement. By combining advanced analytical training with access to IIASA's global networks and real-world policy processes, these opportunities prepare young Japanese researchers to become leaders in addressing complex sustainability challenges across different scales and disciplines.

Annex 1.

Selected IIASA projects with Japanese funders and partners (active in 2021-2025, arranged by end date).

TITLE	FUNDER	PARTNERS IN JAPAN	DATES
NEWPATHWAYS: New pathways for equitable climate action in line with the Paris Agreement and sustainable development	▪ European Commission	▪ Kyoto University	01-JAN-2025 to 30-JUN-2028
EDITS: Energy demand changes induced by technological and social innovations	▪ Ministry of Economy, Trade, and Industry (METI)	▪ Research Institute of Innovative Technology for the Earth (RITE); ▪ Osaka University; ▪ University of Tokyo; ▪ Waseda University	24-OCT-2020 to 31-JUL-2027
ELEVATE: Enabling and leveraging climate action towards net-zero emissions	▪ European Commission	▪ Kyoto University	01-SEP-2022 to 30-NOV-2026
AQNEA: Development of a collaborative, integrated management framework to improve future air quality in Northeast Asia	▪ National Research Foundation of Korea	▪ National Institute for Environmental Studies (NIES); ▪ Kyoto University	01-JAN-2021 to 31-DEC-2024
ALPS: Alternative pathways toward sustainable development and climate stabilization	▪ Research Institute of Innovative Technology for the Earth (RITE)	▪ Research Institute of Innovative Technology for the Earth (RITE)	18-OCT-2020 to 31-DEC-2024
ENGAGE: Exploring national and global actions to reduce greenhouse gas emissions	▪ European Commission	▪ National Institute for Environmental Studies (NIES); ▪ Research Institute of Innovative Technology for the Earth (RITE); ▪ Kyoto University	01-SEP-2019 to 31-AUG-2023



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