Since 2008 IIASA has intensified its collaborations with the Russian Federation (Russia), leading to new joint research projects, increased interactions with Russian policymakers, significant scientific exchange through people, and a highly productive publication record. Current projects include exploring the challenges and opportunities of Eurasian economic integration, how to minimize wildfires, population aging in Russia, and advancing the methods of systems analysis. Interactions now take place regularly between IIASA and representatives from Russian Ministries and the Administration of the President of the Russian Federation. Knowledge transfer between IIASA and Russia is also facilitated through multiple exchanges with Russian scientists who spend periods working in IIASA’s international and interdisciplinary research environment. The scientific output from these numerous formal and informal activities is highly productive, with over 500 joint publications since 2008. This IIASA Info Sheet provides a summary of this expanding and mutually beneficial relationship since 2008.

### Highlights of Interactions Between IIASA and Russia (since 2008)

<table>
<thead>
<tr>
<th><strong>IIASA National Member Organization (NMO)</strong></th>
<th><strong>Russian Academy of Sciences</strong></th>
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<tbody>
<tr>
<td><strong>Membership start date</strong></td>
<td>1972 (from 1972 to 1991 as the Academy of Sciences, Union of Soviet Socialist Republics)</td>
</tr>
<tr>
<td><strong>Key research partners</strong></td>
<td>45 Russian organizations collaborate with IIASA, including:</td>
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<tr>
<td></td>
<td>- Federal Forestry Agency (Rosleskhoz)</td>
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<td></td>
<td>- Federal State Statistics Service (ROSSSTAT)</td>
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<td></td>
<td>- Lomonosov Moscow State University (MSU)</td>
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<td></td>
<td>- Russian Academy of Sciences (RAS) and many of its institutes</td>
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<td></td>
<td>- Russian Foundation for Basic Research (RFBR)</td>
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<td></td>
<td>- Scientific Research Institute for Atmospheric Air Protection (SRI Atmosphere, JSC)</td>
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<td>- V.A. Steklov Mathematical Institute, Russian Academy of Sciences (SMI RAS)</td>
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<td>- Vladimir State University</td>
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<td></td>
<td>- V.N. Sukachev Institute of Forest, Siberian Branch, Russian Academy of Sciences (SIF RAS)</td>
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<tr>
<td><strong>Areas of research collaboration</strong></td>
<td>- Advancing the methods of systems analysis</td>
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<tr>
<td></td>
<td>- Eurasian economic integration</td>
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<td>- Managing and monitoring Russia’s forests</td>
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<td>- Projecting Russia’s future population</td>
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<td>- Tackling air pollution and greenhouse gases in Russia</td>
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<td>- The Arctic and Russia</td>
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<td></td>
<td>- Global Energy Assessment and Russia</td>
</tr>
<tr>
<td><strong>Capacity building</strong></td>
<td>- 21 young scientists from Russia participated in IIASA’s Young Scientists Summer Program</td>
</tr>
<tr>
<td></td>
<td>- 9 training workshops for researchers and policymakers in Russia</td>
</tr>
<tr>
<td><strong>Publication output</strong></td>
<td>- 518 publications have resulted from collaborations between IIASA and Russian scientists</td>
</tr>
<tr>
<td><strong>Other interactions</strong></td>
<td>- Over 20 Russian scientists have been employed by IIASA each year since 2008</td>
</tr>
<tr>
<td></td>
<td>- Scientists and NMO representatives from Russia have visited IIASA over 450 times; IIASA scientists have visited Russia over 200 times</td>
</tr>
</tbody>
</table>
Activities with Member Countries: Russian Federation

IIASA Info Sheet 2016/04
July 2016

The electronic version of this document is available at
www.iiasa.ac.at/russia

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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 IIASA interactions with Russia during 2008–2016; the research collaboration section covers 2008–2014. It includes highlights, with links to further information, but is not intended to be a comprehensive report on all interactions.

Feedback and updates are encouraged and should be sent to Iain Stewart.
IIASA’s National Member Organization in Russia

The Russian Academy of Sciences (RAS) is the National Member Organization (NMO) representing Russia’s membership of IIASA. It succeeded the Academy of Sciences of the Union of Soviet Socialist Republics (USSR) following the dissolution of the USSR in 1991. A founding member of IIASA, the Academy of Sciences of the USSR met with representatives from 11 other countries from the Eastern and Western blocs in 1972 in London to sign the charter establishing IIASA.

Academician Alexei Gvishiani, Director of the Geophysical Center, RAS, represents the Russian NMO on the IIASA Council, the governing body of the Institute. Academician Gvishiani is also Vice-Chair of the IIASA Council and a member of the Council’s Executive Committee, which can act on behalf of the IIASA Council.

RAS has established a national IIASA committee for Russia, which is chaired by Academician Vladimir Kotlyakov, Director of the Institute of Geography, RAS. The committee is made up of 40 distinguished Russians both from academia, including many of the RAS institutes and Lomonosov Moscow State University, and policymakers, including representatives from seven ministries (see Appendix 6, Members of the National IIASA Committee for Russia). The NMO Secretary for Russia is Dr. Tatiana E. Khromova, Leading Research Scholar at the Institute of Geography, RAS.

Two of the seven Chairs of IIASA’s governing Council have been Russian citizens: Academician Jermen Gvishiani (1972–1987), who was Deputy chairman of the Soviet Council of Ministers for Science and Technology; and Academician Gueorgui Golitsyn (1992–1997).

Professor Petr Aven, Chairman of the Board of Directors at Alfa Banking Group and former Foreign Economic Relations Minister of the Russian Federation (1991–1992), was a participant in IIASA’s first Young Scientists Summer Program (YSSP) and an IIASA research scholar (1989–1991). Collaborations continue today, with a Petr Aven Fellowship to fund YSSP participants and a 2012 conference at IIASA on economies in transition.

Academician Vladimir Fortov, President, RAS, since 2013 and his predecessor, Academician Yuri Osipov, RAS President from 1991 to 2013, have been strong supporters of IIASA. Most recently, Academician Fortov met with IIASA Director General Professor Dr. Pavel Kabat during the 2013 official IIASA visit to Russia. Together, they agreed to enhance joint activities between IIASA and Russia.

Professor Yegor Gaidar, Former Russian Prime Minister, considered by many to be the intellectual leader of Russia’s economic reforms in the early 1990s, made extended visits to IIASA when the Institute was analyzing the problems of economic reform in the Soviet Union.

Academician Sergey Glazyev, Adviser to the President of the Russian Federation and Director of the Institute of New Economy at the State University of Management, is also a long-term IIASA collaborator. In 1988 he participated in the YSSP and in the 1990s he was an IIASA scholar researching economic reform in the Soviet Union, before returning to Russia as Minister of Foreign Economic Relations.

Professor Leonid Kantorovich, who jointly won the Nobel Prize in Economics in 1975, joined IIASA in the 1970s to work with fellow Nobel Prize winner Professor Tjalling Koopmans to expand IIASA’s study of advanced systems science and methodology.

Professor Yevgeny Yasin, Russian Minister for the Economy from 1994 to 1997, led a Soviet delegation of experts to join economists from the West in an IIASA project to identify the steps to avert the collapse of the Soviet economy.
Research Partners in Russia

IIASA works with research funders, academic institutions, policymakers and individual researchers in Russia. The following list includes the names of the organizations or the individual’s affiliated institutions that have all recently collaborated with IIASA.

- Adyghe State University (ASU)
- A.M. Obukhov Institute of Atmospheric Physics, Russian Academy of Sciences (IAP RAS)
- B.N. Yeltsin Ural Federal University (UrFU), Ekaterinburg
- Center for Energy Efficiency (CENEF)
- E.K. Fedorov Institute for Applied Geophysics (IPG), Roshydromet
- Federal Forestry Agency (Rosleskhod)
- Federal Service for Hydrometeorology and Environmental Monitoring (Roshydromet)
- Federal State Statistics Service (ROSSSTAT)
- Gazprom VNII GAZ
- Geophysical Center of the Russian Academy of Sciences (GC RAS)
- Institute for Agricultural Market Studies (IKAR)
- Institute for the U.S. and Canadian Studies, Russian Academy of Sciences (ISKRAN)
- Institute for Control Sciences, Russian Academy of Sciences (ICS RAS)
- Institute of Economics, Ural Branch, Russian Academy of Sciences (IE UrB RAS)
- Institute of Geography, Russian Academy of Sciences (IGRAS)
- Institute of Global Climate and Ecology, Roshydromet & Russian Academy of Sciences (IGCE Roshydromet & RAS)
- Institute of Geology, Komi Science Center, Ural Branch, Russian Academy of Sciences (IG KSC RAS)
- Joint Stock Company “Russian Space Systems” (JSC “RSS”)
- L.A. Melentiev Energy Systems Institute, Siberian Branch, Russian Academy of Sciences (ESI SB RAS)
- Liberal Arts University/University for Humanities, Ekaterinburg
- Lomonosov Moscow State University (MSU)
- Ministry of Education and Science of the Russian Federation
- Moscow International Petroleum Club (MIPC)
- Moscow State Forest University (MSFU)
- Moscow State Institute of International Relations (MGIMO University)
- Nansen International Environmental and Remote Sensing Centre (NIERSC)
- National Geophysical Committee, Russian Academy of Sciences (NGC RAS)
- National Research Centre “Kurchatov Institute”
- New Economic School (NES)
- N.N. Krasovskii Institute of Mathematics and Mechanics, Ural Branch, Russian Academy of Sciences (IMM UrB RAS)
- O.Y. Schmidt Institute of Physics of the Earth, Russian Academy of Sciences (IPE RAS)
- Peter the Great Saint-Petersburg Polytechnic University (SPbPU)
- Pomor State University, Arkhangelsk
- P.P. Shirshov Institute of Oceanology, Russian Academy of Sciences (IO RAS)
- Russian Academy of Sciences (RAS)
- Russian Foundation for Basic Research (RFBR)
- Russian Institute of Continuous Education in Forestry (VIPKLH)
- Scientific Research Institute for Atmospheric Air Protection (SRI Atmosphere, JSC)
- Siberian Center for Environment Research and Training (SCERT)
- Space Research Institute, Russian Academy of Sciences (IKI)
- Ural State Technical University (USTU-UPI), Ekaterinburg (now part of UrFU)
- V.A. Steklov Mathematical Institute, Russian Academy of Sciences
- Vladimir State University
- V.N. Sukachev Institute of Forest, Siberian Branch, Russian Academy of Sciences
- WWF-Russia
Recent Research Collaborations

Advancing the methods of systems analysis

IIASA’s mathematicians have a long history of collaborating with Russian scientists to advance research techniques. Recent collaborations include:

- Advancing analytical and numerical methods for solving optimal control problems (with the V.A. Steklov Mathematical Institute, RAS; the N.N. Krasovskii Institute of Mathematics and Mechanics, UrB RAS; and Lomonosov Moscow State University)
- Studying the heterogeneous interactions of parts of large socioeconomic systems that function across many sectors and are driven by multiple agents (with Vladimir State University; partially supported by the Russian Foundation for Basic Research)
- Identifying drivers of economic growth, understanding their interactions, and developing new macroeconomic endogenous growth models with social and environmental constraints (with the V.A. Steklov Mathematical Institute, RAS; the N.N. Krasovskii Institute of Mathematics and Mechanics, UrB RAS; and Lomonosov Moscow State University)
- Creating methodologies to better integrate outcomes of different models from multi-model ensembles and applying these methodologies to integrate projections from global climate–economy models (with the Nansen International Environmental and Remote Sensing Centre)
- Exploring optimal exploitation of heterogeneous renewable resources (with researchers at Vladimir State University)

In addition, IIASA researchers recently played key roles in a partnership conference on “Data Intensive Systems Analysis for Geohazard Studies” in Sochi in 2016. This conference was a collaboration between IIASA, the Geophysical Center RAS and the Ministry of Education and Science of the Russian Federation, and was the fifth of a series of meetings dedicated to applied systems analysis. The previous one in Kaluga in 2013 was on “Geophysical observatories, multifunctional GIS and data mining”.

IIASA also co-organizes the Moscow Summer Academy held at Lomonosov Moscow State University. The first three schools took place in 2009, 2011, and 2015, each attracting about 50 students from all over the world.

Russians with recent senior scientific roles at IIASA

Dr. Arkady Kryazhimskiy led IIASA’s Dynamic Systems Program from 2006 to 2010 and IIASA’s Advanced Systems Analysis (ASA) Program from 2011 to 2013.

Dr. Alexey Malovichko, Director of the Geophysical Survey, RAS, was a member of IIASA’s Science Advisory Committee from 2010 until 2015.

Dr. Elena Rovenskaya has been Director of IIASA’s Advanced Systems Analysis (ASA) Program since 2013.

Dr. Svetlana Shanina, of the Institute of Geology of Komi Science, was a member of IIASA’s Science Advisory Committee from 2011 until 2014.

Major General Professor Igor Sheremet, former adviser to the Russian Deputy Prime Minister, now at Bauman Moscow State Technical State University, is a member of IIASA’s Science Advisory Committee from 2014 until 2017.

Dr. Anatoly Shvidenko was Acting Leader of IIASA’s Forestry Program from 2009 to 2011.
Eurasian economic integration

In 2013 IIASA began coordinating an international, interdisciplinary initiative on the challenges and opportunities of economic integration within a wider European and Eurasian space. Since then a series of workshops have discussed and analyzed the critical issues of economic cooperation between an enlarged European Union (EU), the Eurasian Economic Union (EAEU), and countries of their joint neighbors, extending also, where relevant, to key Asian players such as China, the Republic of Korea, and Japan. This could lay the foundations for a broader pan-European/Eurasian Economic Space “from Lisbon to Vladivostok” or even wider integration “from Lisbon to Shanghai.”

To date, the workshops have attracted more than 200 recognized scientists, experts, stakeholders and policymakers from across the globe, in particular, from institutes of the Russian Academy of Sciences, Eurasian Economic Commission, Eurasian Development Bank, European Commission, and other European institutions. Topics analyzed so far include trade policy and non-tariff barriers, labor markets and migration, energy, and transport infrastructure.

The initiative builds on previous activities, including:
- IIASA research into economic transformations (see Research into policy, below); and
- A recent analysis arguing that a closer integration of Russia, its neighbors, and the EU could result in more trade and investment, thereby fostering economic growth in Europe and Russia.

IIASA is also working with the Institute for Agricultural Market Studies on the EU funded project AGRICISTRATE (2014–2016). The project will explore the production potential of the food, feed, and biomass sectors in Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Moldova, Russia, and Ukraine in light of ongoing negotiations on Deep and Comprehensive Free Trade Agreements between the EU, Armenia, Georgia, Moldova, and Ukraine; the accession of Russia to the World Trade Organization in 2012; and the establishment of the Customs Union of Russia, Belarus, and Kazakhstan.

Managing and monitoring Russia’s forests

The forests of Russia comprise almost one fourth of the world’s forest cover, making Russian forests a unique natural phenomenon both nationally and globally. They serve as extremely important refuges for terrestrial biodiversity, are a central component of stability of the biosphere at the continental scale, and a source of numerous ecosystem services essential for human wellbeing.

In 2007 a ten-year project, in close collaboration with the Federal Forestry Agency (Rosleskhoz), resulted in an in-depth assessment of forest productivity and growth. In 2008 the models and...
IIASA’s models, tools, and data

Through intense data gathering, computer modeling, and other advanced research methods, IIASA provides a country’s researchers and policymakers with the essential numbers and tools to select the most effective policies. For example:

- In the last two decades, disastrous fires have occurred in various regions of Russia with increasing frequency. Through the application of various remote sensing instruments, IIASA research shows that the average vegetation wildfire area in Russia for 1998–2010 covered $8.2 \pm 0.8 \times 10^6$ ha, with about two-thirds of wildfires occurring on forest lands. Further research indicates climate change may double the number of fires by the end of the century, increase the number of disastrous fires getting beyond control, and lead to large-scale drying out of forests that is often accompanied by massive insect outbreaks. Models show that these changes will increase current carbon emissions ($121 \pm 28$ Tg C yr$^{-1}$) from Russian forests at least two-fold, turning them from net absorbers of carbon to net emitters and thereby helping to accelerate further climate change.

An integrated analysis of the future facing Russia’s forests revealed to IIASA researchers that implementing sustainable forest management in Russia is the most effective way to avoid a massive loss of forest. Source: Shvidenko A, Schepaschenko D (2013). Climate change and wildfires in Russia. Contemporary Problems of Ecology 6(7):683–692.

Many of the research projects summarized in this Info Sheet draw on analyses from IIASA’s models, tools, and data, including:

- Data and analysis on multiple aspects of the Russian forestry sector (Russian Forests & Forestry Database).
- Projecting future population (Demographic multistate modeling).
- Reducing air pollution and greenhouse gas emissions simultaneously (GAINS model).
- World soil resources (Harmonized World Soil Database).
- Assessing competition for land use between agriculture, bioenergy, and forestry (GLOBIOM model).
- Planning a sustainable energy system (MESSAGE model, Global Energy Assessment Scenario Database).
Projecting Russia’s future population

IIASA demographers study and project the changing composition of population. The Institute’s interdisciplinary setting has encouraged its demographers to research beyond the traditional boundaries of demography and explore how changes in society, economy, and the natural environment influence the health and mortality, migratory patterns, and reproductive behavior of human society.

A recent innovative example of this broader approach has been the development of research methods to project population by level of education. This equips researchers with the tools to explore the implications of different education policies on a country’s future fertility, life expectancy, migration, and population level as well as economic growth, and ability to adapt to climate change. In 2014 IIASA published the first projections of educational attainment by age and sex for 195 countries with Oxford University Press. Findings for Russia project the country’s current population of 143 million to become between 82 and 144 million by the end of the century.

Other studies focus on aging in Russia and include:
- Research into pension age and labor-force participation policies, with a case study on Russia;
- A planned collaboration with the Federal State Statistics Service (ROSTAT), Division on Population and Health Care, on aging in Russia, which follows previous productive collaborations on population and household projections for Russia;
- A planned joint project with Lomonosov Moscow State University on pension reforms and aging;
- The publication of the European Demographic Data Sheet 2012, which compared population projections, life expectancy, and population aging across all European countries, including Russia; and
- An innovative study measuring aging based on remaining life expectancy, people’s health, and cognitive function, among other measures, rather than on chronological age.

In addition, IIASA’s demographers have trained students at Lomonosov Moscow State University in advanced demographic methods and computer applications in 2012 and 2013.

Tackling air pollution and greenhouse gases in Russia

IIASA’s GAINS model is a scientific tool that helps policymakers select a smart mix of measures to simultaneously cut air pollution and greenhouse gas emissions in the most cost-effective way. Working with partners in Scandinavia and the Scientific Research Institute for Atmospheric Air Protection (SRI Atmosphere, JSC) in Russia, IIASA has developed a national version of GAINS for Russia. Subsequent analysis using GAINS-Russia explored the measures and costs of reducing the 2005 air pollution levels by 5 percent by 2020. In addition, training workshops helped develop capacity in Russia to use GAINS Russia to analyze different air pollution abatement strategies, their costs, and their environmental and human health impacts.

IIASA was established in 1972 to use scientific cooperation to build bridges across the Cold War divide and research growing global problems on a truly international scale. Today the soft power of science diplomacy continues to help IIASA member countries through using scientific cooperation to improve international relations, and through international teams jointly researching controversial issues to find consensus such as through integrative assessments of the future for the Arctic or of the economic integration of Eurasia.

In addition, IIASA also maintains its original bridge-building objective through attracting member countries that represent a range of geo-political interests (see full list of IIASA members, back page). For instance, both Russia and the US are members, as are Brazil, China, India, and South Africa. Several key factors also unite all IIASA member countries: their interest in systems analysis, scientific and academic infrastructure, economic stability, and the geopolitical role in future global transitions. With this in mind, IIASA is also exploring closer collaboration with countries in the Middle East, including Iran and Israel.
The Arctic and Russia

As an Arctic country, Russia has a natural interest in Arctic affairs. The global significance of the region has also risen considerably in recent years as the economic potential of the Arctic’s natural resources and new transport routes emerge.

In 2014 IIASA began planning a new flagship project, known as the Arctic Futures Initiative, to conduct a holistic, integrative assessment of plausible futures of the Arctic. The project will use systems analysis to cut across different disciplines and integrate the perspectives of academia, policy, business, and media. It will focus on developing future scenarios for the region and providing insights for decision makers that are independent of any particular country’s interest. Numerous Russian organizations are collaborating and helping to shape the initiative, including:

- Arctic and Antarctic Research Institute (AARI),
- Ministry of Foreign Affairs,
- Russian Academy of Sciences Geophysical Center, Institute of Geography, and Far East Geological Institute,
- Northern (Arctic) Federal University,
- Nansen International Environmental and Remote Sensing Centre, and
- Russian Scientific Foundation.

Other collaborators on the project include researchers and diplomats from Canada, Denmark, Finland, Germany, Greenland, Norway, Sweden, and the United States, and international organizations such as the Arctic Monitoring and Assessment Program (AMAP) of the Arctic Council—of which Russia and the Russian Association of Indigenous Peoples of the North (RAIPON) are permanent representatives.

Other recent studies about the Arctic in collaboration with partners in Russia include:

- A study with the P.P. Shirshov Institute of Oceanology and the A.M. Obukhov Institute of Atmospheric Physics, both at RAS, which found that gas flaring from oil extraction in the Arctic accounts for 42% of black carbon concentrations in the Arctic;
- A case study into the impact on Arctic warming of cutting black carbon emissions from wood burning stoves in Finland; and
- Recommendations for Arctic Ministers to reduce black carbon and methane emissions to slow Arctic climate change.

IIASA’s work is underpinned by high-quality science, which is regularly published in high impact publications. A selection of recent publications is presented here; a complete list can be found in Appendix 5.

Global Energy Assessment and Russia

The Global Energy Assessment (GEA), published in 2012, defines a new global energy policy agenda—one that transforms the way society thinks about, uses, and delivers energy. Coordinated by IIASA and involving over 500 specialists from a range of disciplines, industry groups, and policy areas, GEA research aims to facilitate equitable and sustainable energy services for all, in particular for around three billion people who currently lack access to clean, modern energy. Russia contributed significantly to the GEA: Professor Yuri Kononov, RAS, served as a member of the GEA Organizing Committee and Secretariat; and Russian scientists from the Russian Academy of Sciences, the Center for Energy Efficiency in Moscow, and Gazprom contributed as authors and reviewers.

An earlier energy study explored the feasibility and location of different pipelines from Russia and other CIS countries to deliver natural gas directly to China. Results indicated that a number of proposed pipelines are competitive under the assumptions made and could enter the market within the coming decade.

Selected presentations in Russia by IIASA researchers

- **Serguei Scherbov** “A New Look at Age and Aging” at the Russian Academy of Sciences in Moscow (2015).
- **Alexey Davydov** “Differential and Functional Differential Equations” at the 7th International Conference on Optimal Stationary Cyclic Utilization of Renewable Resources in Moscow (2014).
- **Florian Kraxner** “Where is our Certified Forest? Application of a New Tool for Certification Mapping to the Boreal Forest” at the All-Russian Scientific Conference on Forest Biogeocenoses of the Boreal Zone: Geography, Structure, Functions and Dynamics in Krasnoyarsk (2014).
- **Dmitry Schepaschenko** “Scientific basis of sustainable forest management” at the Institute of Space Research, Russian Academy of Sciences in Moscow (2014).
- **Steffen Fritz** “Citizens as Sensors and the Potential to Gather Vast Amounts of Data: Examples from the Geo-Wiki Project” at the Partnership Conference: Geophysical Observatories, Multifunctional GIS and Data Mining in Kaluga (2013).
- **Pavel Kabat** “Systems Science for Policy Support” at Lomonosov Moscow State University (2012).
- **Arkady Kryazhimskiy** Keynote lecture at the first international conference on Prospects of Coordinated Socio-economic Development of Russia and Ukraine in a European Context in Moscow (2012).
- **Anatoly Shvidenko** Plenary presentation at the International Workshop on the Impacts of Climate Change on Forest and Agricultural Ecosystems and Adaptation and Mitigation Strategies in Krasnoyarsk (2012).
Capacity Building

**Young Scientists Summer Program**

The Young Scientists Summer Program (YSSP) develops the research skills and networks of talented PhD students. Under the guidance of IIASA scientific staff, participants conduct independent research within the Institute’s research programs. Funding is provided through IIASA’s Russian National Member Organization unless otherwise indicated. Since the first YSSP in 1977, 198 Russian students have participated, many going on to highly successful careers: Professor Petr Aven, for example, a former Minister in the Russian Government and President of Alfabank, the largest private bank in Russia, was once a YSSP participant. The following 21 Russian students have taken part in the YSSP since 2008:

**Natalia Borisevich** (YSSP’15 & V.N. Sukachev Institute of Forest, Siberian Branch, Russian Academy of Sciences) estimated the economic value of the ecosystem services provided by specially protected natural areas, showing that good management can result in great economic gains. (Funded by the Petr Aven Fellowship)

**Roman Chechushkov** (YSSP’08 & Ural State Technical University) created a dynamic model to support decisions that are needed to build an efficient technological portfolio.

**Ekaterina Dolgova** (YSSP’08 & Institute of Geography, Russian Academy of Sciences) studied the climate response of different tree species growing at different altitudes in the Caucasus using tree-ring chronologies and long-term meteorological records under the mentorship of IIASA’s forest experts.

**Anastasia Emelyanova** (YSSP’11 & Pomor State University) worked with IIASA demographers to explore aging among the population of the circumpolar territories of Russia. (Funded by the Petr Aven Fellowship)

**Igor Istomin** (YSSP’10 & MGIMO-University) studied the impact of scientific and expert communities on Russian climate change foreign policy and its approach towards international climate change negotiations.

**Alexey Ilin** (YSSP’10 & Lomonosov Moscow State University), under the guidance of IIASA’s system analysis team, explored the modeling of adaptation and mitigation decision-making strategies at the national and local scales.

Many of today’s most pressing challenges extend beyond international borders. IIASA research areas such as climate change, water scarcity, and poverty are affected by multiple factors across the globe. In turn, these global problems have impacts on nations, regions, and continents. Finding long-lasting solutions to these challenges requires scientific expertise that is free from the interests of a single nation. IIASA’s National Member Organizations recognize this need and their investment in IIASA is a contribution to a global public good. The benefit of this contribution is paid back to global researchers, policymakers, and citizens in multiple ways, as the following examples show:

- **IIASA supports the climate change research community by hosting the Representative Concentration Pathways (RCP) database.** The database provides data on greenhouse gas emissions for four different future scenarios that underpin the analysis of thousands of climate change researchers. IIASA also calculated the data for one of the scenarios, all of which have been developed for the world’s most comprehensive analysis of climate change—the Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report.

- **IIASA’s research provides scientific guidance to the Convention on Long-range Transboundary Air Pollution of the United Nations Economic Commission for Europe.** This international environmental treaty between 33 countries has slashed air pollution in Europe, improving people’s health and countries’ crop production. IIASA’s GAINS model guided negotiators and policymakers as they worked on the treaty to identify the most cost-effective approach to cleaning Europe’s air. The negotiators chose the GAINS model not only because of its accuracy and usability but also because it had been developed by an international team with funding from multiple countries, which assured them that the model was nationally unbiased.
Alexander Laletin (YSSP’12 & V.N. Sukachev Institute of Forest) developed a GIS-based model to assess the ecological and economical accessibility of forest resources in the Eniseyskoe forest district of central Siberia.

Oleg Nurmukhametov (YSSP’15 & B.N. Yeltsin Ural Federal University) explored how to get the most out of citizen science by using a machine learning algorithm to increase the reliability of the data produced. (Fund by the Russia Trust Fund)

Sergey Orlov (YSSP’14 & Lomonosov Moscow State University) looked at the question of social status seeking versus fertility in humans.

Askhad Panesh (YSSP’14 & Adyghe State University) examined how the physiological state of individuals affects the dynamics of the population of which it is part.  
(Funded by the Petr Aven Fellowship)

Yulia Pavlova (YSSP’08 & University of Jyväskylä), a Russian national, developed algorithms for use in a model of international environmental agreements and adapted a multilateral negotiation model to provide practical assistance in making decisions about emission reductions. (Funded by the Finnish NMO, the Finnish Committee for IIASA)

Irina Petrenko (YSSP’09 & Vladimir State University) developed a model to explore the optimization of aquaculture production and minimization of pollution resulting from it.

Anton Platov (YSSP’12 & Vladimir State University) explored the optimal rate of exploitation of forest resources.

Alena Puchkova (YSSP’11 & Lomonosov Moscow State University) advanced the research method known as “inclination analysis” and explored how it could help identify tendencies in the world financial system to collapse.

Tamara Shulgina (YSSP’08 & Institute of Monitoring of Climatic and Ecological Systems, Siberian Branch, Russian Academy of Sciences), working with IIASA forest experts, assessed the impacts of climate change on the productivity and carbon budgets of the forests of northern Eurasia.

Tatyana Shutkina (YSSP’11 & Vladimir State University) worked with IIASA forest experts to conduct a comparative analysis of uncertainties in data used in full greenhouse gas accounting and to develop an integrative method to reduce these uncertainties.

Margarita Strelkova (YSSP’09 & Moscow State Forest University) conducted a spatially explicit assessment of the carbon and nitrogen fluxes in terrestrial ecosystems of Russia.

Business can benefit from science through the analysis and knowledge it provides. In turn, science can benefit from business through its experience on the ground and in implementation. IIASA also recognizes that closer collaboration between business and its researchers can increase the impact of the Institute’s work. Not surprisingly, IIASA is seeing a growing number of contracts with commercial partners, including:

- The global insurer, Zurich Insurance Group, began working with IIASA in 2013 to identify and address research gaps on flood resilience and community based disaster risk reduction, demonstrate the benefits of pre-event risk reduction over post-event disaster relief and to improve public dialogue around disaster resilience.
- The German carmaker, Daimler AG, has collaborated with IIASA researchers to assess biofuel potential from marginal and degraded lands in India and Brazil.
- The Brazilian energy company, Petrolero Brasileiro, was one of nineteen sponsors of IIASA’s Global Energy Assessment.
- The research institute of the Japanese carmaker, Toyota, has an ongoing collaboration with IIASA to research measures to reduce ozone emissions in Asia.
- The multinational consumer goods company, Unilever, funded IIASA’s agricultural experts from 2008–2010 to analyze yields and land suitability of key agricultural crops under a changing climate.
- In addition, IIASA is exploring ways that it can work more closely with multinational corporations, including through input to the development of their global sustainable business plans.
**Activities with Member Countries: Russian Federation**

*Alexander Tarasyev* (YSSP'13 & Institute of Economics, Ural Branch, Russian Academy of Sciences), under the mentorship of IIASA's advanced system analysis team, developed a dynamic model to analyze migration flows between Russia and countries of the Commonwealth of Independent States.

*Sergey Timonin* (YSSP'10 & Lomonosov Moscow State University) applied new cartographic methods and other spatial visualization techniques to projections of future population by size, structure and different spatial levels.

*Anna Timonina* (YSSP'11 & Institute for Control Sciences, Russian Academy of Sciences) investigated optimal strategies for the risk management of catastrophic events under the mentorship of IIASA's risk and vulnerability researchers. Based on the quality, originality, and relevance of her research during the YSSP, Timonina was presented the YSSP Mikhalevich Award.

*Victoria Veshchinskaya* (YSSP'12 & Lomonosov Moscow State University) worked with IIASA's evolution and ecology experts to better understand how the extinction of a species can impact the stability of an ecosystem.

Finally, the success of a YSSP study on estimating the nitrous oxide emissions from forest fires in Russia between 1998 and 2010 shows the multinational nature of the program. The YSSP researcher, Austrian-born Stefan Schreier (YSSP'12), was working on his PhD at the University of Bremen, Germany. Schreier’s “extensive uncertainty treatment” and rather novel approach in methodology won him the YSSP Peccei Award and a scholarship to return to IIASA for three months.

**Postdoctoral Program**

Postdoctoral researchers at IIASA work in a rich international scientific environment alongside scientists from many different countries and disciplines. The Institute’s research community helps its postdoctoral researchers develop their research from fresh angles, publish widely in journal articles, and establish their own global network of collaborators. One postdoctoral fellow from Russia has participated in the program since 2008:

*Artem Baklanov* (2014–2016) of the Advanced Systems Analysis Program is analyzing iterated social dilemmas that will help reveal features of stability of interactions, thereby helping individuals learn, though interaction, how to cope with behavioral uncertainty, understand the interests of other individuals, and better adapt to changing social environments.

(PhD from N.N. Krasovskii Institute of Mathematics and Mechanics, Russian Academy of Sciences)

**Other capacity-building activities**

Apart from the three training workshops mentioned elsewhere in this Info Sheet, IIASA has also organized the following training activities:

- Fifty-seven young scientists from 24 countries took part in the Summer Academy on Economic Growth and Governance of Natural Resources at Lomonosov Moscow State University in 2015. This was the third school (2011 and 2009 schools listed below) and participants studied contemporary concepts of the management of natural resources and economic growth and engaged in discussions of methodological and applied challenges in this field. It was co-organized by the University of Oslo, Lomonosov Moscow State University, and IIASA, with funding from the NordForsk-funded GreenMAR project.

- Fifteen international students, along with 29 students from across Russia, attended the week-long international winter school on "Economic Growth: Mathematical Dimensions" in Moscow during January and February 2011. The winter school was jointly organized by Lomonosov Moscow State University, RAS and its V.A. Steklov Mathematical Institute, and IIASA. Several IIASA researchers helped students develop skills to study economic growth using formal mathematical analysis. A similar three-week course held in July 2009 at Lomonosov Moscow State University was equally well attended.

- In 2011 IIASA, the Federal Forestry Agency, the Russian Institute of Continuous Education in Forestry, and partners in Austria organized a seminar for top level regional managers and experts on forest inventory. A similar workshop on new forest management products was held in 2008 at Irkutsk Forest Management Agency.

- Managers from Russian oil and gas companies, including Lukoil, Gazprom Neft, Rosneft, took part in a one-day session on IIASA interdisciplinary research in 2013.
Scientific exchange between IIASA and Russia is facilitated through IIASA staff researching at or visiting organizations in Russia. IIASA researchers holding associate or full positions with universities and research institutes in Russia include:

- **Sergey Aseev** Corresponding Member, Russian Academy of Sciences (RAS); V.A. Steklov Institute of Mathematics, RAS; and Lomonosov Moscow State University
- **Artem Baklanov** N.N. Krasovskii Institute of Mathematics and Mechanics, RAS; B.N. Yeltsin Ural State Technical University
- **Alexey Davydov** Vladimir State University
- **Arnulf Grubler** Elected Foreign Member, Russian Academy of Natural Sciences
- **Victor Kremenyuk** Institute for the U.S. and Canadian Studies, RAS
- **Sergey Orlov** Lomonosov Moscow State University
- **Elena Rovenskaya** Lomonosov Moscow State University
- **Dmitry Shchepashchenko** Moscow State Forest University
- **Anatoly Shvidenko** V.N. Sukachev Institute of Forest, Siberian Branch, RAS
- **Alexey Smirnov** Lomonosov Moscow State University
- **Anastasia Stepanova** National Research University

Other examples of scientific exchange include:

- IIASA has consistently employed over 20 Russian scientists each year since 2008.
- 518 publications have resulted from collaborations between IIASA and Russia since 2008.
- Since 2008 twenty-one doctoral students from Russia have gained international and interdisciplinary research experience from participating in IIASA’s Young Scientists Summer Program.
- Since 2008 scientists and NMO representatives from Russia have visited IIASA over 450 times to attend meetings, workshops, and conferences; IIASA scientists have visited Russia over 200 times.

**Appendices**

The details behind the above facts can be found in the following appendices to this IIASA Info Sheet. The appendices are either attached or available on request from Sanja Drinkovic (drinkovs@iiasa.ac.at):

1. Employees from Russia at IIASA (2008–2015)
4. Travel by IIASA scientists to Russia (2008–2015)
6. Members of the National IIASA Committee for Russia (2016)
Prospects for Future IIASA–Russia Activities

This Info Sheet summarizes recent research collaborations between IIASA and Russia (see Recent Research Collaborations, page 5). Significant potential remains to further intensify IIASA interactions with Russia through developing a range of new joint activities, including:

- **Enhancing Russian expertise in applying system analysis to national problems**
  Developing bespoke Russian versions of IIASA's global models would allow researchers and policymakers to look at complex global problems and their impact on Russia in a holistic and integrated way. For example, IIASA worked with the Dutch government to develop a national version of the IIASA GAINS model. The new model helps Dutch ministries identify cost-effective measures to improve air quality and reduce greenhouse gas emissions in the Netherlands, while complying with the country's obligations under European air quality agreements.

- **Conducting international assessments in areas of Russian strategic interest**
  Russia contributed to IIASA’s Global Energy Assessment, which brought together over 500 specialists to transform the way society thinks about, uses, and delivers energy. At the request of its member countries, IIASA is currently embarking on four new assessments, whose focus will be on issues of strategic interest also to Russia: holistic, integrative assessments of plausible futures for the Arctic; global water challenges; Eurasian economic integration; and tropical forests.

- **New partnerships between IIASA and Russian institutions to win grants from international research funders**
  IIASA's high-quality research and international research network makes it highly competitive in its applications for international research funds. Between 2006 and 2014, IIASA nearly doubled its income by winning research grants that amounted to €69 million. This was part of a total funding portfolio of €329 million of the external projects in which IIASA was and is involved.

- **Using international scientific cooperation to support diplomacy**
  IIASA was established in 1972 to use scientific cooperation to build bridges across the Cold War divide and research growing global problems on a truly international scale. Today the soft power of science diplomacy continues to help IIASA member countries through using scientific cooperation to improve international relations, and through international teams jointly researching controversial issues to find consensus, free from the constraints of national self-interest (see Research to support science diplomacy, page 8). Recently, IIASA has launched a new international project to analyze the prospects for economic integration between Europe and the countries of the former USSR.

- **Academic training opportunities for early-career Russian scientists**
  There is potential to further enhance participation by young Russian doctoral and post-doctoral students in IIASA's programs to develop international and interdisciplinary research skills (see Capacity Building, page 11). Becoming a partner in IIASA’s forthcoming International Postgraduate School of Excellence will be another fine opportunity.
About IIASA

Founded in 1972, the International Institute for Applied Systems Analysis (IIASA) conducts policy-oriented research into problems of a global nature that are too large or too complex to be solved by a single country or academic discipline. IIASA’s research areas are energy & climate change; food & water; and poverty & equity.

IIASA is at the center of a global research network of around 2,500 scholars and nearly 600 partner institutions in over 65 countries. It is funded and supported by its National Member Organizations which represent the scholarly communities in the following countries:

Australia, Austria, Brazil, China, Egypt, Finland, Germany, India, Indonesia, Japan, Malaysia, Mexico, Netherlands, Norway, Pakistan, Republic of Korea, Russia, South Africa, Sweden, Ukraine, United Kingdom, United States of America, Vietnam.

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