

Armenia

Belarus

Georgia

Kazakhstan

Kyrgyz Republic

Russian Federation

Tajikistan

# ANNUAL REPORT 2006

I S T C



M H T Ц

**International Science and Technology Center**



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## GOVERNING BOARD CHAIRMAN STATEMENT



*Dr. Ronald F. Lehman II*

The International Science and Technology Center (ISTC) was created fifteen years ago to provide new, cooperative tools to help prevent nuclear weapons proliferation. As the ISTC completes tasks that address legacies of an earlier era, the Center has evolved into a valuable mechanism that can help to address the global weapons proliferation dangers we face today. If the ISTC did not already exist, this vital and unique inter-governmental organization would have to be created.

Fortunately, the ISTC does exist. And it has been responsive to technological and political change. From the beginning, the Center has been empowered with a broad, forward-looking mandate that permits the Parties to develop new approaches to address the dangers associated with contemporary weapons proliferation.

Programs developed to achieve ISTC's objectives confront weapons proliferation challenges at many levels. Providing innovation for economic growth, public health, and ecological well-being can address some of the fundamental forces that promote proliferation. ISTC supported scientists develop more direct measures through technologies to help prevent or counter proliferation. Throughout, cooperation among scientists with the full involvement of their governments builds common approaches to nonproliferation and provides a measure of openness and trust.

On the technological front, the ISTC has expanded beyond the nuclear mission to deal with chemical and biological weapons proliferation and means of delivery such as ballistic missiles. A desire to reduce the potential of non-state individuals acquiring WMD has been a part of the ISTC focus from its earliest days, but clearly counter-terrorism has become more important in recent years.

To address new priorities, the ISTC has restructured its organizations and processes and will continue to do so to meet new challenges. For example, to obtain a broader realm of cooperation, the ISTC Parties created the Partners program that permits the private sector, whether businesses or non-profit organizations, and specific government entities to fund projects through the ISTC subject to the same oversight as direct government funding.

As part of the transformation of the ISTC to meet the new challenges, a programmatic approach is being refined to focus direct government investment in areas that meet the highest priority nonproliferation needs of the Parties today. The ISTC will continue to welcome a wide range of proposals, but the emphasis will be on selecting projects that focus on areas such as countering WMD terrorism that are considered most urgent.

And the emphasis will increasingly be on selecting the teams best qualified to do these projects. Institutes that have graduated to self-sustaining capabilities would be particularly well suited to these projects. Thus, the ISTC is planning to undertake a major effort to help institutes that can become self-sustaining graduate to this new status so that the transition to full partnership can be expedited.

To support this evolution to sustainability for ISTC beneficiaries, the ISTC has created the groundbreaking Commercialization Support Program, which is generously funded by its Parties and Government Partners and is considering other, complementary approaches, to leverage investments from all the Parties. The transition to full partnership would certainly get a further boost if we can incorporate more host government assistance in the context of the activities channeled through the ISTC. The aura of paternalism that sometimes accompanied the legacy mission of supporting under-funded scientists is disappearing as the transition to full partnership moves ahead.

The challenges of proliferation today are global. The influence of the ISTC on technology and cooperative threat reduction can extend well beyond the boundaries of its members, but the ISTC is not a global organization. It has tailored its size to the interest of its members. Even so, the geographical footprint of ISTC membership has expanded greatly. The ISTC originally was the initiative of just three nations; namely the Russian Federation, the Federal Republic of Germany, and the United States of America. Today, forty countries participate in the ISTC. This year Switzerland will join the ISTC whose most recent new members, Canada and Tajikistan, expanded participation from North America and Central Asia. Political change is also reflected in the ISTC. Germany, a founder of the ISTC, and Sweden, an early member, are now represented through their membership in the European Union.

Mobilizing science to address the dangers of nuclear proliferation is the fundamental objective set by the Parties to the ISTC. Individuals operating through the structure and processes of the ISTC, however, carry out that task. Bringing so many different nationalities and cultures together to act as one has not been easy. It has, however, been a success. The ISTC is fortunate to attract employees of great talent and integrity. We have never been satisfied to rest upon past accomplishments as we seek to achieve and expand upon best practices that meet the highest international standards and after audit suggests that we have made great progress.

As we attempt to press ahead toward greater effectiveness and efficiency, I wish to thank those who have made this possible. The Board Members and their delegations along with representatives from governments have learned to work well together. The Executive Secretariat and Branch Offices carry out most of the day-to-day implementation, but they also inspire a greater strategic vision. In particular, I wish to thank our Executive Director, Norbert Jousten, who permitted an extension of his service to help keep our program on track. Most of all, however, we must thank the many scientists who design our projects or collaborate on them for their contributions to the peace and prosperity of millions of people.

**Ronald F. Lehman II**  
Chairman of the ISTC Governing Board

**ISTC – PURSUING OUR OBJECTIVES**

**NONPROLIFERATION THROUGH SCIENCE COOPERATION**

**The objectives of ISTC are to:**

- Provide former weapons scientists in Russia and the Commonwealth of Independent States (CIS) countries the opportunity to redirect their knowledge and skills to peaceful activities
- Support basic and applied research and technology development
- Contribute to the transition to market-based economies
- Foster the integration of former weapons scientists and engineers from Russia and CIS countries into the global scientific community
- Contribute to solving national and international technical problems

The ISTC coordinates the efforts of numerous governments, international organizations, and private sector industry, providing former weapons scientists from Russia and the Commonwealth of Independent States new opportunities in international partnership. The ISTC is central in the management of these science partnerships. Through its political, legal, and financial frameworks, the ISTC contributes to fundamental research, international nonproliferation programs, and innovation and commercialization by linking the demands of international markets with the exceptional pool of scientific talent available in Russian and CIS institutes.

## EXECUTIVE DIRECTOR STATEMENT



Norbert Josten

In 2006, the management and the staff of the Secretariat worked hard to continue to fulfill our primary mission, which is to support our beneficiary scientists and institutes. The high level of activities pursued throughout the year is reflected in this report. The particularity of this year's annual report is that it presents highlights of the ISTC's activities country-by-country.

As in previous years, the bulk of our activities were related to the management of regular and partner projects, in close coordination with project participants, with our parties, and with our partners. Besides that, we have continued and expanded the array of related activities: training individual project participants; providing opportunities for them to access the immense body of printed journals and other publications in their respective fields of scientific inquiry; facilitating their meetings locally as well as in different countries, with their peers as well as with the businesses that exploit and bring to market scientific results similar to theirs; pursuing their partnering possibilities with private sector entities; undertaking inventories as well as the legal protection of their intellectual property rights; initiating the pre-commercialization of their advanced innovations e.g., by way of verifying models and pilot production.

In sum, we in the Secretariat are "bullish" about the opportunities that we see to fulfill not only the historical mandates set by our foundational treaty documents but to also capitalize upon the diversity of positive changes being made in our funding as well as beneficiary countries.

The in-house accomplishments of 2006 that are worthy of note include:

- The physical move of the ISTC's headquarters from its original premises on the southern outskirts of Moscow to newly-renovated facilities close to the center of the city; a location much more accessible for the many who visit us e.g., project scientists; foreign collaborators; funding Parties and Partners; project auditors and consultants. A specially designed conference room has already accommodated the 39th and 41st meetings of the Governing Board and is in regular use for training and other events.

- Staff changes that involve departures as well as arrivals at the Secretariat. After seven years as the Deputy Executive Director nominated by the European Union and for a number of years prior to that spent in the trenches as a senior project manager Uwe Meyer left the ISTC. His successor is Prof Waclaw Gudowski, who was Professor of Reactor Physics at the KTH-Royal Institute of Technology, Stockholm, Sweden.
- Demonstrations of good efficiency to individual scientists and institutions that we are mandated to help transition into market economies. One tangible manifestation of the Secretariat taking its own medicine is our completion of a major revision to the Project Management Manual that is a critical guide to the prudent and efficient administration of our projects – from their inception to execution and ultimate completion.

We are also well aware that no sensible decision can be made any longer without taking into account not only the world as it is, but the world as it will be. To that effect our parties have encouraged us to undertake a strategic planning exercise and are taking a leading role in its development. We, in the Secretariat, have devoted much time and thought to gathering pertinent inputs as well as proposing a spectrum of options. Starting in June 2006, a Background Paper was prepared and distributed to Governing Board Members forming the basis for Governing Board recognition of the issue and approval to proceed further. A consultative process was then organized to obtain input from key officials from the governments and science communities in Russia and each of the other CIS Recipient Parties, as well as other ISTC stakeholders. An Options Paper, based on this consultative process, was presented to the December 2006 Governing Board Meeting. This paper emphasized opportunities and threats/barriers and included more detailed pros and cons for various options and synthesized a set of options for the Board's further consideration and decision in 2007.

**Norbert Josten**  
ISTC Executive Director

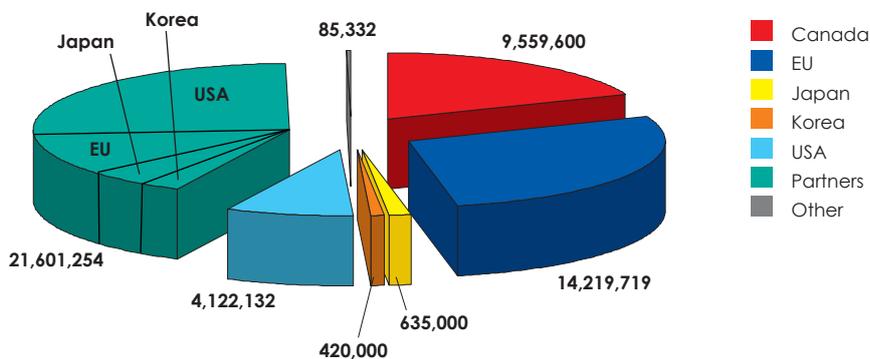
## OVERVIEW OF ISTC IN 2006

To fulfill its nonproliferation mission, the ISTC Parties, Partners, and Project Collaborators contribute financial, in-kind, and human resources to the Center. These resources are used to engage weapons scientists and technical team members in peaceful science projects through ISTC Programs.

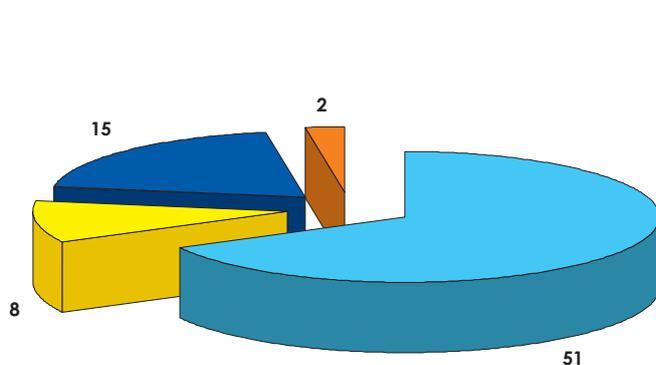
In 2006, the ISTC accomplished:

- New project funding for 182 projects in the amount of \$50.6 million, of which ISTC Partners provided \$21.6 million for 76 projects
- The addition of 51 new Partner organizations to the existing 284 Partners, the highest ever yearly increase of ISTC Partners, which have provided \$224 million in project funding since program inception in 1995.

TOTAL NEW PROJECT FUNDING (\$) IN 2006 BY SOURCE



ISTC PARTNER PROJECT FUNDING (\$) BY PARTY IN 2006



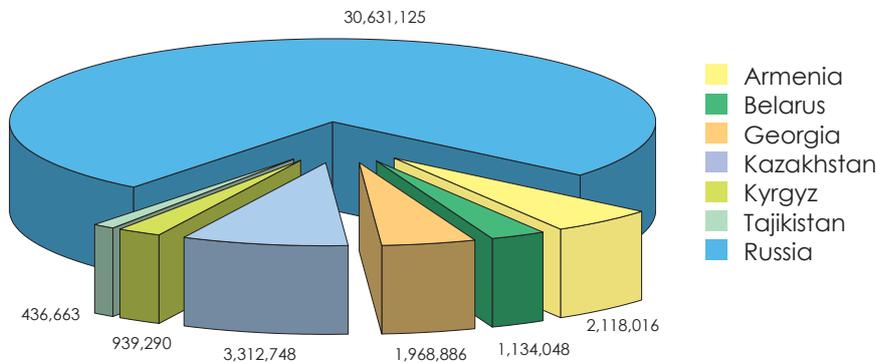
Party	Type	No. of projects, Funded in 2006	Amount 2006
United States	Total	51	18,024,267
	G	48	17,859,982
	NG	3	164,285
Japan	Total	8	680,271
	G	0	0
	NG	8	680,271
European Union	Total	15	2,756,716
	G	8	1,618,484
	NG	7	1,138,232
Korea	Total	2	140,000
	G	2	140,000
	NG	0	0
Total	Total	76	21,601,254
	G	58	19,618,466
	NG	18	1,982,788

G – Government Organizations

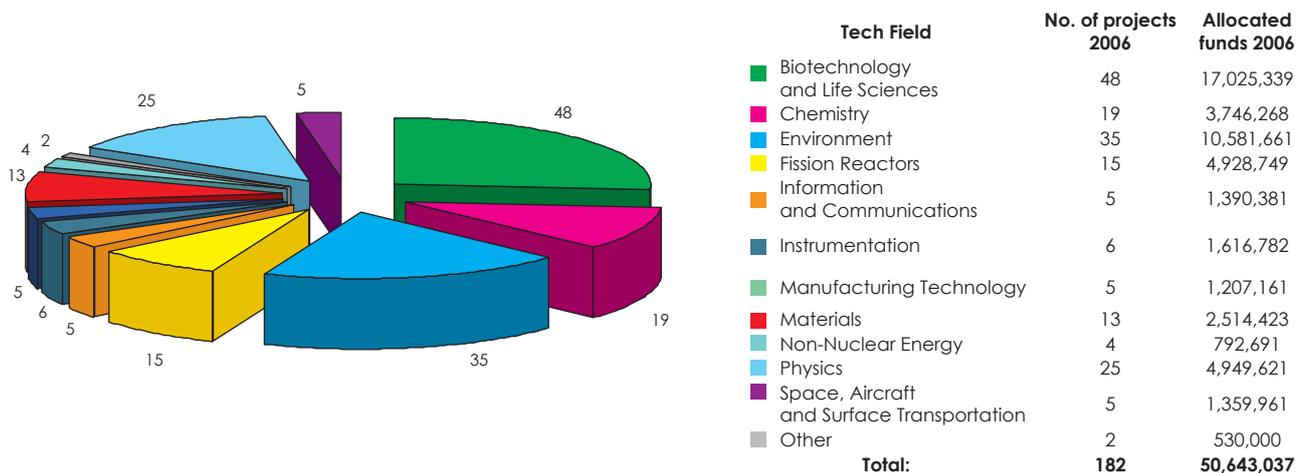
NG – Non-government Organizations

Direct grant payments to 22,062 scientists and their team members, amounting to \$40.5 million

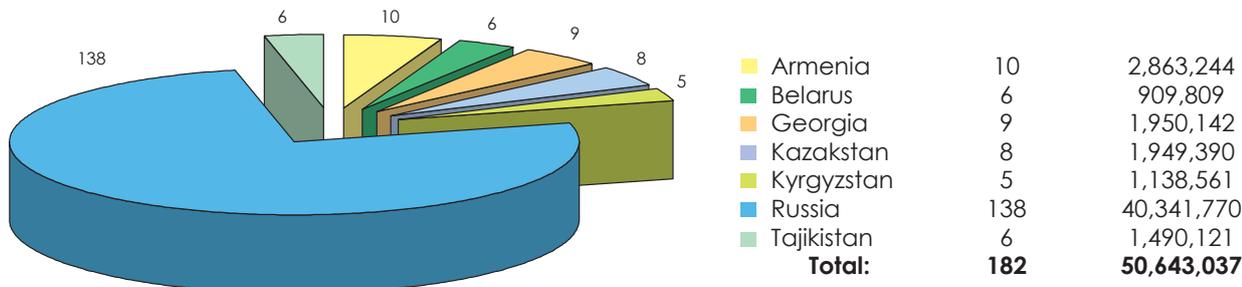
GRANTS PAID IN 2006 BY THE ISTC TO CIS BENEFICIARY SCIENTISTS (\$)



2006 PROJECT FUNDING (\$) BY TECHNOLOGY AREA



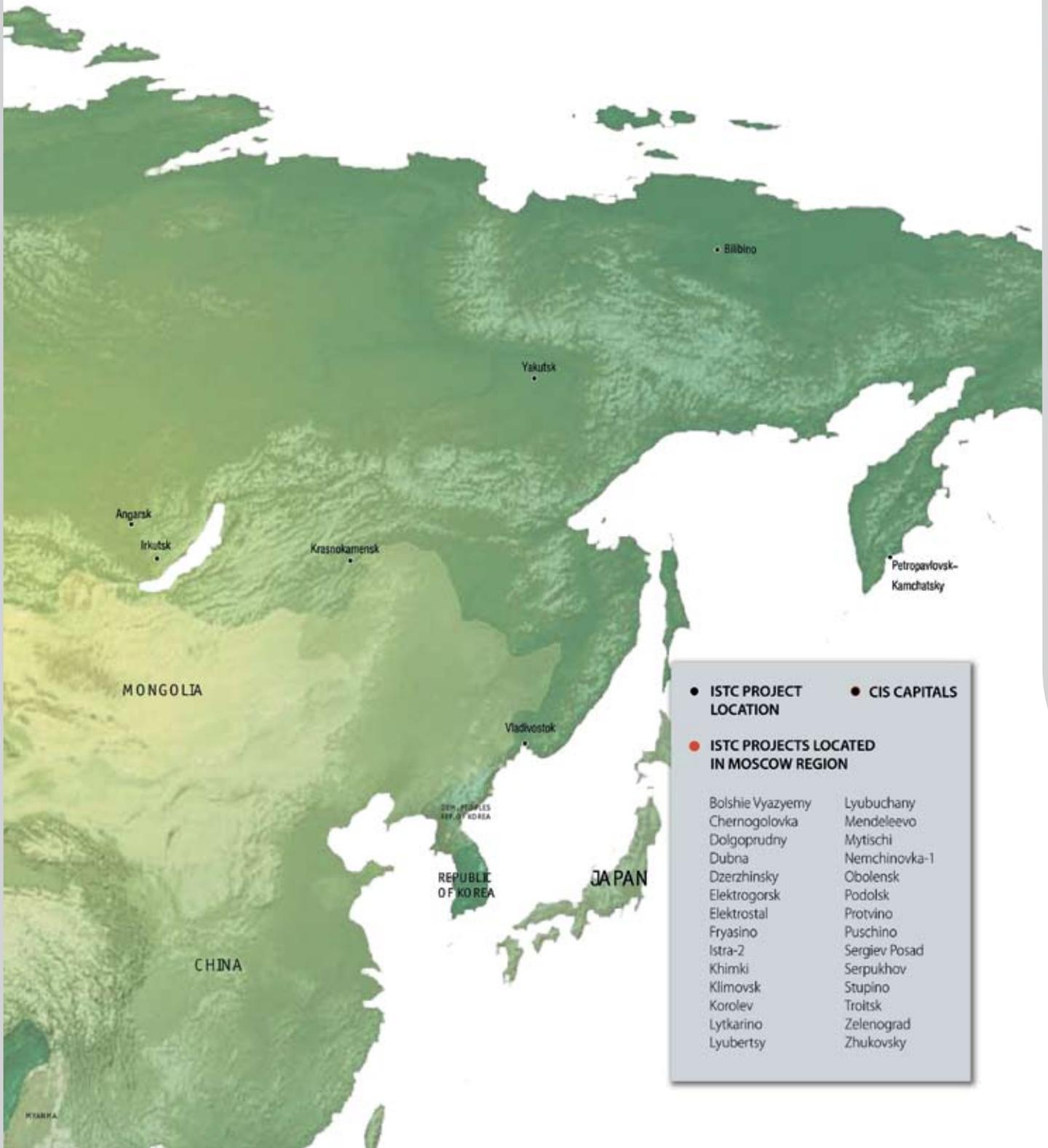
2006 PROJECT FUNDING (\$) BY BENEFICIARY COUNTRY



# LOCATION OF ISTC PROJECTS

6





● <b>ISTC PROJECT LOCATION</b>	● <b>CIS CAPITALS LOCATION</b>
● <b>ISTC PROJECTS LOCATED IN MOSCOW REGION</b>	
Bolshie Vyazyemy	Lyubuchany
Chernogolovka	Mendeleevo
Dolgoprudny	Mytishi
Dubna	Nemchinovka-1
Dzerzhinsky	Obolensk
Elektrogorsk	Podolsk
Elektrostal	Protvino
Fryasino	Puschino
Istra-2	Sergiev Posad
Khimki	Serpukhov
Klimovsk	Stupino
Korolev	Troitsk
Lytkarino	Zelenograd
Lyubertsy	Zhukovsky

# RUSSIA

The Russian Federation is amongst the world's leaders in developing unique high technologies and has proven world-class scientific achievement in many spheres, particularly in biotechnology R&D that continued to attract significant ISTC project funding in 2006. Nuclear fuel cycle technologies, including power plants and fuel assemblies, show Russia as a recognized market leader in this field. The aerospace industry is another Russian strength, demonstrated by Parties' and Partners' interest in seeking access to Russian space technologies, services in land and sea launching of light and heavy satellites, assistance with rocket engine development, and joint work to create and operate orbital stations. The Russian Federation has thus always been the primary beneficiary of ISTC's funding and programs and 2006 activities reflect this focus.

## OVERVIEW

In May 2006, the ISTC Headquarters moved to new premises, formerly the Federal State Enterprise "Red Star", located in the center of Moscow (Krasnoproletarskaya Street). The Headquarters complex has been provided by the Russian Party as an in-kind contribution, and extensively renovated by the ISTC Funding Parties. The complex consists of 2 adjoining buildings comprised of office space for approximately 200 staff. During the official opening, which coincided with the 39th Session of the ISTC Governing Board, the ISTC Parties expressed personal gratitude to Mr. Lev Ryabev and Ms. Lyubov Kondratenkova, official representatives of the Russian Party, for their active role in facilitating the relocation.



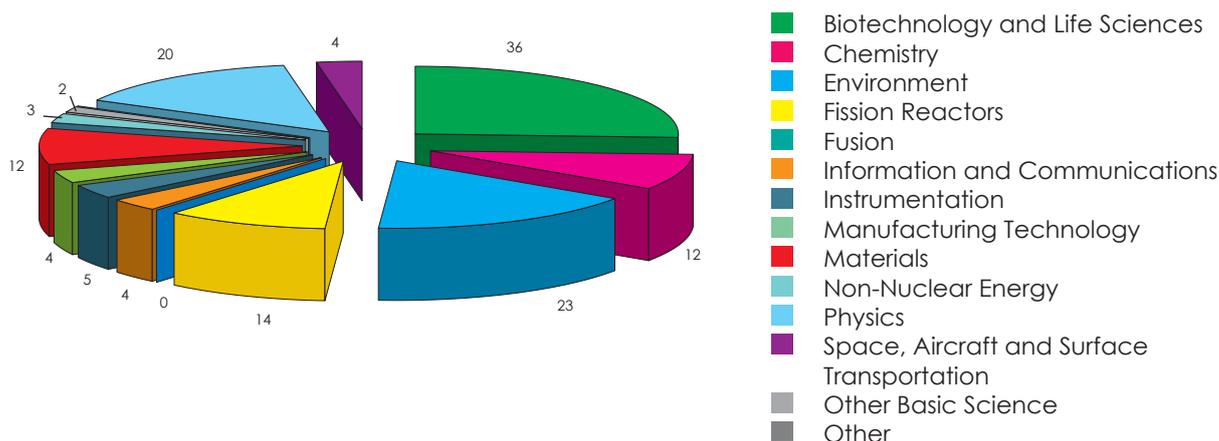
Opening Ceremony of the new ISTC Headquarters in Moscow



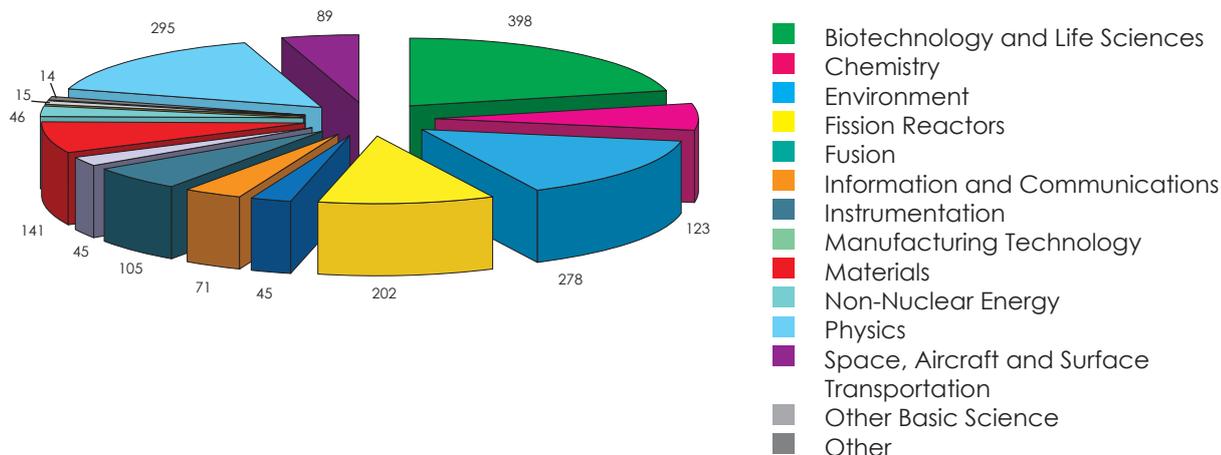
US Ambassador W. Burns (second from right) meets Norbert Jousten, ISTC Executive Director, in the new Headquarters facility.

In 2006, ISTC contributed \$30,631,125 Million in grant payments to Russian Federation beneficiary scientists.

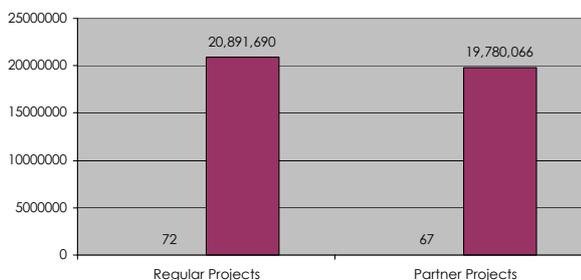
## ISTC TECHNOLOGY AREAS FOR ALL NEWLY FUNDED PROJECTS IN RUSSIA IN 2006



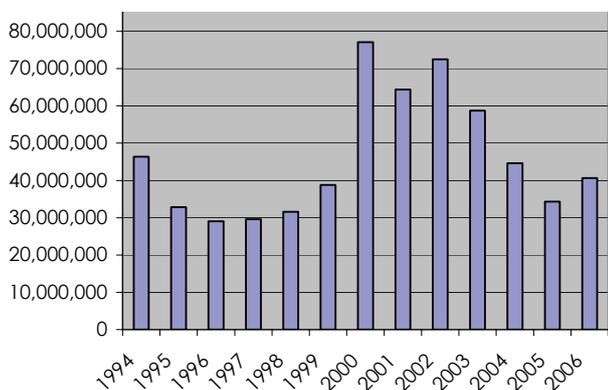
ISTC TECHNOLOGY AREAS FOR ALL PROJECTS IN RUSSIA SINCE 1992



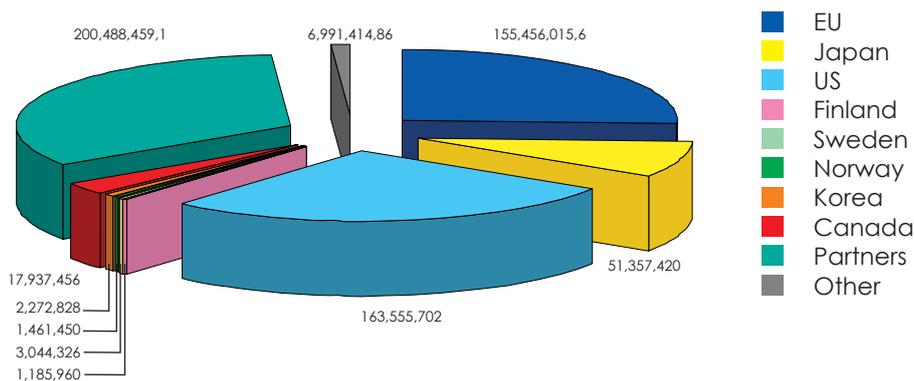
REGULAR VS PARTNER PROJECT NUMBERS AND FUNDING (\$) IN RUSSIA IN 2006



TOTAL FUNDING (\$) FOR PROJECTS IN RUSSIA SINCE INCEPTION



TOTAL PROJECT FUNDING (\$) IN RUSSIA BY SOURCE SINCE INCEPTION



## ISTC ACTIVITIES

The ISTC has been at the forefront of engagement with former Weapons of Mass Destruction (WMD) scientists and engineers in the Russian Federation since its inception almost fifteen years ago. 2006 provided further testimony of ISTC's capacity to promote scientific cooperation and foster technological innovation in creative and constructive ways through a number of collaborative efforts and programmatic activities.

The ISTC Science Project Program is the most comprehensive nonproliferation activity conducted by the ISTC. In 2006, \$40,341,770 was allocated in support of 138 new Regular and Partner Projects in Russia. Funds for Regular Projects are provided by the governing parties through the ISTC, whereas Partner Projects are funded by ISTC's governmental, non-governmental, and private sector partners.

ISTC also contributed \$99,777 for the provision of Information & Technology infrastructure at 3 Russian institutes, including installation of network equipment, protective antivirus software, and training for the system administrators at the 3 institutes, including State Federal Enterprise for Science "Research Center for Toxicology and Hygienic Regulation of Biopreparations", State Research Center for Applied Microbiology and Biotechnology, and Branch of Shemyakin & Ovchinnikov Institute of Bioorganic Chemistry. In addition over \$52,000 has been spent for maintenance, internet service and emergency purposes to three previous beneficiaries of the Communications Support Program.

### **ISTC also assisted Russia's Involvement in Major International Science Projects, such as the Collaboration with CERN.**

The European Organization for Nuclear Research (CERN) located on the border between France and Switzerland is the world's largest particle physics laboratory. In 1995, the Russian Science Strategy Committee for Basic Research, which included 15 western physicists, was established and more than 30 ISTC projects have now been funded with a total budget of \$27 million.

The preparation of the SPL (Superconducting Proton Linac) Project at CERN is built on the cooperative links between CERN and Russia with the involvement of 5 Russian nuclear institutions and laboratories to demonstrate the capability of developing and building in Russia the room temperature accelerating structures of the SPL front-end, Linac4. In particular, it is worth mentioning the successful involvement of the largest Russian nuclear weapon laboratories with CERN: VNIIEF (Sarov) and VNIITF (Snezhinsk), together with three Russian physics and accelerator Laboratories: ITEP (Moscow), IHEP (Protvino), and BINP (Novosibirsk). In 2006, the construction of a prototype of CCDTL (Coupled Cavity Drift Tube Linac) accelerating structure and a technological model of SCL (Side Coupled Linac) structure single cell were completed, and research continues toward starting production of all CCDTL structures for Linac4 in Russia at the beginning of 2008.

### **A NEW BIOSENSOR TO DETECT ORGANOPHOSPHORUS POISONING**

*One of the missions of ISTC is to stimulate and facilitate integration of CIS scientists into the international scientific community through projects of national and international importance. Within ISTC Project #3130 there is close collaboration between the Institute of Physiologically Active Compounds (Chernogolovka), the Chemistry Department of M.V. Lomonosov Moscow State University (Moscow), and their foreign collaborators in the EU and USA, on the development of a smart biosensor system for assessment of the "esterase status" in humans.*

*In the future, medical professionals will be able to use this biosensor to determine*

*whether an individual has been exposed to organophosphorus (OP) compounds, or to establish the sensitivity of an individual to these kinds of compounds. Some highly toxic OPs are chemical warfare agents, but OPs are also widely used as insecticides and herbicides in agriculture, and in medical drugs. This biosensor will provide rapid, sensitive and specific detection of OP exposure of humans in case of terrorist attacks or environmental accidents with pesticides, but will also help in monitoring of workers in chemical weapon destruction facilities or pesticide production facilities. Additionally, the device will enable doctors to establish the correct dose of OP medical drugs for individual patients.*

**Russian Federation (RF) Agencies were also engaged with ISTC's Programmatic Approach**, beginning with a meeting held at ISTC Headquarters in June 2006, which brought together representatives of many Russian Federation Ministries and Agencies whose operations provide similar projects or programs to those carried out by ISTC.

RosCosmos, Russian Academy of Science, and the Russian Ministry of Health (Minzdrav) representatives indicated that many of ISTC's key areas of focus are compatible with their activities and interests, and all representatives encouraged ISTC to work closely with their respective counterparts in RF government agencies to elicit the most benefit from working together on common-interest projects.

RosAtom proposed the creation of a formal body, similar to a council of experts, that could act on the basis of an agreement between ISTC and relevant Russian agencies or organizations, to help coordinate the actions and focus of all organizations in certain thematic areas. ISTC looks to develop this positive initiative in 2007.

**EU-Russian and ISTC cooperation in Space Exploration** was encouraged when experts from the EU and Russia space exploration programs attended a two-day meeting in November 2006, to develop ISTC project work on 'Designing the Lander for a Mars Landing'. ISTC currently supports an EU funded project to develop a 'Mars Lander' and the meeting reviewed results of cooperation to date and shared information on international space exploration programs. Russia is a global leader in the development of space exploration technology and ISTC looks to facilitate a number of international projects in this area. **Space and aeronautics projects are encouraged as part of ISTC's Programmatic Approach.** A new project on lunar space exploration is under development in 2007 as an outcome of the 2006 project results.

**International Science Laboratories (ISLs)** ISLs are designed to link the resources of research institutions and industry in the CIS with those from ISTC Party countries. In 2006, construction was completed on the 'ZOTTO' tower and its auxiliary buildings situated 500km from Krasnoyarsk, which will be used for atmospheric measurements related to global climate change research. All costs and equipment have been granted by the Max Planck Institute for Biogeochemistry in Jena and Mainz, Germany.

**Commercializing R&D** was further enhanced in 2006 with a joint seminar organized by the Competency Building Program with the Russian Science and Innovation Agency (RosNauka) held at the ISTC in December. Fifty RosNauka representatives from technology transfer centers and the Russian regional administration office took part in the seminar, which considered the prospects for collaboration and co-funding of Russian Federation innovation activities. RosNauka presented several promising ideas for possible co-funding of high-tech innovation projects and the two groups agreed upon several areas to explore, initiating joint activities planned for 2007.

**ISTC continued to expand its contacts with other international organizations**, reflecting a continuing emphasis requested by the Funding Parties that ISTC liaise closely with other government or international bodies who work to achieve similar non-proliferation or security goals. The International Atomic Energy Agency (IAEA), and ISTC's sister organization, the Science and Technology Center in Ukraine (STCU) are just two examples of organizations with which ISTC works closely.



NATO Delegation visits ISTC Headquarters

Delegates from the **NATO Parliamentary Assembly Science and Technology Committee**, including two parliamentarians from the Russian Duma, met with ISTC representatives in September at ISTC Headquarters providing an opportunity for NATO parliamentarians to learn more about ISTC scientist redirection efforts and current activities in the fields of nanotechnologies and future energy solutions. Discussions focused on ways to build on previous collaboration with NATO and identify areas of mutual interest.

### Competency Building Successes in Russia

In 2006, approximately 441 Russian participants from Moscow, Novosibirsk, Sarov, Snezhinsk, St. Petersburg, Troitsk, and Ufa institutes passed ISTC distance learning business courses on business plan development and intellectual property. More than 50% of the participants who graduated from these courses have subsequently written or co-written business plans for their organizations. Following the course, scientists presented business proposals to potential donors and investors. More than 30% subsequently received grants or investments from non-ISTC sources as a result. A few highlights are:

- Sergey Antonov from the Institute of Highly Pure Biopreparations, St. Petersburg won the business plan development competition among TEMPO's projects and received a grant from the Civilian Research and Development Foundation.
- After completing an intellectual property course, Rustem H. Bagramov from the Troitsk Institute of Superhard and New Carbonic Materials received two patents.

ISTC's work in the area of business competency and long-distance learning was recognized during the Third International Exhibition on Electronic Education, held in Moscow on May 25-26. A Diploma was presented to the ISTC for outstanding success in the distance learning program category 'Best Corporate E-learning Implementation'. In the Academy of National Economy under Government of RF 40 CIS specialists who are commercialization managers in their Institutes passed the course "Knowledge and Technology Management" among them were 35 specialists from the RF. After the course, each participant presented his own business proposal containing all possible schemes of funding their innovation projects. Some of these business proposals are now in the development stage.



### ISTC Fuel Cell Targeted Initiative recognized by the Russian Government

ISTC was awarded an honorary diploma in 2006 "For its contribution to the development of hydrogen energy" by the Ministry of Education and Science of the Russian Federation and Federal Agency for Science and Innovation. In the field of Hydrogen Economy, ISTC funded almost 40 projects as an integrated element of its Targeted Initiative (TI), for a total of approximately \$ 7 million to date. The TI goal is to build a power plant with the capacity of 5 kW of energy with the capacity to scale up. By the end of 2006, the laboratory prototype was ready for testing.



### ISTC helps to create sustainable jobs in Russia

ISTC provided assistance through the Commercialization Support Program (ComSP) for the Institute for Physics and Power Engineering (IPPE) in Obninsk to establish a pilot line for production of brachytherapy radiation seeds for the treatment of prostate cancer. The IPPE has developed the production technologies for Iodine-125 and seeds through previous ISTC project funding and will produce the seeds in Russia. Seed quality will meet international standards, but will be produced at a cheaper cost. The market in Russia and other CIS countries is expected to reach about 170,000-200,000 seeds per year (\$3-5M) by 2010. ISTC funding will also allow the IPPE to develop plans to target markets in the Russian Federation and CIS, as well as in Europe, the United States, Canada, and Asia. The initiative is also expected to create 40 sustainable local jobs.

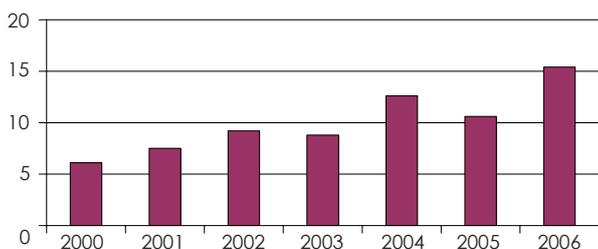
ISTC has also supported an emerging Russian company, located in the largest of Russia's Nuclear Cities, Sarov (formerly Arzamas-16). The Global Test Company was created in 1999 to take advantage of market opportunities for industrial and experimental use of VNIIEF's piezoelectric transducer technology, which was developed through several past ISTC projects. GlobalTest has since grown into a leading designer and manufacturer of dynamic instrumentation components for vibro-acoustic measurements. With ISTC support, GlobalTest will upgrade its infrastructure, expand its production capabilities and start manufacturing a new type of transducer, the AP2000. ISTC support is expected to result in the creation of 50 local permanent civilian jobs.

**Provision of scientific equipment and materials**

A vital part of ISTC achieving its mission is supplying equipment and materials to Russian scientists and institutes in support of their research, to allow them to reach, and often surpass, levels of results exhibited by their colleagues globally.

Procurement activities in Russia in 2006 totaled more than \$15 million and ranged from small

office material purchases to large construction contracts and purchases of sophisticated scientific equipment for institutes and project participants. Moreover, there were nearly 400 customs clearances in Russia in 2006, which included equipment imports and the export of project results for ISTC collaborators and Partners.

**ANNUAL ISTC PROCUREMENT ACTIVITIES (\$ million) FOR THE RUSSIAN FEDERATION SINCE 2000****ISTC'S PARTNERS****Nuclear Cities Initiative**

In 2006, the Nuclear Cities Initiative (NCI), funded by the US Department of Energy, used ISTC Partner projects as the main mechanism for implementing its new activities. During 2006, 450 former weapon scientists participated in 13 projects that were funded by NCI for more than \$4 million. By the close of 2006, at least two NCI Projects have offered promising commercialization results.

**Joining the Global Pharmaceutical Market**

To meet growing demand in the areas of drug discovery programs and pre-clinical studies, Russian/CIS research institutes, with ISTC support, are implementing a number of sustainability efforts to comply with international good laboratory practice (GLP) standards. This support enables institutes to become Contract Research Organizations able to conduct pre-clinical trials of new drugs in line with international GLP standards for pharmaceutical companies. Canadian funding through ISTC was provided to training in GLP standards as one example of this support.

An active ISTC Partner, the US Bio-Industry Initiative (BII) also funded a number of projects in Russian institutes at Pushchino, Serpukhov, St-Petersburg, Koltsovo, and elsewhere. This support included renovation of vivariums, provision of Quality Assurance training at pharmaceutical companies such as Eli Lilly and Co, as well as regular meetings and collaboration with the Regulatory Affairs Professionals Society and the Society of Quality Assurance.

An example of ISTC/BII support is at the Pushchino Animal Breeding Facility (ABF), a unique producer in Russia of specific pathogen-free (SPF) rodents for pre-clinical studies. The ABF is now implementing its own business plan based on local production of SPF high-quality animal feed for laboratory animals in Russia. The plan was developed as a result of an ISTC project for which Charles River Laboratories was a collaborator. In 2006, the ABF successfully implemented the ISO-9001 quality management system and passed an audit by the international certification body.

**Developing Industrial Chemicals Using Green Chemistry**

A team of thirty leading chemists has been working at the State Institute for Technology for Organic Synthesis (GITOS) to develop an environment-friendly Green Chemistry – methodology for industrially used chemicals doing the least amount of harm in the form of decreased wastes and not producing harmful outputs. An ISTC Partner, the US Environmental Protection Agency, funded a project to produce N-Methyl Formamide using green chemistry, a widely used solvent in pharmaceutical synthesis, as well as in catalyst applications and pesticide production.

## SEMINARS AND WORKSHOPS

ISTC's seminar and workshop programs support the integration of former WMD experts in Russia into the international community and promote sustainable cooperation. Goals are pursued through funding provided by Canada, the EU, the United States, and Japan, allowing experts in Russia to interact and exchange ideas with their international science colleagues.

The ISTC organized 23 such science seminars and workshops in Russia during 2006.

Dates	Location	Event
February	Moscow	International Forum "Hydrogen Technologies for Energy Production"
February	Moscow	Law Enforcement Targeted Initiative Workshop
February	Moscow	International Forum "Hydrogen Technologies for Energy Production"
March	Khimki, Moscow region	New Molecular Targets for Drug Design & Discovery
April	Moscow	Biosecurity & Biosafety Seminar for Experts from G-8 Countries
April	Moscow	International Conference "G8 Global Security Agenda: Challenges & Interests. Towards the St. Petersburg Summit"
May-June	Miass, Chelyabinsk Reg	From environment research to ecological technologies
June	Moscow	Modeling Atmospheric Dispersion of Weapons Agents
June	Ul'yanovsk	International Seminar: "Prophylaxis, Diagnostics and Treatment of Diseases Common for Human and Animals"
June	Saint Petersburg	Analysis of Toxic Substances: Method of Development and Applications
June	Saint Petersburg	XII International Conference "Laser Optics -2006"
July	Kirov	Canada-Russia Decontamination Workshop
July	Moscow	Workshop on Spent Fuel and Radioactive Waste Management Technologies
July	Novosibirsk, Akademgorodok	The 3rd International Conference "Genomics, Proteomics, Bioinformatics and Nanotechnologies for Medicine" (GPBM-2006)
July	Novosibirsk	XVI International Synchrotron Radiation Conference (SR-2006)
August	Tomsk	Monitoring of large-scale Atmosphere Changes in CIS Regions
September	Moscow	How Clean is Clean: Setting Decontamination Targets for Chemical Counter-Terrorism
September	Pushino	Preclinical GLP Testing Workshop
September	Saint Petersburg	9th SAC Seminar "New Trends on Positron Emission Tomography: Physics, Radiochemistry, Modeling, Pharmacology and Clinical applications"
October	Tomsk	International Conference "Gallium Arsenide and III-V Group Related Compounds (GaAs-2006)"
October	Saint Petersburg	Clean Energy Workshop 3 "Membrane Technologies in Power Engineering"
November	Moscow	Novel Alternatives to Antibiotics Emerging Team Workshop
November	Moscow	Enhancing Biosecurity & Biosafety: Developing National and International Strategies

### Some examples of ISTC Seminars and Workshops held in Russia during 2006:

#### **ISTC Workshop Highlights Nexus Between Science and Law Enforcement**

The Russian Ministry of Internal Affairs (MVD) was the venue for an ISTC workshop in February to discuss greater collaboration between scientists and law enforcement personnel. The workshop was organized as part of ISTC's Law Enforcement Targeted Initiative (LETI), which further integrates scientific and technological expertise into global security efforts. The two-day workshop included presentations about scientific and technical capabilities at Russian institutes and a tour of MVD's Forensic Science Center. The workshop also provided information about ongoing ISTC projects that enhance detection and forensics activities for law enforcement personnel. In addition to officials from MVD, representatives from Canada, the U.S., the EU, the Russian Academy of Sciences and several scientific institutes participated in the discussions.

#### **Biosafety and Biosecurity Seminar for Experts from G-8 Countries**

This event was held in Moscow together with the Non Commercial Partnership Center of Modern Medical Technology 'TEMPO', and addressed issues related to the benefits and concerns that surround biomedical research. Specific recommendations emerging out of the Seminar were submitted to the G8-Summit held in St Petersburg during July 2006. Over 80 participants attended the seminar, among them Russian participants from 17 organizations and participants from USA, Germany, Canada, Sweden, Japan, France, and the UK. 23 media representatives also attended and significant

media coverage was achieved. A follow-up seminar was held in November and resulted in the creation of an International Advisory Group on Biosafety and Biosecurity.

#### **9<sup>th</sup> SAC Seminar 'New Trends on Positron Emission Tomography(PET): Physics, Radiochemistry, Modeling, Pharmacology and Clinical Applications'**

The ninth in the series of ISTC Science Advisory Committee (SAC) Seminars was jointly organized with SAC and the St. Petersburg State University. The seminar took place under the patronage of the European Association of Nuclear Medicine and was sponsored by SIEMENS Medical Solutions, Erlangen, and by IBA in Belgium.

The seminar, attended by over 150 international participants, focused on technical innovations concerning PET and a wide range of related topics, including: new accelerators for short-lived isotope production, innovative chemistry and radiochemistry, innovations in crystals, detectors and electronics, hybrid systems (PET/CT etc.), new reconstruction algorithms, mathematical modelling, applications for the development of new drugs, clinical applications (oncology, neurology, psychiatry, cardiology).

#### **Decontamination of Buildings and Facilities after Chemical Terrorism**

The July workshop, held in Kirov, considered the development of scientifically grounded standards of surface decontamination after chemical terrorist acts and took place in the context of the international program 'The Chemical, Biological, Radiological and Nuclear Research and Technology Initiative'. Over 60 scientists, specialists and representatives of federal agencies from Russia, Canada, USA, UK, Czech Republic and Poland attended, with all participants being experts on decontamination problems or on development of scientifically established standards of decontamination.

#### **BIO-TREATMENT OF OIL SORBENT**

Today, purification of territories from oil polluted soils and surface water where oil extraction and transportation occurs is a pressing environmental problem. As an example, in the Komi Republic alone, there are 358 lakes that are completely polluted by oil and the area of oil leaks is over 450 km<sup>2</sup>. Consequently, methods of microbiological oil utilization through adsorbents with high adsorbing capacity have become the focus of efforts to try to remedy this environmental problem. ISTC Project #2216, which involved scientists from Kirov, the Institute of Biology in Syktyvkar, and Vector in Novosibirsk, developed and demonstrated a microbial biodegradation carrier complex with natural organic-mineral oil sorbents. This research was a necessary component of establishing efficient and environmentally safe methods of utilizing the used-up adsorbents to reduce the damage caused by oil leaks.



Oil contaminated water area in Usinskiy Region, Komi Republic

# ARMENIA

Armenia has many expert and specialist science and technology (S&T) institutions characteristic of modern and dynamic economies. From important educational institutions to state research institutes to innovative science-oriented firms, there is a strong tradition of S&T in the country. International funding is critical to the survival of science in Armenia as well as to maintaining the wealth of knowledge that Armenian scientists can add to the international community.

## OVERVIEW

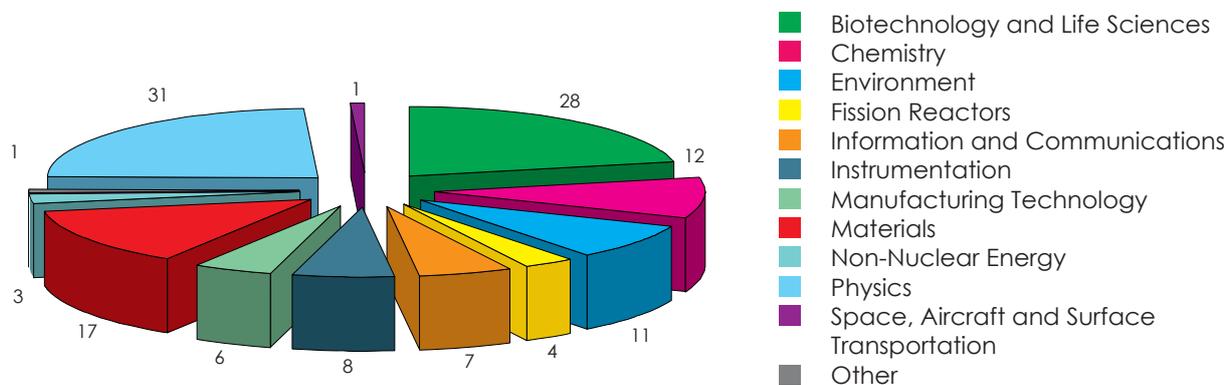
Armenia acceded to the ISTC Agreement in 1994. The Armenian Branch Office played a key role in the success of ISTC activities in Armenia in 2006, including the organization and oversight of the 40th Governing Board Meeting in June. The 3 ISTC staff at the Armenian Branch Office provided more than 200 advice meetings and specific consultations on preparing new ISTC project proposals and work plans, as well as assistance to managers and participants of ongoing projects. Staff also made logistical arrangements for 40 visits involving representatives from the ISTC and the Funding Parties. There were also over 30 customs clearances for equipment valued at more than \$180,000 for institutes and project participants in Armenia.



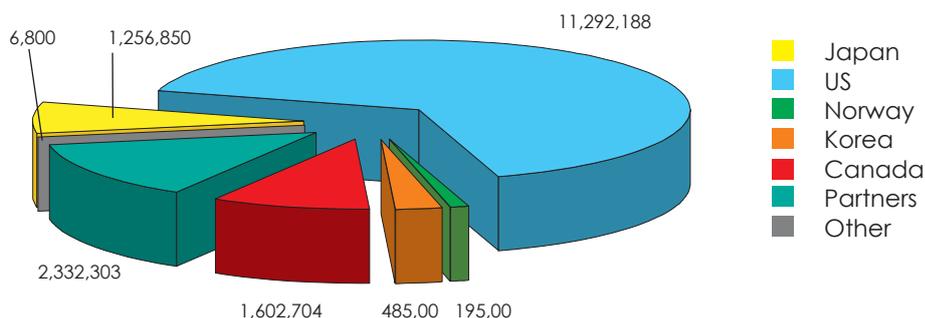
40<sup>th</sup> ISTC Governing Board Meeting in Yerevan

In 2006, ISTC contributed \$2,118,016 in grant payments to Armenian beneficiary scientists.

### TOTAL PROJECTS FUNDED IN ARMENIA BY TECHNOLOGY AREA (SINCE INCEPTION)



### TOTAL PROJECT FUNDING (\$) IN ARMENIA BY SOURCE (SINCE INCEPTION)



## ISTC ACTIVITIES

Armenia was the host of the ISTC Governing Board's 40th "Jubilee" meeting in July. Representatives from 11 ISTC Parties attended the meeting in Yerevan with Canada, the European Union, Japan, Russian Federation, United States of America, and Armenia represented on the Governing Board. Armenia participated as a rotating CIS Board Member. A special meeting was arranged for Governing Board members with the President of Armenia, Mr. Kocharian. In 2006, ISTC formalized the development plans for an ISTC Resource Center in Yerevan by signing an 'Amendment to the Memorandum on Facilities and Location' with Mr. Ruben Djarbashyan, the new President of the National Academy of Science (NAS RA). The Center is located at the premises of the Institute of Geological Science of NAS RA. Oversight of the Resource Center is provided by the Armenia Branch Office of ISTC, and the Center was officially opened on 24 May 2007. Similar to other such Resource Centers successfully operating so far in Russia and the Kyrgyz Republic, the Armenian Resource Center conducts distance education, business training, provides consultancy to project recipients on issues concerning IPR protection, technology transfer, as well as other topics that help scientists to create sustainable employment following the completion of their ISTC project.

## ISTC'S PARTNERS

ISTC Partner, the U.S. Biotechnology Engagement Program (BTEP), funded a project that will provide R&D support to the National Armenia Tuberculosis Program. In line with World Health Organization recommendations, the Armenian Ministry of Health's objectives were to assess and determine the incidences of Multi Drug Resistant Tuberculosis. The Armenian Tuberculosis Program will comprehensively reorganize and decentralize local tuberculosis control services and activities. The new structure will make all tuberculosis patient management and laboratory activities more

robust and modern. Finally, the effort will include a new national tuberculosis-training program for post-graduate medical officers with advanced laboratory training in up-to-date techniques. During a two-day International Conference held in Tsakhkadzor in 2006 in the frame of ISTC project #A-998, a new methodology and Information System in Tuberculosis Surveillance approach application was created.

## SEMINARS AND WORKSHOPS

An international conference on biotechnologies was organized by the ISTC in cooperation with the Institute of Biotechnology in Yerevan in July. 120 scientists from Armenia, Russia, the United States, Holland, Sweden, and Germany, as well as the President of the Academy of Science and Deputy Minister for Science and Education Republic of Armenia attended the conference. More than 50 reports on Biotechnology for medicine, pharmacology, and agriculture were presented and a special ISTC session was organized to highlight results of all ISTC projects in Armenia in the area of biotechnologies. A wide range of problems in the process of technologies commercialization was discussed with a special focus on proper handling of IPR at the Institutes and further implementation of results obtained in the framework of science projects.

An international conference on "New Technologies for Developing Heterosemiconductors for Radiation Detectors" also took place in Yerevan in September. This event was organized by the Institute of Radiophysics and Electronics in cooperation with ISTC and gathered 40 scientists from Russia, Armenia, and Ukraine. Particular attention was given to the review of the advances in the opto- and nanoelectronics fields mainly as applications, such as nanodevices, which are consolidated materials and nanocluster-based materials. Heterosemiconductors are such materials; hence the development of new technologies of production of these elements is a current problem.

## IDENTIFYING THE CAUSES OF HUMAN INTESTINAL DISEASE

*Clinical research facilities around the world are attempting to identify the cause of various human intestinal diseases, such as; Crohn's disease, Familial Mediterranean Fever, chronic colitis, gastritis, and peptic ulcers. Currently, the principle question for these types of gastrointestinal disorders is whether the cause is a specific pathogenic bacteria or whether it is due to an imbalance in the microflora of the intestines. Research performed in the framework of ISTC Project #A-732 (funded by Japan) resulted in strong indications that an imbalance of the intestinal microflora is the cause for several intestinal diseases.*

*In close collaboration with scientists from Japan (Jichi Medical School) and the United Kingdom (Rowett Research Institute), the Armenian scientists characterized the composition of the intestinal micro flora, and significant difference in micro flora were observed between healthy individuals and patients with intestinal diseases. Additionally, as part of the project an E. coli strain was identified with probiotic characteristics, i.e. a bacteria which can assist in restoring the correct microflora balance in patients with gastrointestinal disorders. This probiotics strain has been patented and the participants are looking for a commercial partner which can assist them to bring this product to the market.*

# BELARUS

Belarus has actively been involved in international cooperative programs since 1993. Belarusian scientists in the fields of physics, mathematics, and information technologies carry out nearly a third of all research within international projects. There are around 300 research, design and technology organizations, universities and industrial enterprises involved in research and development in Belarus, with 191 of these organizations based in the capital, Minsk. S&T priorities in Belarus include life and agricultural sciences, environmental protection, information and telecommunications technologies, healthcare technologies, and new energy sources. Research in healthcare and the environment has particularly focused on mitigating the damage from the Chernobyl disaster.

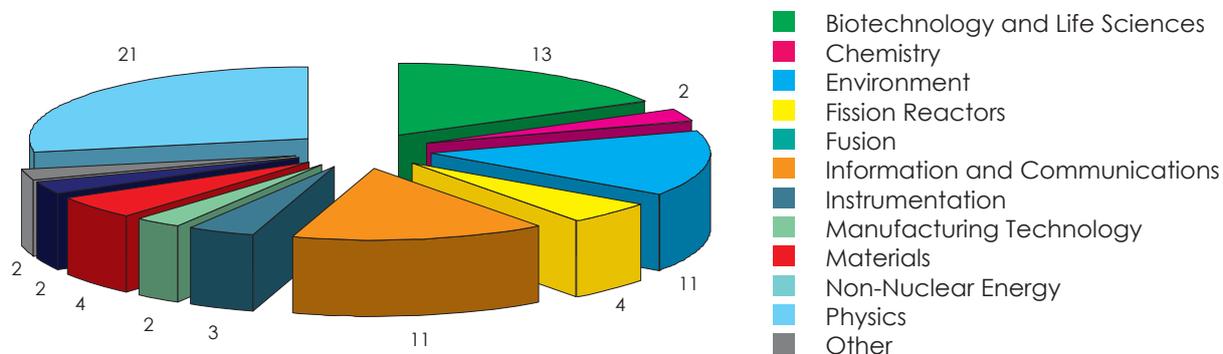
## OVERVIEW

The Republic of Belarus acceded to the ISTC Agreement in 1996. The Belarus Branch Office was subsequently established and has been instrumental in promoting and facilitating ISTC activities in Belarus in 2006. In addition to organizing a number of seminars and presentations, 3 ISTC staff at the Belarus Branch Office provided approximately 600 consultations to scientists and managers in the preparation

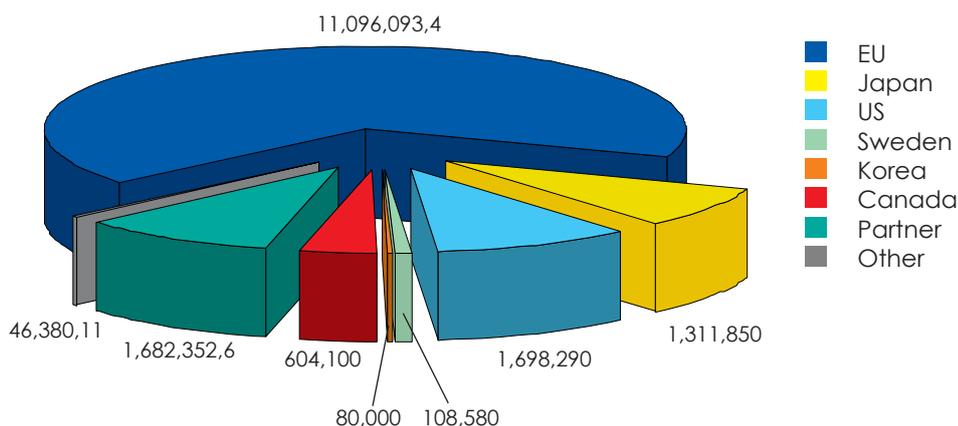
of new ISTC project proposals and participants of ongoing projects. Furthermore, staff made logistical arrangements for 25 visits involving representatives from the Funding Parties and ISTC headquarters staff members. Staff was also responsible for facilitating over 30 customs clearances for equipment valued at more than \$350,000 and designated for institutes and project participants in Belarus.

**In 2006, ISTC contributed \$1,134,048 in grant payments to Belarus beneficiary scientists.**

### TOTAL PROJECTS FUNDED IN BELARUS BY TECHNOLOGY AREA (SINCE INCEPTION)



### TOTAL PROJECT FUNDING (\$) IN BELARUS BY SOURCE (SINCE INCEPTION)



**ISTC ACTIVITIES**

**International Science Laboratory (ISL)**

In June 2004, the first ISL for Optical and Laser Diagnostics (ISL LOD) started operations at the Stepanov Institute of Physics of the National Academy of Sciences of Belarus, Minsk. In September 2005, a final agreement on the ISL LOD was signed and work has since continued throughout 2006.

The S&T program of the ISL LOD is to develop optical/laser-related methods, devices, and systems for the non-destructive:

- testing and quality assurance of products e.g. materials, components, and devices;
- health monitoring of industrial plants and fabrication processes; and
- non-invasive medical diagnostics for broader precautionary public health care and a more efficient clinical therapy

ISTC Project #B-1065, funded by the EU, provided an important basis for this ISL and is nearing completion. At this time, four projects of the German Partner, Fraunhofer Gesellschaft Institute (FhG), are under implementation. Leading German and Belarus experts are cooperating successfully, performing efforts aimed at promoting ISL LOD to potential clients and at initiating new Partner Projects. Four patent applications have been prepared and applied for novel devices for NDT and diagnostics of surfaces of cylindrical or conical shape.

**Developing Alternative Energy Sources**

European estimates suggest that by the year 2020, alternative energy sources will make up 20% of



*A joint Delegation of the European Commission, Fraunhofer Gesellschaft Institute, Germany and a Scientific Council of Jenoptik AG, Jena, Germany to the B.I. Stepanov Institute of Physics of the Belarus Academy of Sciences.*

global energy provision, with solar energy sources providing as much as 7% of the total.

Alongside the development of fuel cell technology, institutes in the CIS, and those in Belarus in particular, are working on advanced solar energy technologies and other alternative forms of energy. ISTC Project #B-1029 is supporting the development of high efficiency solar cells (SC) and solar modules (SM) based on thin films of semiconductor chalcopyrite  $Cu(In,Ga)Se_2$  and  $Cu(In,Zn)Se_2$  compounds.

Project teams from the Institute of Electronics and the National Academy of Sciences of Belarus and the Joint Institute of Solid State and Semiconductor Physics, are working with the most promising materials based on  $Cu(In,Ga)(S,Se)_2$ . Support for the ISTC project is provided by the EU and Canada. Project results in 2006 have meant that the creation of a pilot pre-industrial facility for the production of solar elements, to be based in Belarus, is now under discussion.

**Technology for Isolation of Radionuclide-free Cellulose**

The Institute of Physical Chemical Problems at the State University of Belarus in Minsk was the lead institute in ISTC Project #B-852, which featured a new approach to the rehabilitation of radionuclide-polluted lands. The project was based on a specially developed technology for obtaining pulp and paper products and soil meliorants from the plants grown on contaminated lands. This approach not only minimizes the contamination levels of these areas, but also creates a potential market mechanism for sustainability of decontamination efforts.

The project demonstrated that large reserves of nitric acid missile fuel oxidizer (oxidizer blends) could be utilized since this agent proved to be effective for isolation and bleaching of cellulose. This helps address storage problems, including corrosion and high toxicity, of fuel-oxidized blends when missile systems are removed from the weapon arsenal. This EU-funded project



*Participants of the ISTC Project on radiation-polluted territory «Bartolomeevka», Gomel region*

involved collaborators from institutes in Europe and the United States and patent applications are currently being prepared to further capitalize on the project results.

# GEORGIA

Georgia's climate and geographical location provide opportunities for a wide range of research applications. The environment, biodiversity, climate change, and the management of trans-boundary environmental problems are some examples of promising research and development areas in Georgia. Some sectors of Georgian science, such as mathematics and physiology, continue to enjoy strong international prestige, while many Georgian science and technology institutes are respected worldwide, most notably in the field of bacteriophage research.

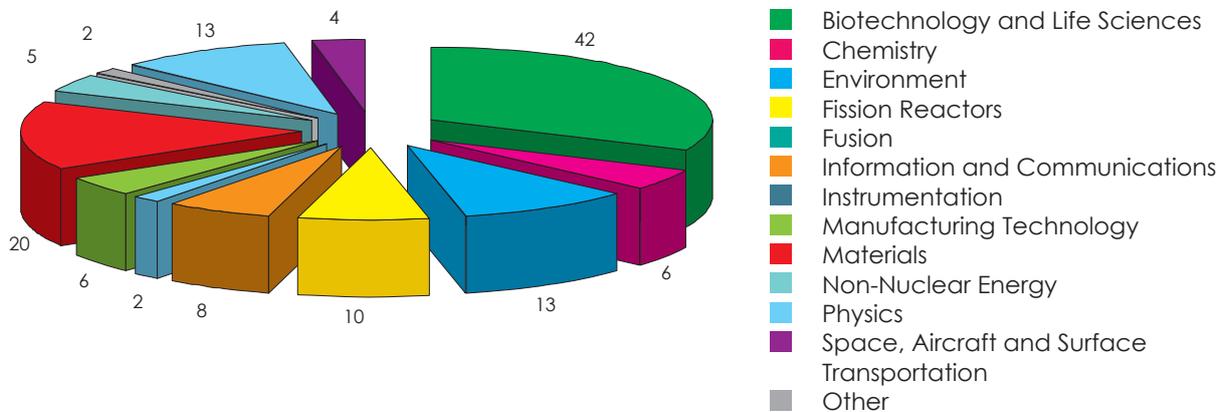
## OVERVIEW

After acceding to the ISTC in 1994, an Information Office was first established in Georgia and operated until 2001 when its status was changed to a full ISTC Branch Office. This office has since played a key role in the success of ISTC activities in Georgia. In 2006, in addition to organizing a number of seminars and presentations, the 3 ISTC staff at the Georgian Branch Office provided more than 100 consultations to managers in the preparation of new ISTC project proposals

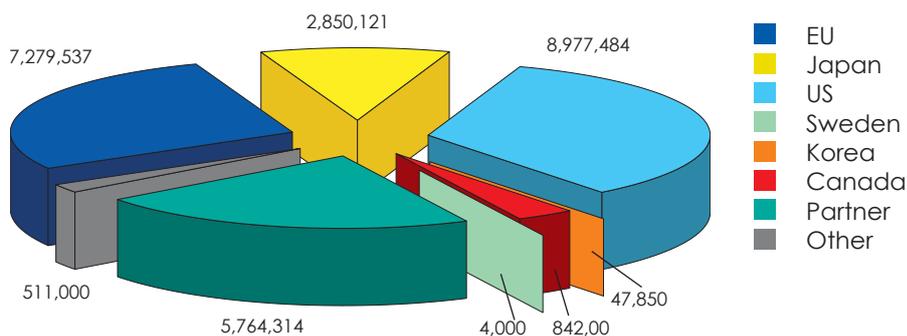
and work plans, while more than 200 individual consultations were provided to managers and participants of ongoing projects. Furthermore, staff made logistical arrangements for 28 visits involving Partners, collaborators and representatives from the Funding Parties. There were also 36 customs clearances for equipment valued at more than \$380,000 for institutes and project participants in Georgia, as well as over 50 local purchases of materials and equipment for over \$130,000.

**In 2006, ISTC contributed \$1,968,886 in grant payments to Georgian beneficiary scientists.**

### TOTAL PROJECTS FUNDED IN GEORGIA BY TECHNOLOGY AREA (SINCE INCEPTION)



### TOTAL PROJECT FUNDING (\$) IN GEORGIA BY SOURCE (SINCE INCEPTION)



**ISTC ACTIVITIES**

**Intellectual Property Rights (IPR) Asset Inventory and Assessment**

An international seminar focused on IPR was held at the Eliava Institute of Bacteriophage in Georgia on March 14-15 and was co-funded by ISTC Partner UK Ministry of Defence. The seminar concentrated on intellectual property issues and outlined both general international and national procedures in handling intellectual property, including handling of IP at the ISTC. As a follow-up to the seminar, an IPR Asset Inventory and Assessment (IPRA), funded by the ISTC's Commercialization Support Program, was initiated at the Eliava Institute in December to help Eliava scientists to prioritize, protect and exploit their most valuable IP. During the IPRA, a team of five experts conducted a thorough examination of Eliava's portfolio of intellectual property, the products, and the processes to organize and protect potentially valuable assets. By participating in this IPRA, the Eliava management gained a more comprehensive understanding of their intellectual property and inventive assets, including the potential commercial value of these assets that could be realized by the Institute. ISTC covered all costs of this initiative.



The Staff of the Eliava Institute of Bacteriophage, Microbiology and Virology near the premises of the Institute.

**Building IT Infrastructure**

ISTC provided Georgian Technical University, Tbilisi and the Institute of Bacteriophage, Microbiology and Virology, Tbilisi with a full network of IT installation and connections at a cost of \$231,010.

**Improving Plant Health and Agriculture in Georgia**

Georgian agriculture suffers from poor crop yields, partly due to fungal diseases. ISTC's Partner, UK Ministry of Defence, with close cooperation with the official collaborator, Central Science Laboratory (UK), (one of the most experienced plant pathology groups in Europe), funded research to address these Georgian agricultural issues. The project aimed to equip scientists in Georgia with technology and information to better assess the risks from a

**ISTC'S PARTNERS**

According to the US Centers for Disease Control and Prevention (CDC), in 2002 the Republic of Georgia had one of the highest incidences of food-borne botulism (0.9 per 100,000). Utilizing funding from the US Bio-Chem Redirect Program, an ISTC Partner, the Department of Health and Human Services (DHHS) Biotechnology Engagement Program funded ISTC Project #G-596 on 'Enhanced epidemiologic and laboratory diagnostic capacity for the control of botulinum intoxication in Georgia' with Nelli Chakvetakze, as project manager. The project is focused on surveillance, diagnostics, proper treatment, home food preservation and canning practices throughout the country. Work to date has resulted in a significantly decreasing trend of botulism incidences due to improvements in the disease monitoring system, diagnostics, training of medical staff, and increased public awareness.

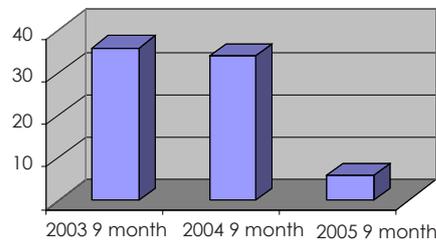


Figure 1. Botulism cases during 2003-2005

**SEMINARS AND WORKSHOPS**

ISTC supported an international workshop "Spin Physics from COSY to FAIR" which was held in September in Tbilisi under the joint auspices of the University of Tbilisi, Georgia and the Research Center Jülich, Germany. Spin Physics is a central issue in hadron physics, both at electromagnetic (e.g. JLAB, HERMES, COMPASS) and hadronic facilities (RHIC, COSY, JINR, RCNP). In the future it will become even more important with FAIR at GSI, in-process PAX project. During the Workshop, attention was given to the new technological and physics ideas/projects connected to Spin Physics, polarized antiprotons being just one of the areas covered. The event also included a workshop-school of young scientists.

range of plant pathogens, especially wheat rusts, and if necessary breed new disease resistant varieties. The project #G-1093 assists the Institute of Plant Immunity (Adjara, Kobuleti) to become a regional center for further research opportunities with other national and international groups. The institute will also collaborate with other institutes in Georgia to share skills developed during the project, and to facilitate aspects of crop production in Georgia.

# KAZAKHSTAN

Kazakhstan is currently encouraging and promoting its considerable scientific potential by developing high technologies, increasing the competitiveness of its goods, and integrating into the world scientific community. The country is focusing on expanding research and development in information technologies and nanotechnologies specifically, while also funding research to study the fundamental bases of space monitoring and geo-information technologies and ways to resolve problems with ecology and rational use of natural resources – especially water supplies.

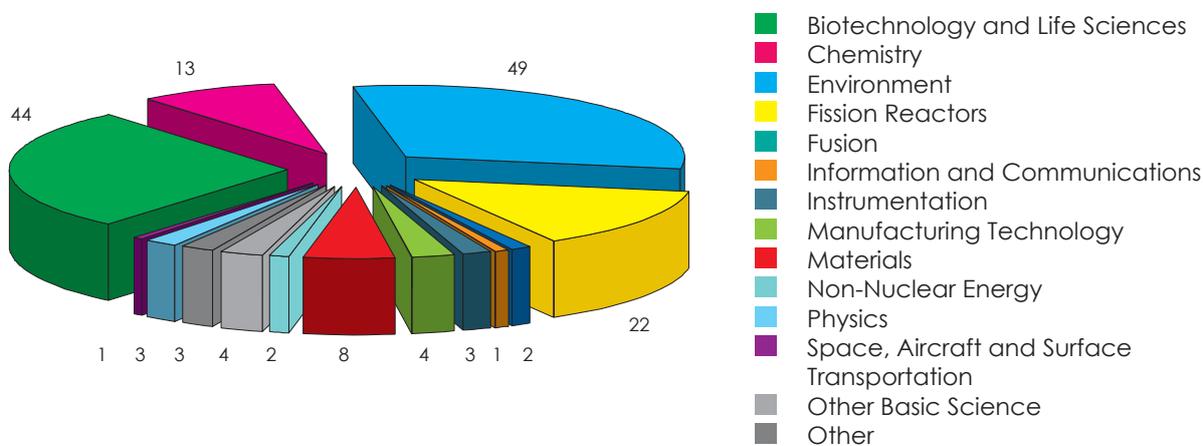
## OVERVIEW

The Kazakh Branch Office was established in 1995 in Almaty and is responsible for ensuring the successful development and implementation of a number of ISTC activities in Kazakhstan. In addition to organizing 18 seminars regarding ISTC project proposal development and programmatic activities, the 3 staff at the Kazakh Branch Office provided over 200 consultations on work plan

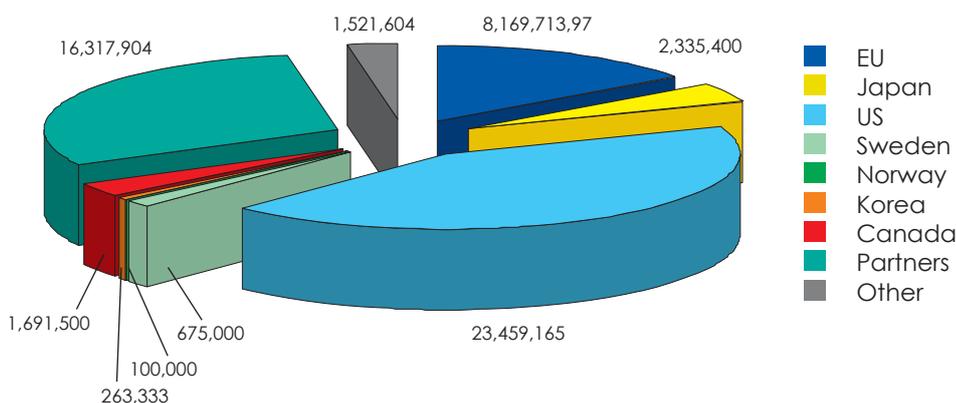
preparations and new project proposals. Staff also made logistical arrangements for over 60 visits from ISTC stakeholders, including 16 visits by Partners and Funding Party representatives, 14 visits by auditors, 12 visits by collaborators, and 23 visits by ISTC staff. There were also 107 customs clearances for equipment and materials valued at more than \$1,250,000 for institutes and project participants in Kazakhstan.

**In 2006, ISTC contributed \$3,312,748 in grant payments to Kazakh beneficiary scientists.**

TOTAL PROJECTS FUNDED IN KAZAKHSTAN BY TECHNOLOGY AREA (SINCE INCEPTION)



TOTAL PROJECT FUNDING (\$) IN KAZAKHSTAN BY SOURCE (SINCE INCEPTION)



## ISTC ACTIVITIES

### Former chemical weapons scientists from Pavlodar, Kazakhstan engage in ISTC Projects

At the beginning of 2004, two ISTC projects were underway at the Pavlodar Chemical Plant in the town of Pavlodar, Kazakhstan. Pavlodar was the town where the former Soviet Republic had started construction on the largest Soviet plant to synthesize Chemical Warfare Agents (CWA). Although the construction was stopped before any CWA was actually made, the town was home to hundreds of CWA specialists. After three years of concerted effort by the ISTC, amongst others, which included funding and organization of workshops, international conferences and the promotion of peaceful science proposals, there have now been 9 completed and active science projects, with a further 7 projects in development or awaiting funding.

## ISTC'S PARTNERS

ISTC Project #K-338 involves collaboration between the U.S. Department of State, the U.S. Environmental Protection Agency (EPA) and the Environmental Monitoring Lab (EML) in Stepnogorsk. During the five-year timeframe of this project, EPA personnel provided training for EML personnel on-site and in U.S. labs. The project reached fruition in 2006 when the EML was awarded ISO 17025 certification by the American Association for Laboratory Accreditation. This internationally recognized certification gives the EML a commercially competitive advantage in Kazakhstan and Central Asia for providing services to monitor industrial production, land and water reclamation, and other environmental aspects, which are rapidly becoming priorities for Kazakh government agencies and companies.



Staff of the Environmental Monitoring Lab in Stepnogorsk, Kazakhstan.

## SEMINARS AND WORKSHOPS

### Biocontainment Design Workshop and Resource Library Initiative

In April, a workshop was organized in Almaty, Kazakhstan, to offer training to former weapons scientists from Kazakhstan, Kyrgyzstan, Tajikistan, and Georgia in the management of containment facilities for dangerous pathogens. Lectures and demonstrations were delivered by Canadian biosafety experts and from the Kazakh Scientific Center for Quarantine and Zoonotic Diseases (KSCQZD). Numerous documents and CDROMs were translated and provided to participants and a large HEPA filter, imported from Canada, was provided to the host institute as part of the workshop. Canada has become a major contributor to biosafety training efforts in Central Asia through its participation in ISTC as a funding Party.

### Toxic Wastes Storage KOSHKAR-ATA and Development of Rehabilitation Actions

One of the most challenging radio-ecological problems in Kazakhstan has been the rehabilitation and restoration of lands at the tailings pond, KOSHKAR-ATA. ISTC Project #K-632 provided a solution to this seemingly intractable problem by making it possible to perform a comprehensive environmental study of the land at the tailings pond and four adjacent territories. The project also facilitated the development of an electronic database and a GIS that is continuously updated.

A primary outcome of the project was the development of substantial proposals for stage-by-stage technical rehabilitation of the land. Two control sites within the project are now also the basis of a special government program to perform



Complex radioecological investigations of tailing pools as well as adjoining settlements and territories.

a full-scale rehabilitation of the tailings pond. The ISTC project was central in raising awareness among state and local authorities on the need to address the rehabilitation problems at KOSHKAR-ATA. In 2007, the Republic of Kazakhstan is allocating \$1 million from the state budget for the first stage of rehabilitation and restoration works at KOSHKAR-ATA.

# KYRGYZ REPUBLIC

The Kyrgyz Republic is currently an active participant in a wide range of international S&T programs. The scientific potential of the Kyrgyz Republic is concentrated in 92 independent scientific and technical organizations, including institutes, universities, and scientific production centers. Kyrgyz science is focused on areas such as information and telecommunication technologies, electronics and problems of applied mathematics, as well as bio-diversity and the environment. Kyrgyz scientists are also at the forefront of research on natural and human-related processes in mountain regions and better methods to forecast natural disasters.

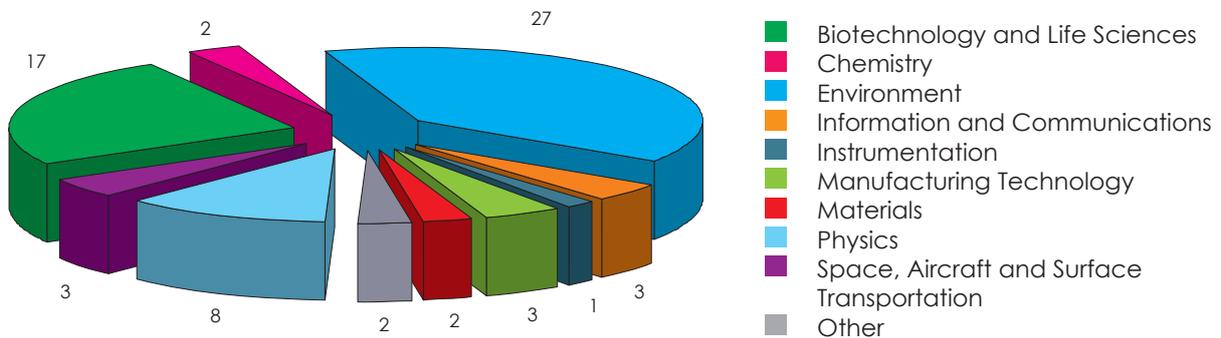
## OVERVIEW

The Kyrgyz Republic acceded to the ISTC in 1995 and at the same time, a Branch Office was established in Bishkek. The office provides a range of services, from helping in the preparation of new ISTC project proposals to raising awareness of new ISTC resources and programs. The Kyrgyz Branch Office was crucial to the promotion of ISTC objectives in the Kyrgyz Republic in 2006, and in particular, provided more than 100 consultations to scientists in the preparation

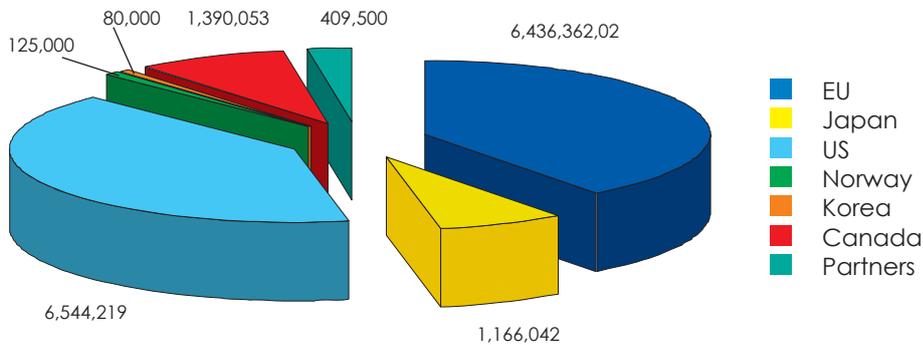
of new ISTC project proposals and work plans, while more than 200 individual consultations were provided to project managers and participants of ongoing projects. Furthermore, staff made logistical arrangements for 28 visits involving representatives from the Funding Parties. There were also over 20 customs clearances for equipment valued at more than \$230,000 for institutes and project participants in the Kyrgyz Republic.

**In 2006, ISTC contributed \$939,290 in grant payments to Kyrgyz beneficiary scientists.**

### TOTAL PROJECTS FUNDED IN THE KYRGYZ REPUBLIC BY TECHNOLOGY AREA (SINCE INCEPTION)



### TOTAL PROJECT FUNDING (\$) IN THE KYRGYZ REPUBLIC BY SOURCE (SINCE INCEPTION)



## ISTC ACTIVITIES

### Building IT Infrastructure

In 2006, ISTC added 3 Bishkek seismic institutes (Institute of Seismology, Institute of Geology, Methodical Seismological Expedition) to the 11 institutes that have already been IT connected by ISTC, at a cost of \$39,570.

The high level of research on ISTC projects was reinforced during the year when Project Manager, Dr. Kamila Asylbekovna Kydralievna and scientific leader, Dr. Sharipa Jorebekova of the Institute of Chemistry and Chemical Technology (NAS – Kyrgyz Republic) received a Kyrgyz Republic State Award for their work on “Innovative Technologies for the use of Coal Wastes and Humic Substances”. This award, signed by the President of the Kyrgyz Republic, was presented by the State Secretary of the Republic, Mr. Adakhan Kumsanbaevich Madumarov, during a special ceremony at the Government House of the Kyrgyz Republic on August 28. Part of this work was performed within the framework of ISTC Projects #KR-156 and #KR-993, which were financially supported by the United States of America and Canada.



*Project Manager, Dr. Kamila Asylbekovna Kydralievna, of ISTC Project #KR-156 and #KR-993 (left) receives the state award from State Secretary of the Kyrgyz Republic, Mr. A. Madumarov on August 28, 2006.*

The scientists were recognized for their research that uses biotechnological methods to transform waste products in coal burning (slag and ash) and sugar production (beet molasses) into a formulation that can be used as bio-fertilizers and soil conditioners in agriculture. This formulation rehabilitates and activates beneficiary microorganisms in the soil, which then releases the necessary minerals in the soils to improve plant growth and increase the autoimmunity of plants. As a result, Kyrgyz farmers will be less dependent on mineral fertilizers and pesticides, and more ecological pure agricultural products will be obtained. This approach will reduce the environmental consequences of pesticides and mineral fertilizers, and it finds new uses for waste products from coal burning and sugar production.

This research is performed in close collaboration with the Russian Institute of Applied Biochemistry and Machine-building Open Joint Stock Company “Biochimmash”, Washington State University, USA, and Canadian University of Saskatchewan scientists.

## ISTC PARTNERS

### Improving Infrastructure for Civilian Mining

Blast Maker, LLC (BM) is a spin-off business started by scientists in the Kyrgyz Republic who had developed a hardware and software system (HSS) to improve the productivity of open pit mining. Using ISTC Commercialization Support Program funding, 18 workplaces were established by the end of 2006. ISTC also supported the company with equipment purchases, travel, IPR protection, exhibition participation and marketing training. The result was an increase in business interest among CIS mining companies for the BM product. A strong business partnership with the renowned mining industry market player and ISTC Partner Maxam Corporation (Spain) helps BM to sell their products, which will be used in the world's biggest iron ore mine in Brazil.

## SEMINARS AND WORKSHOPS

### Central Asian Disease Surveillance Workshop

ISTC organized a regional workshop in Bishkek to enhance knowledge and build capacity in disease surveillance, detection and response efforts in Kazakhstan, the Kyrgyz Republic and Tajikistan. Canada played an important role in the development of this event, with the objective being to raise awareness of current biological proliferation and bio-safety concerns in Central Asia while providing participants with the necessary information and tools to address these concerns.

The Ambassador of Canada to the Kyrgyz Republic attended the first day of discussions and offered a keynote address. Participants in the workshop included directors from key biological institutes in Central Asia, as well as officials from the ministries of Foreign Affairs, Health, Agriculture, and the National Academy of Sciences in each country. Other participants included officials from the United States and Canada, as well as representatives from the World Health Organization, the Food and Agriculture Organization, and non-governmental organizations such as the Soros Foundation and the Nuclear Threat Initiative. The outcome of the Workshop will be the development of a regional strategic plan focused on reducing the threat of disease proliferation.

### **Monitoring Pollution and Climate Forming Gas Species in the Atmosphere over Northern Tien-Shan, Kyrgyzstan”**

As with many mountainous regions worldwide, monitoring of atmospheric composition and climate change in the region of the northern Tien-Shan is a critical issue for the Kyrgyz Republic and neighboring countries of Central Asia. For more than 25 years, one station located at the bank of Issyk-Kul Lake in the mountains of northern Tien-Shan has monitored the ozone layer and greenhouse gases in the central part of the Euro-Asian continent, while providing a critical link in a global network of monitoring stations. Indeed, the results from measurements obtained at the Issyk-Kul station are transferred regularly to the World Data Centers in Canada, Japan and worldwide.

As a result of previous ISTC projects, there has been a substantial modernization and automation of equipment at the Issyk-Kul station, which now provides real-time measurements of stratospheric ozone, greenhouse gases, stratospheric nitrogen dioxide, atmosphere pollution, surface ozone



concentration, and Solar UV-B reaching the ground. ISTC Project #KR-763 built on past project work to enhance optical observations at the Issyk-Kul station in order to forecast the condition of the ozone layer and to evaluate the degree of negative impact of climate change on the environment.

### **Improving Public Health**

In June, the ISTC organized an International Conference 'Problems of high altitude medicine and biology' in the Cholpon-Ata, Issyk-Kul region. The Workshop was co-funded by NATO and ISTC. 137 scientists from the EU, Japan, USA, Peru, Russia, Ukraine, Kazakhstan, Tajikistan and Kyrgyzstan attended the event. Conclusions reflected the need to develop global, regional and sub-regional cooperation in the course of development of an integrated approach to the solution of the problems of biology and medicine encountered by permanent and migrant mountain inhabitants. There was also a recognition that it was necessary to assist in increasing the quality of life and access to high-quality health services for the mountain inhabitants who are presently considered as a

relatively unprotected group of the population.

### **Summer School for Young Scientists**

A Scientific Workshop on Problems of Applied Physics and Information Technologies was held at Issyk-Kul in July. The event was organized by ISTC in cooperation with the National Academy of Sciences of the Kyrgyz Republic (Bishkek), and was attended by 70 scientists from Kyrgyzstan, Kazakhstan, Russia, and Germany. Traditional Summer Schools on Radiation Physics in Kyrgyzstan have obtained wide international recognition and serve as a meeting point for internationally known scientists and young researchers from different countries of the world. In the course of the 2006 Summer School, participants discussed current science issues and established creative contacts.

### **Rehabilitation of Uranium Contaminated Territories in Kaji-Say**

The Kyrgyz Republic has several uranium tailings that are of environmental concern and require near-term attention. Of the five sites where these tailings are located, the smallest, Kaji-Say, site was selected as a pilot site to develop and demonstrate the feasibility and applicability of technologies for reconstruction and rehabilitation. Participants of ISTC Project #KR-1044 focused their efforts on engineering

aspects, design, construction and establishment of an ecological monitoring network. A post construction radiation survey over the entire rehabilitated territory showed that radiation expositions are within permissible levels. The successful result of this pilot project has led to the reconstruction of the Kaji-Say uranium tailings and the rehabilitation of adjacent tailings contaminated territories.



Participants of a working meeting and training under the Navrus project.

### Managing Freshwater Reserves in Central Asia

The scarcity of high quality freshwater reserves has become a serious problem in many parts of the world. This problem has reached disastrous scales for the four Central Asian countries situated in the Aral Sea basin, as fresh water scarcity in Central Asia is intensifying regional tensions among Kazakhstan, Uzbekistan, Tajikistan and the Kyrgyz Republic. ISTC project activities in this region have subsequently focused on ways to promote dialogue and strengthen tools and capabilities in responding to regional challenges.

projects were started in 2006 to address other trans-boundary issues. The three completed projects allowed specialists from the Institute of Nuclear Physics in Kazakhstan, the Institute of Physics in the Kyrgyz Republic, and the Physical and Technical Institute in Tajikistan to create an international trans-boundary database on water quality and quantity in the Aral Sea basin rivers, which is accessible on the Internet for all participating project institutions and governments.

Trans-boundary monitoring and freshwater management are potential solutions to the problem of scarce fresh water supplies in the Aral Sea basin. In particular, the ISTC has been involved in an international program, Navrus, since 2003 and six projects have been financed by ISTC Funding Parties to support this regional objective. Three of these projects, #K-884, #KR-850, and #T-1000, were completed in 2006, while three new



Water sampling under Navrus Project on the territories of involved countries: Kazakhstan, Kyrgyz Republic, Tajikistan and Uzbekistan.

# TAJIKISTAN

Tajikistan is a country located at an important geographical crossroads in Central Asia and has made impressive strides over the last decade in improving its science and technology sectors. Research and development priority areas for Tajikistan include geophysical instrumentation, seismology and earthquake forecasting, alternate renewable energy sources such as solar energy, biotechnology, and lasers and plasma in medicine.

## OVERVIEW

The Tajik Information Office was opened in 2002 when the country acceded to the ISTC, and was subsequently established as a full Branch Office in 2006. Two staff provide support that ranges from consulting with scientists to organizing and supporting events in support of ISTC programs. The Tajik Branch Office was at the forefront of ISTC project and programmatic activities in Tajikistan in 2006 and provided 75 consultations to project managers and participants in the preparation of project proposals and for ongoing projects. Furthermore, staff made logistical arrangements for 36 visits involving representatives from the Funding Parties, ISTC auditors, Partners and collaborators. The Branch Office, which started facilitating customs clearances for the first time in late 2006, processed 7 customs clearances for equipment valued at nearly \$104,000 for institutes and project participants in Tajikistan.

### ISTC Chairman Meets Tajik President

On March 27th, the President of the Republic of Tajikistan, Mr. Emomali Rakhmonov, welcomed Mr.

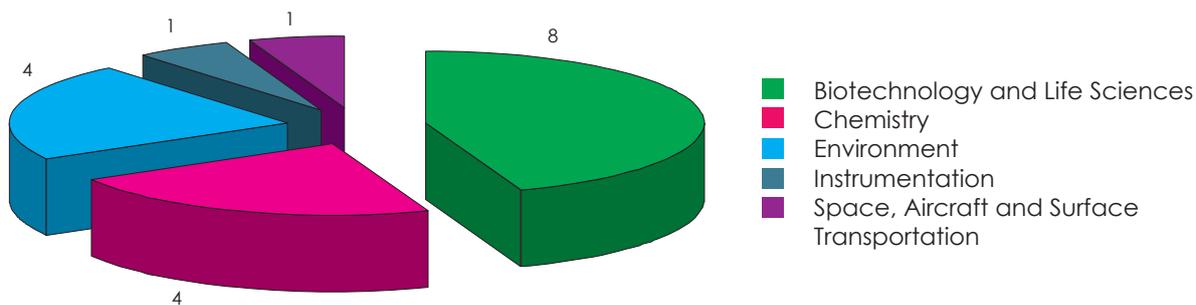


Mr. Emomali Rakhmonov, President of Tajikistan (left) meets Dr. Ronald Lehman II, ISTC Governing Board Chair and Mr. Norbert Jousten, ISTC Executive Director.

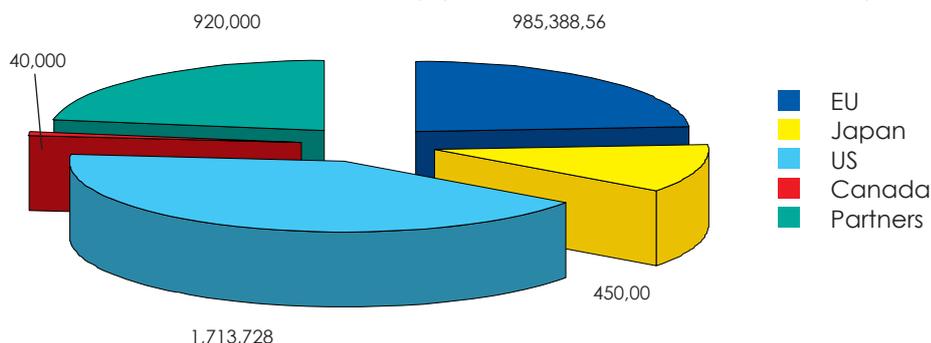
Ron Lehman II, the Chair of the ISTC Governing Board, and Mr. Norbert Jousten, ISTC Executive Director, to Tajikistan. In his opening address, Mr Rakhmonov said, "We highly appreciate the work of the ISTC which plays an important role in the progress of science and further development of the science and technology cooperation on the territory of the former Soviet Union".

In 2006, ISTC contributed \$436,663 in grant payments to Tajikistan beneficiary scientists.

### TOTAL PROJECTS FUNDED IN TAJIKISTAN BY TECHNOLOGY AREA (SINCE INCEPTION)



### TOTAL PROJECT FUNDING (\$) IN TAJIKISTAN BY SOURCE (SINCE INCEPTION)



## ISTC ACTIVITIES

### Building IT Infrastructure

In 2006, ISTC added 8 institutes to a network of 13 previously supported by ISTC in Tajikistan, at a cost of \$206,529. Those eight institutes include the Center for Monitoring of the Environment, Center of State Sanitary Epidemiological Control of Dushanbe, Municipal Infectious Diseases Hospital of Dushanbe, Nuclear and Radiation Safety Agency, Dushanbe, Republican Center of Food Problem, Republican Center of Tropical Diseases, State Unitary Enterprise Disinfection, and the Tajik Institute of Earthquake Engineering and Seismology.

## ISTC PARTNERS

### First-Ever Partner Projects in Tajikistan

The US Department of Agriculture's Agricultural Research Service (USDA/ARS) is one of ISTC's first US governmental Partners, joining the Program during 1999. Since that time, USDA/ARS, a participant in the US BioChem Redirect Program, has funded more than 70 agricultural projects through ISTC in Russia and Kazakhstan and additional projects in Uzbekistan through the Science and Technology Center in Ukraine. Now Tajikistan has been added to ARS's list with two projects, #T-1419 and #T-1420 starting in 2006, and a third that is planned to start in the first quarter of 2007. These projects also represent the first major collaborations USDA/ARS, or indeed any ISTC Partner, has had with Tajik scientists.

## SEMINARS AND WORKSHOPS

### Teaching Commercialization Skills to Tajik Scientists

ISTC's Competency Building Program funded a seminar on commercialization of R&D results in Dushanbe, Tajikistan in October. More than seventy Tajik ISTC project participants took



Academician Mamadsho Ilolov, President of the Academy of Sciences of Tajikistan, welcomes participants of the ISTC Commercialization Seminar.

part in this seminar. As commercialization and IPR policy are not yet fully established in Tajikistan, the seminar presented a detailed introduction of commercialization concepts and processes with added emphasis on intellectual property protection. ISTC project managers presented potential projects for screening and consideration by ISTC's Commercialization Support Program. Leading Tajik specialists presented on various topics such as Tajikistan state policy in commercialization, IPR management, legal and procedure issues in the IP area of the Republic of Tajikistan, and IP protection in Tajikistan.

### Preventing Plague Spread in Mountain Areas of Tajikistan

Although the last plague epidemic in the territory of Northern Tajikistan took place in 1898, the plague pathogenic organism was extracted from rodents and fleas for the first time in 1970 in the canyons of the Hisor mountain range. No epidemiological monitoring has been implemented for over 15 years and there is no data about the real epizootological situation in the at-risk regions. The ISTC supported a project #T-1171, developed by the Republican Anti-plague Station in Dushanbe, to study the epizootological conditions of the area. The data obtained from this study will allow for planning of anti-epidemic and prophylactic measures and the adoption of appropriate measures for local infection warnings.



Ms. Laura Williams, ISTC Deputy Executive Director (US), visits the Anti-Plague Station of the Ministry of Health.

# ISTC STRUCTURE

## Permanent Governing Board Parties



Canada



European Union



Japan



Russian Federation



United States

## Other Parties



Norway



Republic of Korea

## CIS Parties



Armenia  
*(Board Member in 2006)*



Belarus



Georgia  
*(Board Member in 2007)*



Kazakhstan



Kyrgyz Republic



Tajikistan

**The Governing Board** includes representatives of Canada, the European Union, Japan, the Russian Federation, and the United States, plus one rotating seat for a member CIS country, held by Armenia in 2006 and by Georgia in 2007.

**The Coordination Committee** representatives are appointed by the Parties and meet prior to Governing Board meetings to review details of projects to be considered by the Board, discuss coordination of project funding, and exchange views on policy and other issues to be brought before the Governing Board.

**The Scientific Advisory Committee** provides expert scientific evaluation of project proposals and evaluates ongoing projects, as directed by the Governing Board.

### Members of the Governing Board:

<b>Chair (USA)</b>	Ronald F. Lehman II
<b>Canada</b>	Troy Lulashnyk
<b>European Union</b>	Zoran Stancic
<b>Japan</b>	Takeshi Hikiyama, Kozo Honsei
<b>Russian Federation</b>	Lev Ryabev, Vladimir Pavlinov
<b>United States of America</b>	Victor Alessi
<b>Armenia (2006)</b>	Samvel Shoukourian
<b>Georgia (2007)</b>	Natia Jokhadze

### Members of the Scientific Advisory Committee:

<b>Chair (Japan)</b>	Yasushi Seki
<b>Canada</b>	Konstantin Volchek
<b>European Union</b>	Jean-Pierre Contzen, André Syrota
<b>Japan</b>	Yutaka Murakami
<b>Russian Federation</b>	Evgeny Avrorin, Yuri Trutnev
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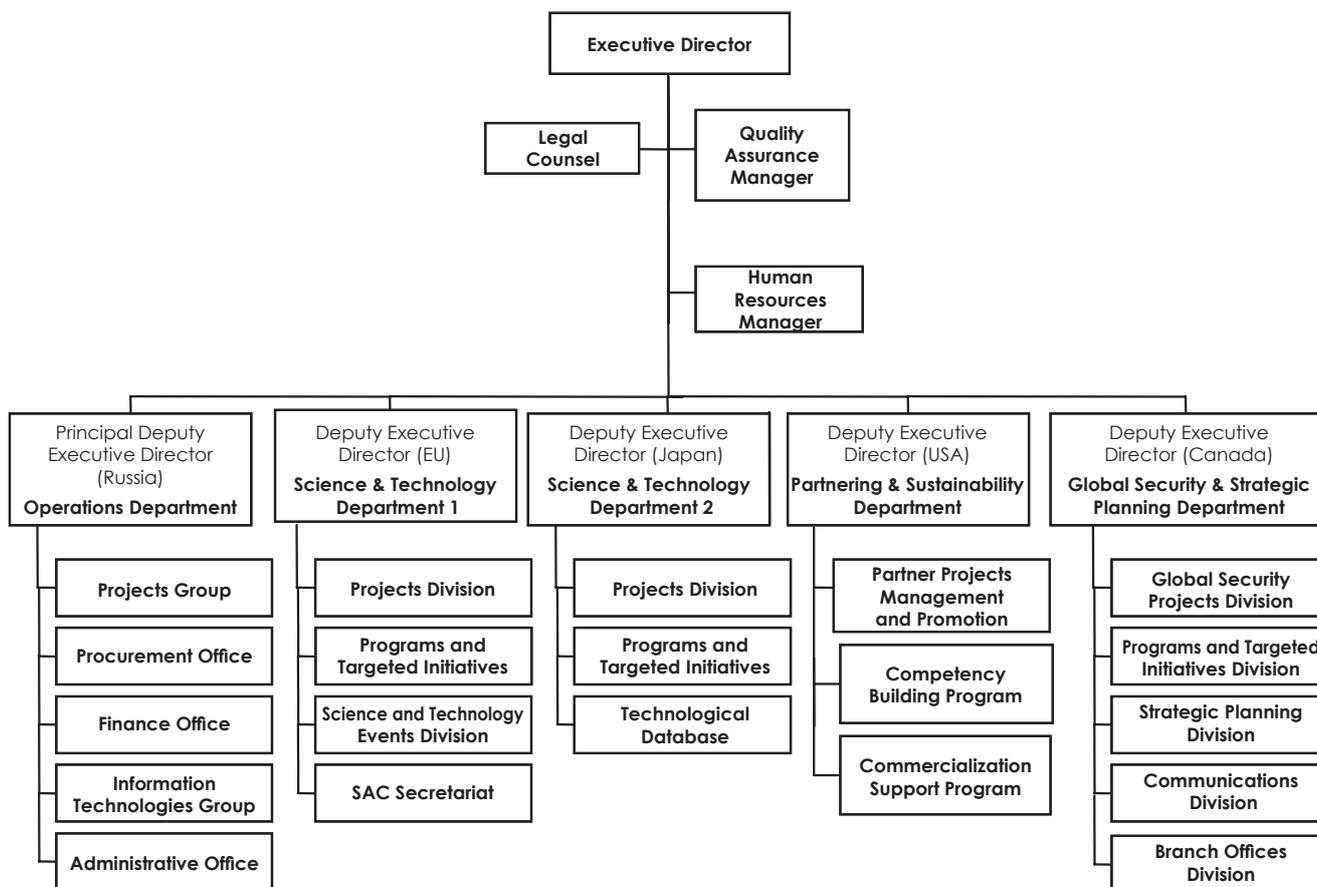
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## GLOSSARY OF MAIN ISTC TERMS AND PROGRAMS

**Bio-safety/Bio-security Program** is aimed at providing additional resources to support various Bio-safety and Bio-security initiatives.

**Commercialization Support Program** is aimed to facilitate and strengthen long-term commercial self-sustainability efforts and job creation by ISTC beneficiaries through promoting marketable products and services.

**Communication Support Program (CSP)** is aimed to support eligible CIS institutes and organizations for building IT infrastructure where existing capabilities inhibit the accomplishment of ISTC projects and the development of commercial opportunities.

**Competency Building Program** is aimed to support former WMD experts and their organizations by providing and improving basic skills needed to create, maintain and develop self-sustainable business and commercialization of technologies.

**Counter-Terrorism Program** is aimed to support activities with respect to counter-terrorism and law enforcement, which are within the mandate of the ISTC and which are not yet foreseen and are not available through existing ISTC activities, such as regular projects.

**Governing Board** is the primary ISTC decision making body, which is made up of representatives from Canada, the European Union, Japan, the Russian Federation and the United States, with one yearly rotating seat for representation of one of the CIS Party.

**Mobility Program** is aimed at providing additional possibilities of direct communication of the CIS scientists with their colleagues from abroad through financing international travels related to ISTC projects and activities.

**Partner Promotion Program** is aimed to attract, initiate and develop active partnerships, networks and Partner projects with private industries, NGOs and Governmental organizations coming from the ISTC Parties.

**Patenting Support Program** is aimed to provide assistance and support in appropriate protection of intellectual property created under regular projects for its effective exploitation.

**Programmatic Approach** is a policy of the ISTC, approved in 2003, which encourages the development of projects along 4 selected or topical areas.

**Science Workshop and Seminar Program** is aimed at promoting the integration of ISTC beneficiary institutions and their former WMD experts into the global S&T community through supporting of various science events.

**Scientific Advisory Committee (SAC)** is an ISTC body that provides expert scientific evaluation of project proposals, determines new directions for project activity, and evaluates ongoing projects. SAC recommendations are considered further on by the Governing Board.

**Scientific Subscription Initiative** is a new program launched in 2006 to provide electronic access to internationally known scientific journals, publications and information services.

**Technologies Database Program** is intended to establish information exchange infrastructure concerning research activities and their application potential in Russia and the CIS countries.

## ANNEX 1

## PROMOTING CIS SCIENCE AND TECHNOLOGY

ISTC carries out a range of promotional activities to inform the international private and public science and technology sector on R&D or late stage technology opportunities that are available through working with the ISTC and former weapons scientists in Russia and the CIS. These activities include participation at major international trade shows, scientific and technological exhibitions or conferences, the organization and funding of sector specific science exchange workshops and targeted company visits. The ISTC also undertakes media advertising and the promotion of its services via the ISTC website, Partner Newsletter and the creation of sector or event specific general promotional materials, such as CD-Roms, brochures and this Annual Report.

ISTC's Science Workshops and Seminars Program, together with parallel Supplementary Budget focused activities, assist the integration of former Soviet Union WMD experts into the international S&T community and to engender sustainable cooperation both during the lifetime of an ISTC project and beyond.



ISTC presence at Bio-Europe 2006, Germany.

Canada, the European Union, the United States, and Japan fund these activities and in 2006, ISTC supported or organized 41 such events in Russia and other ISTC – member states of the CIS including 7 events in Canada, the European Union and the United States.

## ISTC INVOLVEMENT IN PROMOTIONAL EVENTS AND SCIENCE WORKSHOPS / SEMINARS IN 2006

Date	Title	City / Country
21.01.2006 – 25.01.2006	CDC Symposium Support Initiative	Atlanta, USA
30.01.2006 – 31.01.2006	Bio Asia Partnering Conference 2006	Tokyo, Japan
31.01.2006 – 03.02.2006	The 3rd All-Russian Seminar "Fuel Cells and Fuel Cell Based Power Plants" with international attendance	Ekaterinburg, Russia
03.02.2006 – 05.02.2006	Bio Partnering North America	Vancouver, Canada
06.02.2006 – 10.02.2006	International Forum "Hydrogen Technologies for Energy Production".	Moscow, Russia
08.02.2006 – 09.02.2006	Law Enforcement Targeted Initiative Workshop	Moscow, Russia
13.02.2006 – 14.02.2006	Clean Energy Workshop 1 – Canadian-Russian Workshop on Hydrogen Technologies	Moscow, Russia
28.03.2006 – 30.03.2006	New Molecular Targets for Drug Design & Discovery	Khimki, Moscow region
29.03.2006 – 31.03.2006	Globe 2006 – 9th Biennial Trade Fair and Conference on Business and the Environment	Vancouver, Canada
09.04.2006 – 12.04.2006	Bio2006 / Annual International Convention	Chicago, USA
18.04.2006 – 19.04.2006	Biosecurity & Biosafety Seminar for Experts from G-8 Countries	Moscow, Russia
20.04.2006 – 22.04.2006	International conference "G8 Global Security Agenda: Challenges & Interests. Towards the St. Petersburg Summit."	Moscow, Russia
24.04.2006 – 28.04.2006	International Industrial Hanover Fair / Hannover Messe	Hanover, Germany

Date	Title	City / Country
24.04.2006 – 28.04.2006	Biocontainment Design Workshop and Resource Library Initiative	Almaty, Kazakhstan
23.04.2006 – 27.04.2006	Society for Quality Assurance 22nd Annual Meeting	Phoenix, AZ, USA
27.04.2006 – 28.04.2006	"Advanced Sensor Technologies for Life Sciences and Safety"	Dresden, Germany
02.05.2006 – 07.05.2006	1st International Conference: "Traditional Medicine and Dietology – A way to Caucasian Longevity"	Tbilisi, Georgia
08.05.2006 – 09.05.2006	TechConnect Summit 2006	Boston, MA, USA
10.05.2006 – 11.05.2006	ISTC-UK-Russian/CIS Joint Workshop "Infectious Diseases and New Energy Sources"	London, England
14.05.2006 – 17.05.2006	CIM Mining Conference and Exhibition	Vancouver, Canada
22.05.2006 – 26.05.2006	ISTC seminar on commercialization of R&D results for GITOS	Saratov, Saratov reg., Russia
29.05.2006 – 01.06.2006	From environment research to ecological technologies	Miass, Chelyabinsk reg., Russia
05.06.2006 – 08.06.2006	Photonics North 2006	Quebec City, Canada
05.06.2006 – 08.06.2006	Problems of high altitude medicine and biology	Cholpon-Ata, Issyk-Kul region, Kyrgyz Republic
06.06.2006 – 08.06.2006	29-th Arctic and Marine Oilspill (AMOP) Technical Seminar	Vancouver, BC, Canada
05.06.2006 – 09.06.2006	7-th All-Russian Conference "Fluorine Chemistry" (devoted to the centenary anniversary of outstanding chemist Professor I. L. Knunyants)	Moscow, Russia
06.06.2006 – 08.06.2006	9-th International Conference "Material Issues in Design, Manufacturing and Operation of Nuclear Power Plants Equipment" and 4-th Meeting of ISTC-EU Contact Expert Group (CEG) on Plant Life Management ("PLIM")	St Petersburg, Russia
06.06.2006 – 07.06.2006	EU—Russia: Prospects for Cooperation in Biotechnology in the Seventh Framework Programme	St Petersburg, Russia
08.06.2006 – 08.06.2006	Electric Resources in Chemistry	Moscow, Russia
13.06.2006 – 15.06.2006	Exhibition of Innovation Achievements within Xth International Economic Forum	St Petersburg, Russia
19.06.2006 – 21.06.2006	Advanced Manufacturing Technologies Workshop (AMT 2006)	London, Ontario, Canada
19.06.2006 – 21.06.2006	The 3rd International Conference on Science and Business: International Cooperation in Biotechnology, Expectations and Reality	Pushchino, Russia
19.06.2006 – 20.06.2006	Analysis of Toxic Substances: Method of Development and Applications	St Petersburg, Russia
19.06.2006 – 22.06.2006	Modelling Atmospheric Dispersion of Weapons Agents	Moscow, Russia
20.06.2006 – 23.06.2006	International Seminar: "Prophylaxis, Diagnostics, and Treatment of Diseases Common for Human and Animals"	Ul'yanovsk, Russia
26.06.2006 – 30.06.2006	12th International Conference "Laser Optics 2006"	St.Petersburg, Russia
27.06.2006 – 29.06.2006	Euro-Biotech Forum 2006	Paris, France
27.06.2006 – 27.06.2006	Innovation Forum of Rosatom	Moscow, Russia
01.07.2006 – 15.07.2006	International Conference "Advanced Biotechnologies: potential of development in Armenia"	Yerevan, Tsakhkadzor, Armenia
02.07.2006 – 10.07.2006	2-nd International Young Scientists' School "The interaction of hydrogen with structural materials; research techniques and processing of experimental data"	Petrozavodsk, Russia
03.07.2006 – 07.07.2006	Fifth International Colloquium on Pulsed and Continuous Detonations	Moscow, Russia
03.07.2006 – 07.07.2006	The 4-th International Congress "LOW AND SUPERLOW FIELDS AND RADIATIONS IN BIOLOGY AND MEDICINE"	St Petersburg, Russia
11.07.2006 – 15.07.2006	Advanced Biotechnologies: perspectives of development in Armenia	Yerevan, Armenia
12.07.2006 – 16.07.2006	The 3rd International Conference "Genomics, Proteomics, Bioinformatics and Nanotechnologies for Medicine" (GPBM-2006)	Novosibirsk, Novosibirsk reg., Russia
17.07.2006 – 21.07.2006	"XVI International Synchrotron Radiation Conference" (SR-2006)	Novosibirsk, Novosibirsk reg., Russia
19.07.2006 – 21.07.2006	Workshop on Spent Fuel and Radioactive Waste Management Technologies	Moscow, Russia
21.07.2006 – 28.07.2006	The 25 International Symposium "Rarefied Gas Dynamics" (RGD)	St Petersburg, Russia
24.07.2006 – 25.07.2006	Kyrgyz Disease Surveillance Strategic Plan Workshop	Issyk-Kul, Kyrgyzstan
24.07.2006 – 30.07.2006	Scientific Workshop on Problems of Applied Physics and Information Technologies (SCORPh – 2006)	Issyk-Kul, Kyrgyzstan
25.07.2006 – 26.07.2006	Canada-Russia Decontamination Workshop	Kirov, Russia
15.08.2006 – 19.08.2006	Workshop "Monitoring of large-scale atmosphere changes in CIS regions: co-operation of the international measuring networks AERONET, EARLINET, AD-Net, NDSC, as well as scientific groups in CIS"	TBC, Irkutsk reg., Russia

Date	Title	City / Country
03.09.2006 – 06.09.2006	International Workshop: "Commercial and Pre-commercial Cell Detection Technologies for Defence against Bioterror – Technology, Market and Society"	Brno, Czechia
04.09.2006 – 08.09.2006	"Spin Physics from COSY to FAIR"	Tbilisi, Georgia
10.09.2006 – 15.09.2006	2nd International Congress on Radiation Physics and Chemistry of Inorganic Materials, High Current Electronics, and Modification of Materials with Particles Beams and Plasma Flows	Tomsk, Tomsk reg., Russia
11.09.2006 – 13.09.2006	How Clean is Clean: Setting Decontamination Target for the Chemical Counter-Terrorism	Moscow, Russia
11.09.2006 – 16.09.2006	VI International Workshop "Microwave Discharges: Fundamentals and Applications"	Moscow, Russia
13.09.2006 – 15.09.2006	BIO Japan 2006 / World Business Forum	Osaka, Japan
18.09.2006 – 19.09.2006	9th SAC Seminar "New Trends on Positron Emission Tomography: Physics, Radiochemistry, Modeling, Pharmacology and Clinical applications"	St Petersburg, Russia
19.09.2006 – 20.09.2006	ISTC seminar on commercialization of R&D results in Almaty, Kazakhstan	Almaty, Kazakhstan
21.09.2006 – 23.09.2006	International Conference "New Technologies for Developing Heterosemiconductors for Radiation Detectors"	Yerevan, Armenia
26.09.2006 – 28.09.2006	Preclinical GLP Testing Workshop	Puschino, Moscow reg., Russia
28.09.2006 – 29.09.2006	Bio-Conference "2-nd Workshop on Cooperation on Bio-Initiatives in Russia and the CIS"	Como, Italy
04.10.2006 – 06.10.2006	BioContactQuebec 2006	Quebec City, QC, Canada
08.10.2006 – 11.10.2006	"Nuclear Legacy of the Former USSR. Overview of Databases of On-Land and At-Sea Contamination Sources of Russia, Kazakhstan, Arctic and Far Eastern Seas"	Munich, Germany
09.10.2006 – 13.10.2006	Renewable Energy 2006	Tokyo, Japan
10.10.2006 – 11.10.2006	Russian Venture Forum & Fair	St Petersburg, Russia
12.10.2007	39th Japan Workshop on Renewable Energy	Makuhari, Japan
12.10.2006 – 21.10.2006	Optical Waveguide Sensing & Imaging in Medicine, Environment, Security and Defence	Gatineau, Qc., Canada
18.10.2006 – 21.10.2006	Clean energy workshop 3 – Membrane technologies – Fuel cell applications	St Petersburg, Russia
17.10.2006 – 20.10.2006	Dual-use products and technologies. Diversification of Defense Industry	Moscow, Russia
25.10.2006 – 26.10.2006	ISTC seminar on commercialization of R&D results in Dushanbe, Tajikistan	Dushanbe, Tajikistan
08.09.2006 – 11.11.2006	Biosafety and Biosecurity (BS&S) workshop	Minsk, Belarus
06.11.2006 – 08.11.2006	Bio Europe 2006	Dusseldorf, Germany
06.11.2006 – 10.11.2006	"Distant Transfer of Radionuclides in Mountainous Region"	Tbilisi, Georgia
06.11.2006 – 08.11.2006	To Commercialization of Bulk Nanostructured Materials through International Cooperation	Ufa, Bashkiria, Russia
12.11.2006 – 17.11.2006	American Institute of Chemical Engineers (AIChE)	San Francisco, USA
12.11.2006 – 16.11.2006	ANS American Nuclear Society, Winter Meeting and Nuclear Technology Expo	Albuquerque, NM, USA
13.11.2006 – 19.11.2006	5th Semi-Annual Russian-American Innovation Technology Week	Philadelphia, PA, USA
13.11.2006 – 17.11.2006	2006 Fuel Cell Seminar	Honolulu, USA
20.11.2006 – 21.11.2006	BioNorth 2006	Ottawa, Canada
26.11.2006 – 28.11.2006	Europe INNOVA Conference "Re-innovating Europe: Challenges for clusters and innovative businesses"	Valencia, Spain
27.11.2006 – 29.11.2006	Central Asia Disease Surveillance workshop	Bishkek, Kyrgyzstan
12.12.2006 – 12.12.2006	RosNauka and ISTC experience in commercialization of R&D results	Moscow, Russia

## Summary of ISTC Project Funding

Technology Area	2006				1994-2006	
	Funded		Completed		Funded	
	No. of Proj	\$ Value	No. of Proj	\$ Value	No. of Proj	\$ Value
<b>BIOTECHNOLOGY AND LIFE SCIENCES</b> Biochemistry, Cytology, Genetics and Molecular Biology, Ecology, Immunology, Microbiology, Nutrition, Pathology, Pharmacology, Physiology, Public Health, Radiobiology	48	17,025,339	66	24,742,225	548	203,325,043
<b>CHEMISTRY</b> Analytical Chemistry, Basic and Synthetic Chemistry, Industrial Chemistry and Chemical Process Engineering, Photo and Radiation Chemistry, Physical and Theoretical Chemistry, Polymer Chemistry	19	3,746,268	21	6,525,600	160	42,895,226
<b>ENVIRONMENT</b> Air Pollution and Control, Environmental Health and Safety, Modeling and Risk Assessment, Monitoring and Instrumentation, Radioactive Waste Treatment, Remediation and Decontamination, Seismic Monitoring, Solid Waste Pollution and Control, Waste Disposal, Water Pollution and Control	35	10,581,661	26	7,412,430	391	118,352,896
<b>FISSION REACTORS</b> Decommissioning, Experiments, Fuel Cycle, Isotopes, Materials, Modeling, Nuclear and Other Technical Data, Nuclear Instrumentation, Nuclear Safety and Safeguarding, Reactor Concept, Reactor Engineering and NPP, Reactor Fuels and Fuel Engineering	15	4,928,749	22	6,257,322	240	77,446,206
<b>FUSION</b> Hybrid Systems and Fuel Cycle, Inertial Confinement Systems, Magnetic Confinement Systems, Plasma Physics	0	0	6	1,690,000	47	13,639,891
<b>INFORMATION AND COMMUNICATIONS</b> Data Storage and Peripherals, High-Definition Imaging and Displays, High Performance Computing and Networking, Microelectronics and Optoelectronics, Sensors and Signal Processing, Software	5	1,390,381	12	3,421,781	101	26,420,475
<b>INSTRUMENTATION</b> Detection Devices, Measuring Instruments	6	1,616,782	7	1,569,823	122	33,476,002
<b>MANUFACTURING TECHNOLOGY</b> CAD and CAM, Engineering Materials, Machinery and Tools, Manufacturing, Planning, Processing and Control, Plant Design and Maintenance, Robotics, Tribology	5	1,207,161	9	3,304,605	66	21,934,829
<b>MATERIALS</b> Ceramics, Composites, Electronic and Photonic Materials, Explosives, High Performance Metals and Alloys, Materials Synthesis and Processing	13	2,514,423	16	14,865,428	192	61,436,814
<b>NON-NUCLEAR ENERGY</b> Batteries and Components, Electric Power Production, Fuel Conversion, Fuels, Geothermal Energy, Heating and Cooling Systems, Miscellaneous Energy Conversion, Solar Energy	4	792,691	4	1,596,882	58	19,041,998
<b>OTHER BASIC SCIENCES</b> Agriculture, Building Industry Technology, Electrotechnology, Geology, Natural Resources and Earth Sciences	0	0	6	1,614,737	25	5,509,934
<b>PHYSICS</b> Atomic and Nuclear Physics, Fluid Mechanics and Gas Dynamics, Optics and Lasers, Particles, Fields and Accelerator Physics, Plasma Physics, Radio-frequency Waves, Solid State Physics, Structural Mechanics	25	4,949,621	32	7,756,726	366	87,986,884
<b>SPACE, AIRCRAFT AND SURFACE TRANSPORTATION</b> Aeronautics, Astronomy, Extraterrestrial Exploration, Manned Spacecraft, Space Launch Vehicles and Support Equipment, Space Safety, Spacecraft Trajectories and Flight Mechanics, Surface Transportation, Unmanned Spacecraft	5	1,359,961	9	2,509,122	95	27,056,817
<b>OTHER</b>	2	530,000	3	1,362,400	26	6,020,166
<b>Total</b>	<b>182</b>	<b>50,643,037</b>	<b>239</b>	<b>84,629,081</b>	<b>2437</b>	<b>744,543,181</b>

# NONPROLIFERATION THROUGH SCIENCE COOPERATION



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