

U.S. DEPARTMENT OF STATE
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NEW PARADIGMS FOR EVALUATING
DIPLOMACY IN THE 21ST CENTURY
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Science/Technology/Trade Track

PowerPoint presentation from workshop on
Addressing Public Diplomacy Through International
Scientific Collaboration Efforts: Regional Experimental
Support Centers (RESC) Program

Session transcript:
<http://www.state.gov/s/d/rm/rls/rm/2010/148049.htm>



**CRDF RESC:
REGIONAL EXPERIMENTAL SUPPORT CENTERS
PROGRAM**

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Presentation Agenda

- **Program Goals**
- **Evaluation Objectives**
- **Evaluation Methodology**
- **Limitations of the study**
- **Summary of Findings**
- **Case studies' highlights**
- **Lessons Learned**
- **Conclusion**



Program Goals



- **To establish centers of excellence as shared usage facilities with state-of-the-art equipment for experimental research and development (R&D);**
- **To contribute to a general excellence in scientific and technical fields that will draw support for research and development from national and international sources based on outstanding results;**
- **To help the Centers become a catalyst for approaching industry that may lead to commercial success and sustainable development;**
- **To encourage the engagement of students and young scientists in RESC projects; and**
- **To assist in the transition from defense-related to civilian-based research by engaging former weapon scientists (FWS) into civilian research.**



Evaluation Objectives



THIS EVALUATION STUDY HAD THREE MAJOR OBJECTIVES:

- I:** To explore to what extent each center met the goals of the RESC Program and their own set of goals and objectives by collecting data and assessing the achievements of each RESC as the primary success of the centers and the program;
- II:** To study the impact of the centers' achievements on institutional, regional and national levels; and
- III:** To evaluate to what extent the centers have served as a catalyst for internationalization of knowledge and institutions.



Evaluation Methodology

- **A mixed methodology (quantitative and qualitative) was applied, including case study methodology.**
- **The methodology included observations of equipment in use, document analysis, a survey and in-person interviews with RESC PIs, and face-to-face and focus group interviews.**
- **153 senior and young scientists, engineers, institution administrators and students were interviewed face-to-face and in focus groups.**
- **The survey and interviews were conducted in the Russian Language; the data were coded, analyzed and categorized in English.**



Limitation of the Study

The study objectives had three major limitations or constraints.

- **One limitations of the study was the *consistency of the statistical information collected*.**
- **Differences in *terminology and definitions* were another limitation of the study.**
- **Much of the *financial data* requested could not be adequately compared due to inconsistencies in the manner in which the Centers recorded and provided them.**



Core Indicators of Success



- **Subject-related knowledge gains & new technical skills developed**
- **Maintenance & upgrade of CRDF equipment**
- **Purchase of new equipment**
- **Engagement of Ph.D. students & young scientists**
- **Engagement of former weapon scientists (FWS)**
- **International & regional collaborations**
- **Publications & citation index**
- **Funding from national and local governments through grants**
- **International grants**
- **Commercial contracts**



Summary of Findings



- **Fifteen RESCs of seventeen (88 percent) under study continue to operate CRDF granted equipment on a daily basis demonstrating the viability of the program and the high level of grantees commitment.**
- **The RESC Program contributes to advance U.S. foreign policy objectives not only by building stronger ties between U.S. and Eurasian scientists but also by creating a more attractive climate for domestic economic activity and direct foreign investment.**
- **The scientific impact of the RESC equipment on the scientific community in the region was of great value.**
- **From a financial perspective, the study revealed a significant difference in funding opportunities and considerable institutional differences in accessing national & local government grants**



Summary of Findings



- **All seventeen institutions where RESCs were established are placing increased emphasis at the international level to develop their research activities, including the United States.**
- **RESCs spent cumulatively \$10,311,227.026 on purchasing new equipment ranging from \$19,000 to \$2,400,000.**
- **Over the years, the RESCs have developed regional collaborations with 2,965 users;**
- **About 5,000,000 analyses & tests were performed of which 4,200,000 were performed by the Khabarovsk Analytical Center (Russia); and 68 patents were obtained.**
- **Ten of seventeen RESCs (59 percent) reported commercial activities; overall, the RESCs have obtained 238 commercial contracts.**



Summary of Findings, Cont.

- **630 M.S. and Ph.D. students** have been engaged in the RESC research projects,
- **161 Ph.D. students** defended their doctoral thesis using RESC equipment ;
- **300+ young scientists** have worked full-time or part-time in the RESC projects;
- **9,300+ students** were engaged through course work or different types of practicum;
- **161 former weapon scientists (FWS)** have been directly engaged in RESCs' work through grants or commercial contracts.
- **Twelve of seventeen RESCs (59 percent)** reported direct contractual engagement in commercial work.
- **32 university courses** are taught by ten RESC PIs using findings from RESC-based research.



Testimonials from PIs

- ***-- The CRDF equipment was revolutionary: we jumped in our research level seven-eight years forward. Results of our research became known in Europe and in an international research community. With this equipment we can produce films and assure high quality testing of samples; this raises a prestige of our institute very much.***

--Professor Serikbol Tokmoldin, PI of the Regional Experimental Center for Thin Film Research, and the Director of the Institute of Physics and Technology, Kazakhstan

- ***--The CRDF equipment helped to resolve the geodynamic situation in Azerbaijan and with the GPS technology and its practical application in the field, the Center opened a new window of opportunity to move from theories to practice and applied research. We were able to start new research and developed new monitoring procedures.***

--Dr. Kadirov, RESC PI, Azerbaijan

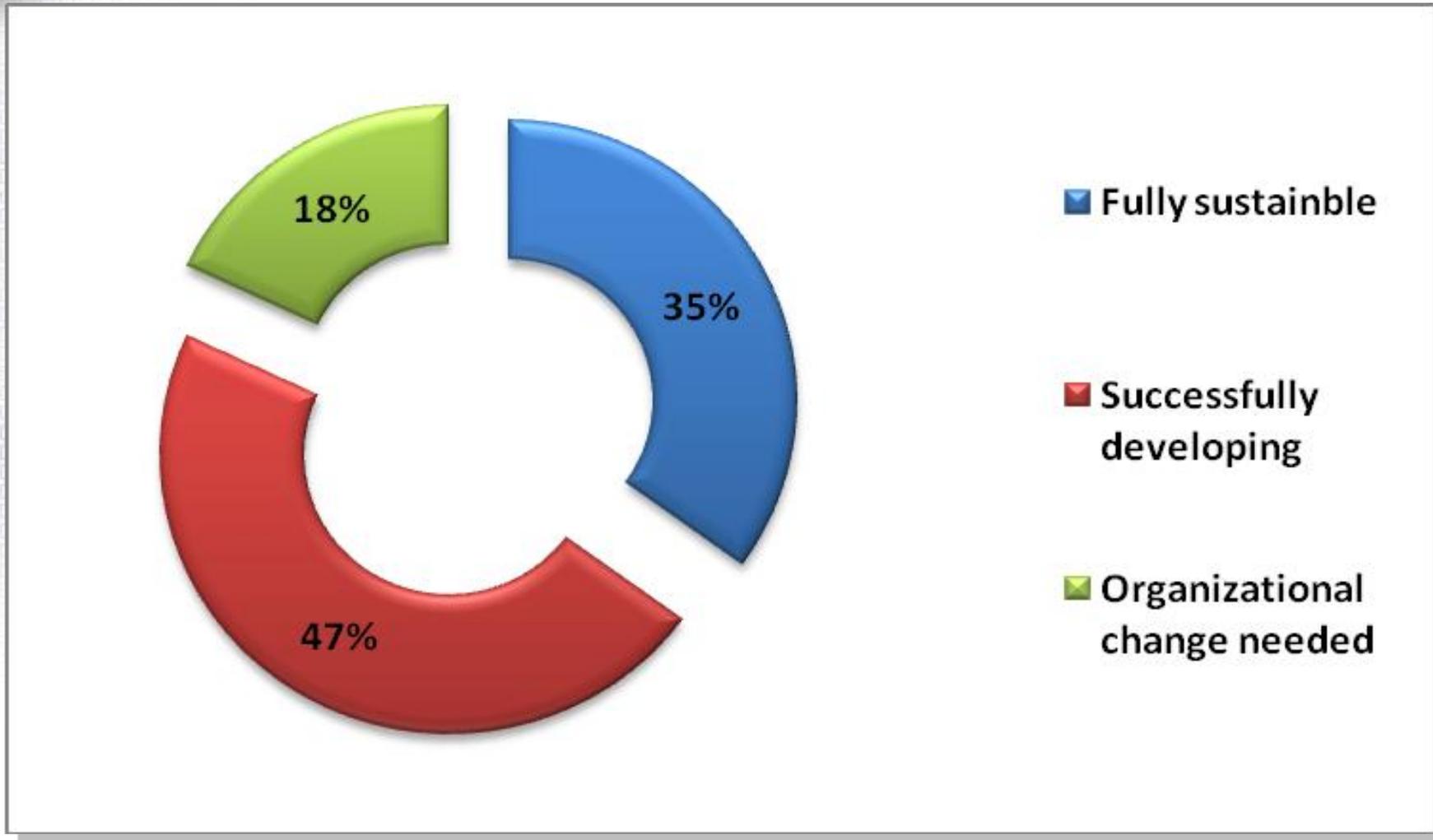


Testimonials from PIs, Cont.

- *– In the mid 90s the economic and political situation at the Academy of Sciences of Ukraine was dead-ended. Scientists did not receive monthly salaries, there was no budget to continue research and scientists lived in despair. The CRDF award in 1996 played a huge role for the institute. **For the first time scientists could see light at the end of the tunnel; they had a new hope that the situation could turn to a better; the CRDF grant was the first step on the way to the institute recovery. The grant allowed to expand collaboration and opened new opportunities to advance research.***
- *–Professor Vasyl Chekhun, Academician, Ukrainian National Academy of Sciences, Director, R. E. Kavetsky Institute of Experimental Pathology, Oncology and Radiobiology.*

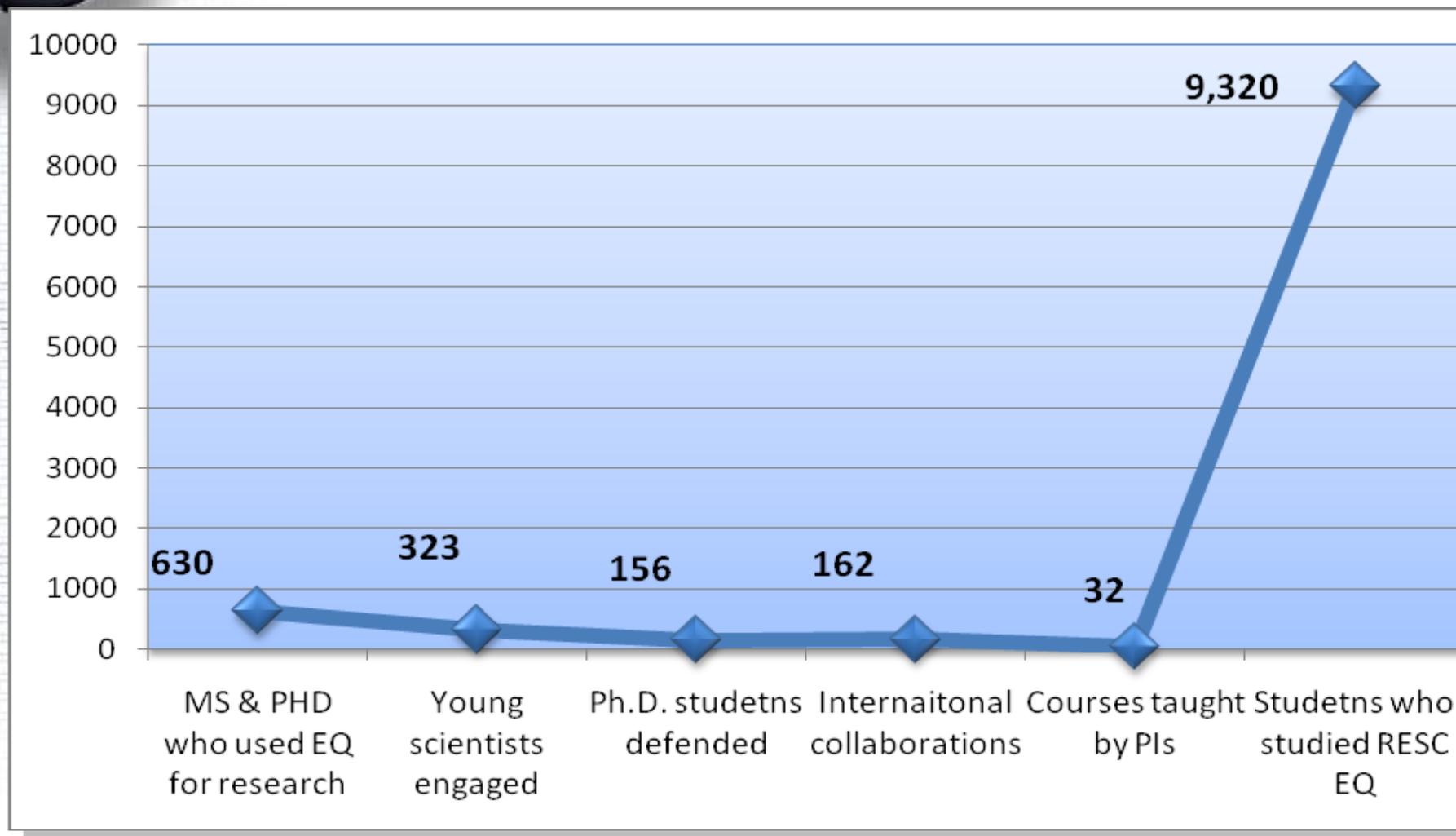


RESC Success in Core Metrics





RESCs: Return on Engagement





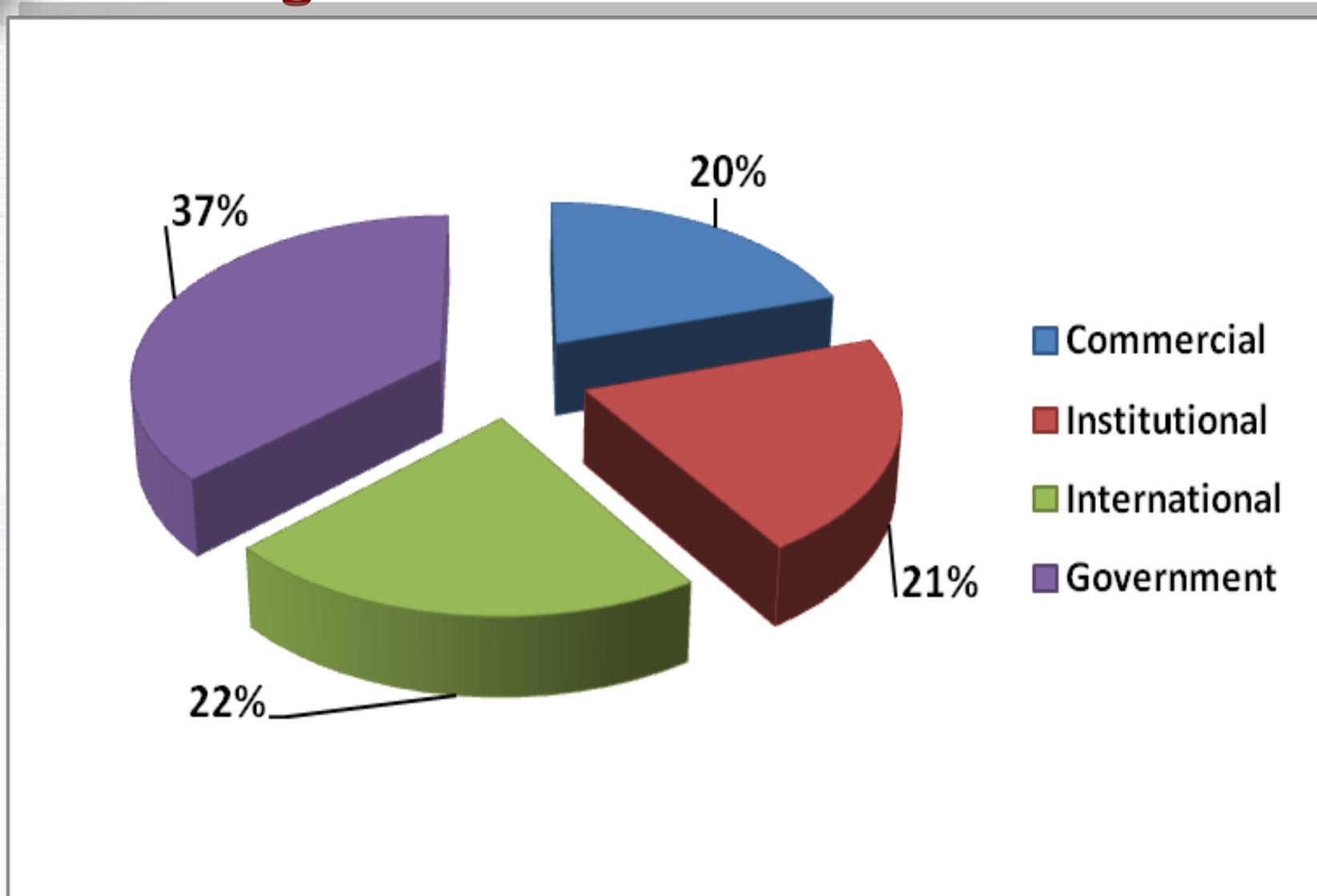
Summary of An Average of R&D Funding Sources

- **National government range is 0-75% (average 37%)**
- **International funding range is 0-95% (average 22%)**
- **Institutional budget range is 0-81% (average 21%)**
- **Commercial funding range is 0-95% (average 20%)**



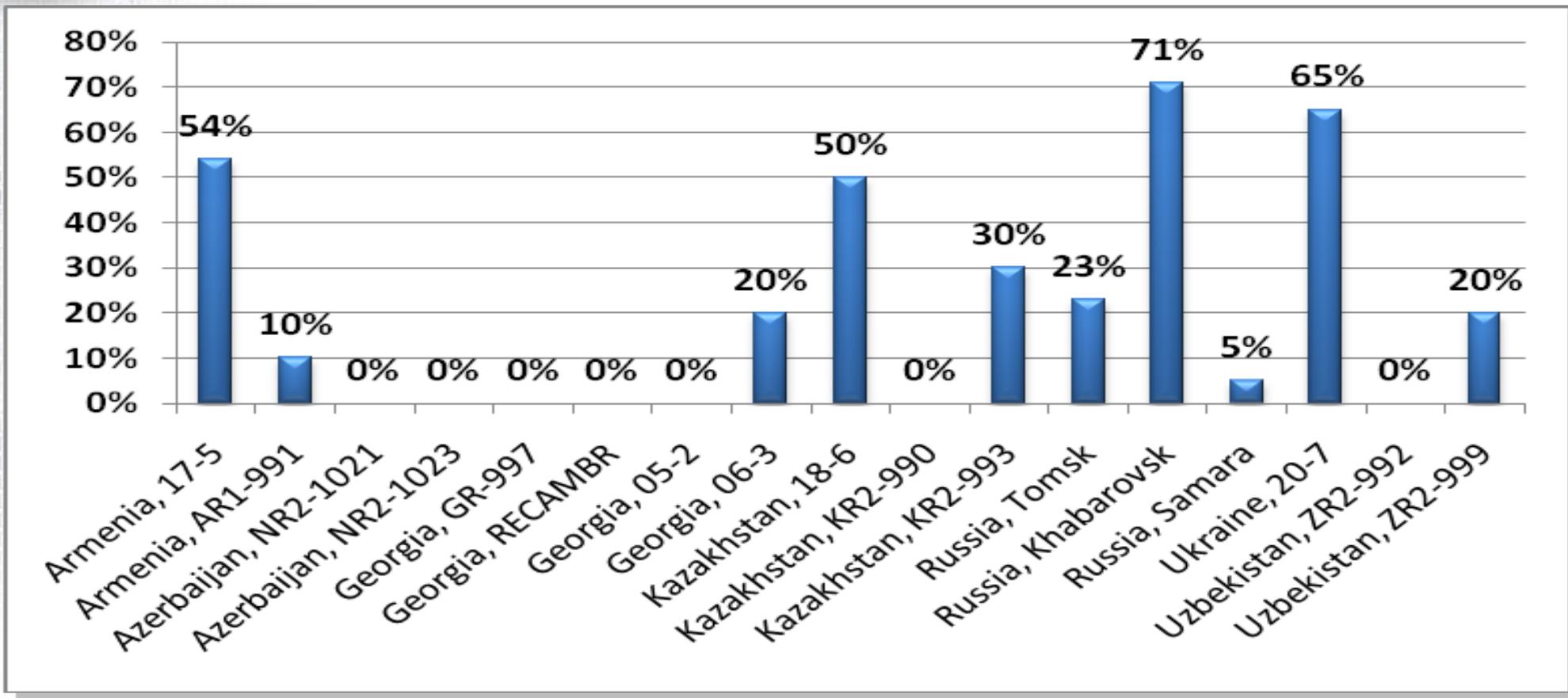
R&D Funding Sources

An Average across All 17 RESCs



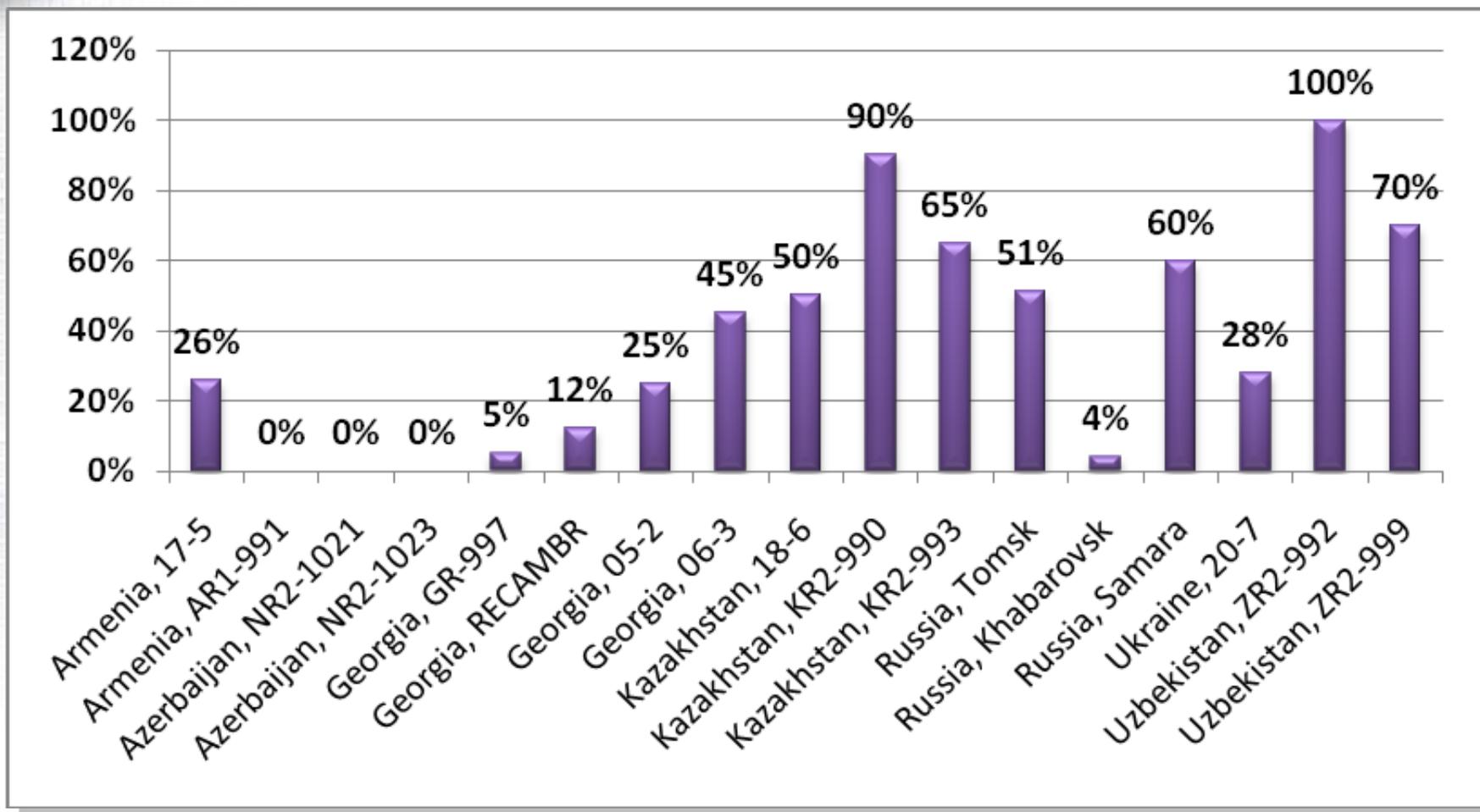


Institutional Funding

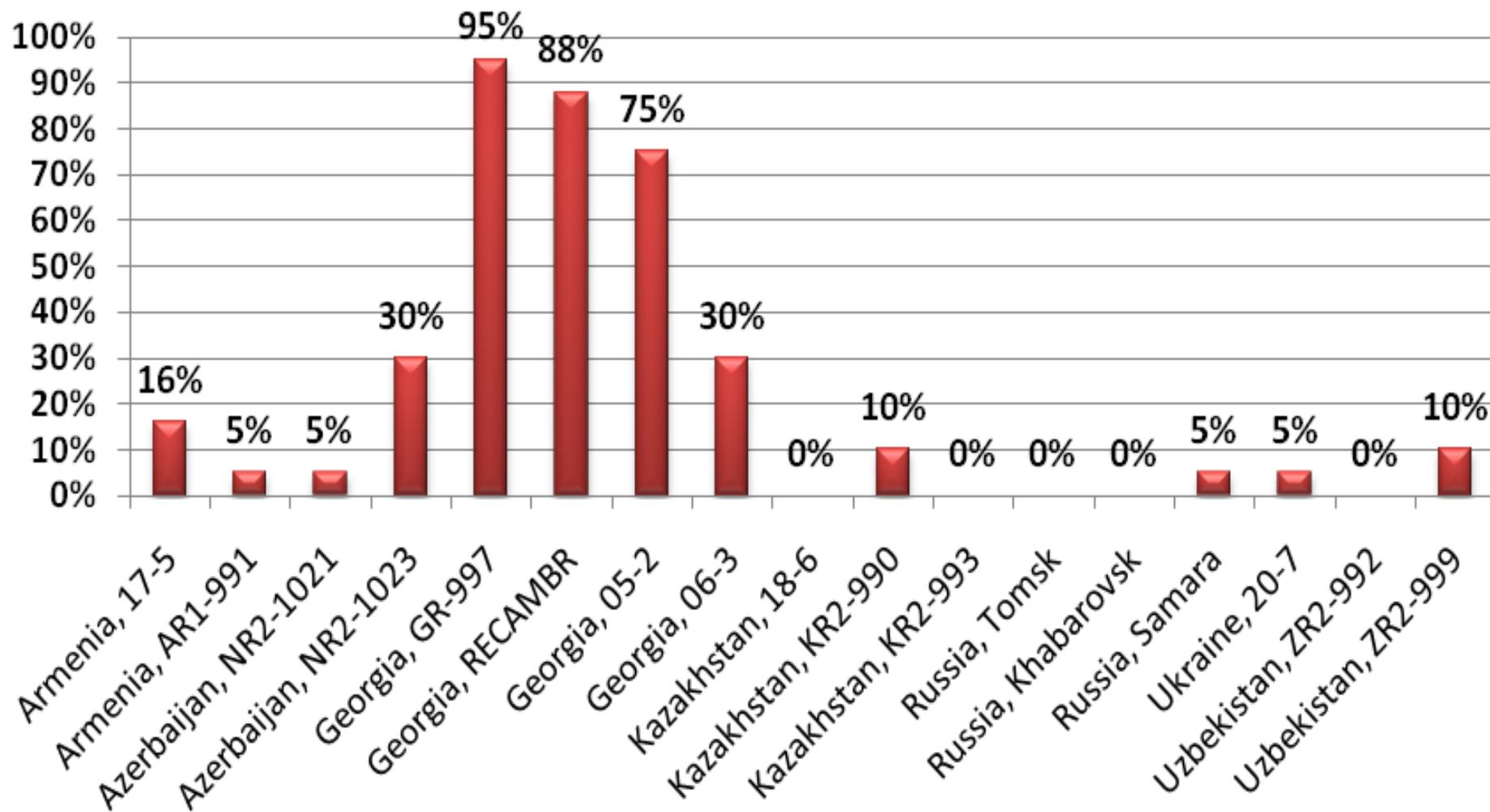




National & Local Government Funding

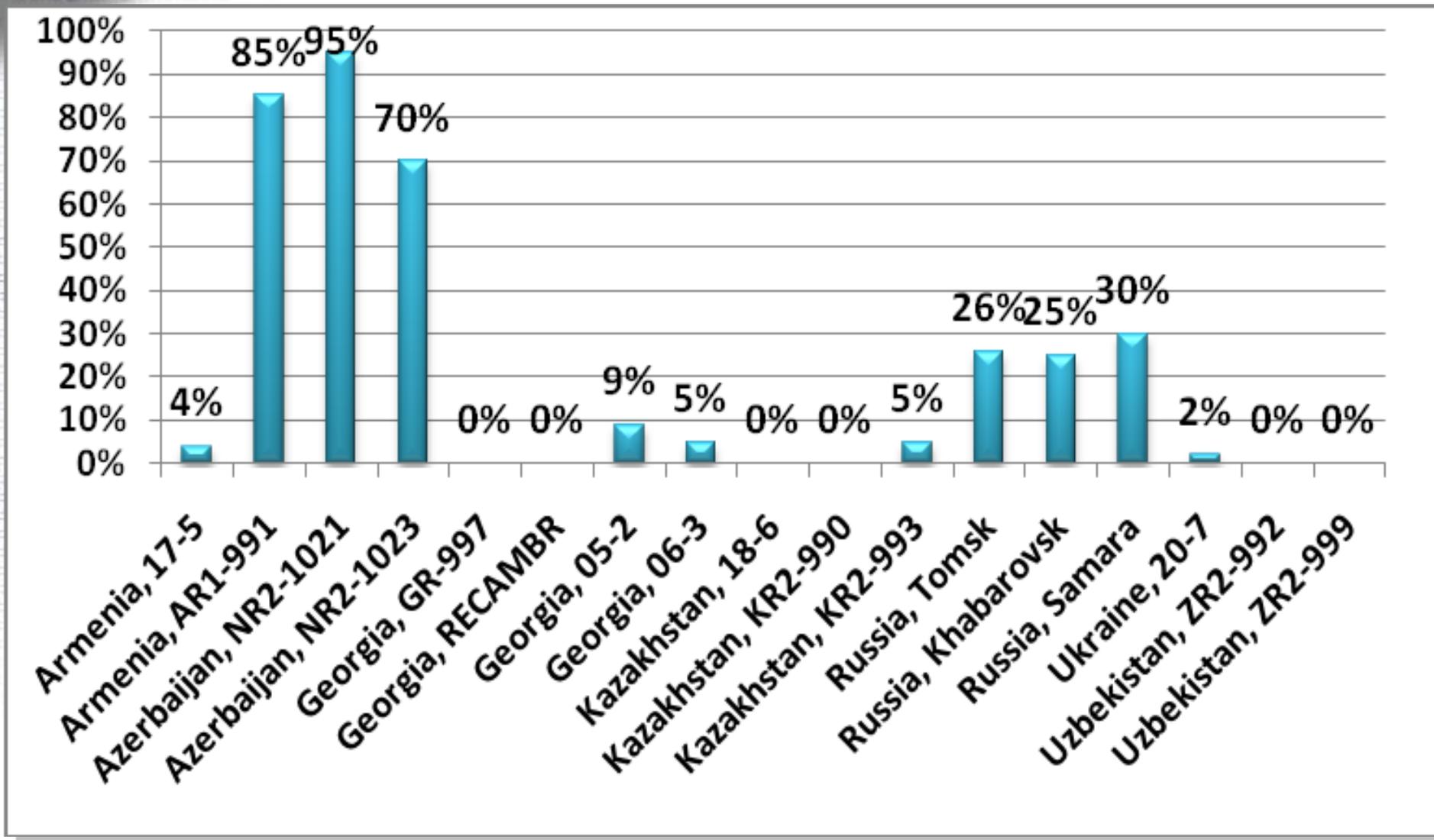


International Funding





Commercial Activities





Country Example 1: Baku, Azerbaijan



The Environmental Physics and Chemistry Center – AzecoLab

Summary of Findings

- Grants from NATO, UNDP, TACIS, and EBRD; the EBRD grant funds the development of a national Caspian Sea oil spill contingency plan;
- By 2008, the Center derived almost 100 percent of its operating budget from commercial activities with a slight decrease to 85 percent in 2009 due to the economic crises;
- By comparison, 2002 funding: 90 percent RESC/NATO grants;
- Commercial projects with BP, its ten Azerbaijani subsidiaries and a local cement factory;
- The Center has also developed vessel and land based environmental labs for the study of the Caspian Sea and two regional water quality labs for the Ministry of Ecology and Natural Resources;



Summary of Findings

- **In 2008, CRDF awarded the Azerbaijan National Science Foundation, a competitive \$50,000 Development and Sustainability Initiative grant to help it serve as the Center's business and marketing arm so that the Center can focus on meeting and expanding the demand for its analytical services.**
- **The Center is purchasing new equipment, spending about \$300,000 in order to expand the RESC research capabilities;**
- **Since 2005, the Center has been participating in a worldwide Analytical Laboratory Program;**
- **The Center has achieved ISO 9001 certification in health safety and plans to pursue ISO 7025 certification to facilitate its international collaborations, which include Florida State University, Moscow State University, Tbilisi State University, and Vienna University;**



COUNTRY EXAMPLE 2: YEREVAN, ARMENIA



The "ExLab" Expert Analytical Laboratory , a branch of Armenian Scientific Center of Drugs and Medicinal Technology Expertise

Summary of Findings

- **Recent purchases include unique \$250,000 equipment for food safety control a three year supply of helium (\$80,000);**
- **Over the years, the ExLab performed about 24,000 tests for 1100 users and 50 commercial partners; in 2008, the Center received an Armenian Food Testing Certificate;**
- **The Center works with the European Medicines Agency in France on establishing its representative Center of Quality Control in Armenia;**
- **Clients for sample drug testing – the Ministry of Justice, police offices, local office of Interpol, wine and brandy producers, pharmaceutical companies; doping control (2004 Georgia's Olympic team).**



COUNTRY EXAMPLE 3: KHABAROVSK, RUSSIA



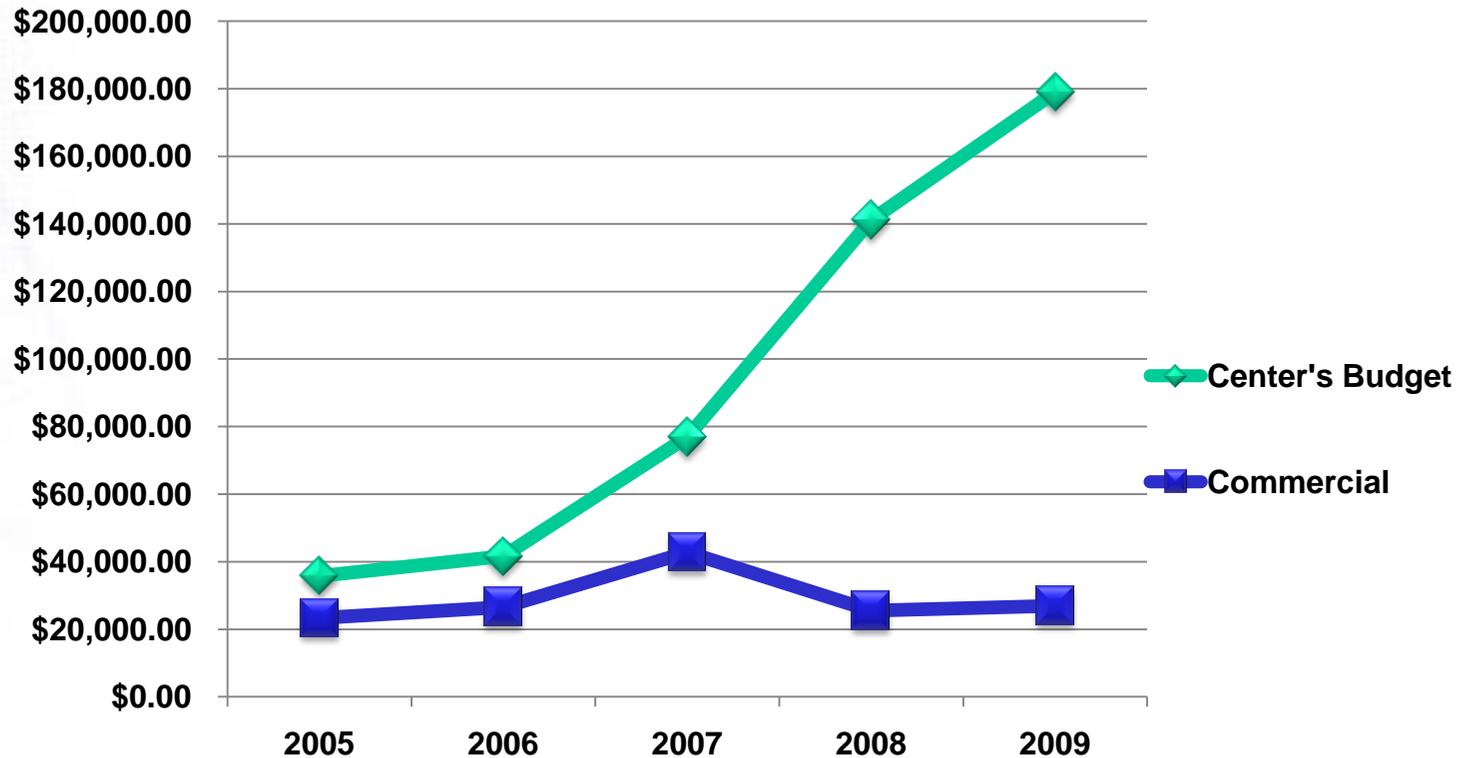
The Khabarovsk Analytical Center (KhAC) of the Institute of Tectonics and Geophysics, Far Eastern Branch of the Russian Academy of Sciences

Summary of Findings

- **In 2006, the Center bought newer generation equipment – an S-4 Pioneer X-Ray Fluorescence Spectrometer (\$567,740) to double its capabilities;**
- **During 2005-2009 the Center purchased new equipment in the amount of \$2,286,046**
- **Over the years the Center has collaborated with 86 users of the equipment and performed 4,200,000 analysis;**
- **The Center developed strong ties with 17 major users of the equipment, including research institutions and private firms in Blagoveshchensk (3), Khabarovsk (10), Moscow (1), Yakutsk (1), Vladivostok (1) and Amursk (1)**



Khabarovsk Analytical Center, Russia: Institutional Budget & Commercial Work





Publications

- **700+ articles**, books and monographs were published by RESC PIs and their staff.
- **A case study:** Molecular Structure Research Center, Armenia, Dr. Henry Panosyan, RESC PI: **104 publications in peer-reviewed journals** of which 80 publications are joint publications with the users. Specifically, **15** articles were published in the U.S. and Europe, **63** in Eurasia, and **26** in Armenia. Another **700** articles were published by the Center's users due to its continuous assistance in performing analyses on the CRDF equipment.
- *–Our RESC Center with NMR spectrometer has made and continues to make a great impact on the chemistry science in Armenia. It provides testing services to more than 370 users in Armenia and Georgia. –Dr. Henry Panosyan, RESC PI*



Lessons Learned & Recommendations



- **Terminology should be explained to the grantees in order to seek consistency in data collection**
- **The reporting mechanisms should be strengthened in order to collect high quality and more accurate information.**
- **Establish better programs/incentives for attracting Ph.D. students and young scientists.**
- **More programs should be funded to support the infrastructure building by establishing Technology Transfer Offices (TTO) and by providing TTO staff with professional training opportunities.**



Conclusion:

The RESC Program had an impact at four major levels:

- I. Professional development of scientists;**
- II. A great contribution to a general excellence in scientific and technical fields and an advancement of R&D activities in the regions and respective countries;**
- III. The RESC Program worked as a magnet for the integration processes of bringing research to university systems and incorporating research activities into the curricula; and**
- IV. The program helped scientists to learn and adapt Western concepts of S&T management and engagement in commercial research leading to the creation of a more attractive climate for domestic economic activity and direct foreign investment.**



Questions & Answers

