Is Cooperation Worthwhile with Central Asia?

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Abstract
The aim of this paper is to review the situations in the Central Asia research landscape, and give some hints to the most competitive areas using data from the ISI Web of Knowledge, CORDIS databases, and practical experience derived from INTAS ININ NIP Continuing Advice project.

Introduction

Central Asian countries (Kazakhstan, Uzbekistan, Kyrgyzstan, Tajikistan, and Turkmenistan) are strategically located at the crossroads of the ancient Silk Road between China, the Middle East and Europe. This area was for centuries one of the cradles of civilization. Several forums express the hope that following the independence of these countries the 21st Century will see an era of renaissance in this region.

Today, the leading regional powers are closely following the Central Asian developments because of the region's geo-strategic significance of its oil, gas and other mineral riches. Central Asian countries joined the World Bank and the International Monetary Fund, acceded to the European Bank for Reconstruction and Development and joined the Asian Development Bank They became members of NATO's North Atlantic Cooperation Council at the end of 1991, the Partnership for Peace in May-June 1994 (except Tajikistan), and the Euro-Atlantic Partnership Council in 1997. The EU has signed Partnership and Cooperation Agreements with all the Central Asian states with the exception of Tajikistan. All the countries are involved in the Commonwealth of Independent States, the Organization of the Islamic Conference, and the Economic Cooperation Organization (MacFarlane, 2003).

At the end of 2001 Central Asia shifted rapidly from the periphery towards the center of the United States global strategic interest. Since 2001 the United States has established airbases in Uzbekistan, Tajikistan and Kyrgyzstan (Bohr, 2003).

Since independence most of the Central Asian countries have passed through several economic reforms. As in all the former Soviet Union countries, their research systems have suffered huge losses. The number of researchers has declined by more than 50%. At the same time the percentage decrease in Research and Development financing was even more substantial than the decline in the number of researchers and engineers (Egorov, 2002).

The current demography common to all these countries is that of a "young society" where almost 50% of the population is under the age of twenty-five. National education policies are therefore critical for these countries' development strategies. In this situation help offered by advanced countries was of vital necessity. This was not a one-way interest. The leading idea, of course, was to help scientists, but also to prevent the proliferation of sophisticated arms technologies and to avert a massive brain drain to the West. Different support programs started their work in Central Asia: INTAS, ISCONIS, COPERNICUS, TACIS, SCOPES, Central Asia Research Initiative (CARI), IREX etc. Soon after independence, all five countries became Member States of UNESCO and established National Commissions for UNESCO.

Naturally there arises a two part question – is cooperation worthwhile with these countries and are there any fields left which are competitive?

Methods

In this paper the author tries to answer to these questions using derived data from the ISI Web of Science, ISI Essential Science Indicators, CORDIS databases and answers to the questionnaire that was sent to the national information points of the 6th Framework Program in Central Asia.

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Results

Changing Publication Pattern

Comparing the periods 1980-1991 (the era of Soviet Union) and 1994-2004 (transition period) we can see a vivid picture that reflects those developments, which have taken place in Central Asia countries.

Table 1. The number of papers of Central Asian researchers in the period 1980-1991 and 1994-2004 (Egorov, 2002)

Country/Period	1980-1991	1994-2004	Difference
Kazakhstan	3046	2500	-546
Uzbekistan	3518	4099	581
Kyrgyzstan	10	410	400
Tajikistan	1	148	147
Turkmenistan	241	126	-115

The Kazakhstan research system during the Soviet time was dominated by Russian speaking researchers who had close contacts with different Russian research centers. A huge number of these researchers emigrated during the 1990s to Russia and to Western countries. Kyrgyzstan, Tajikistan and Turkmenistan, which are still the most underdeveloped countries in this region, have chosen different development strategies. Turkmenistan, with an authoritarian ex-Communist regime in power and a tribal based social structure, has taken a cautious approach to economic reforms. Today Turkmenistan is practically closed to foreigners. Of all the former Central Asia republics, Turkmenistan is the one which, paraphrasing Lenin, has taken "two steps back" since independence (Burghart, 2002). This situation is reflected also in publication patterns.

The clear winners are Kyrgyzstan and Tajikistan. Although they are still far behind the others there is a promise of further development. Kyrgyzstan was deemed an "island of democracy" in Central Asia since the former president Akayev was the only Central Asian ruler who was not a party *apparachik* at the time of independence (Burghart, 2002). The society is still very poor, but the ingenuity and creativity of the people bode well for the future. In the case of the three minor countries, the tendency is that collaboration is mostly with traditional partners from the former Soviet Union.

In the Soviet Union republics, Russian was used as the "*lingua franca*", the language of scientific communication and the language that introduced research results to the world. Only limited number of researchers had an opportunity to communicate directly with colleagues abroad because of the Iron Curtain and for most of them the only opportunities to publish research results were the All Union scientific journals in Russian.

Table 2. Changing language pattern from the period 1980-1991 to 1994-2004 (ISI, 2005)

Period		1980 -	1991			1994 -	2004	
Language	Russian	English	Other	Total	Russian	English	Other	Total
Kazakhstan	1886	1151	9	3046	573	1915	12	2500
Uzbekistan	2490	1019	9	3518	1259	2828	12	4099
Kyrgyzstan	5	5	0	10	99	309	2	410
Tajikistan	1	0	0	1	8	140	0	148
Turkmenistan	175	66	0	241	43	82	1	126

The distinct change in the use of language in research papers show above all the impact of different Western support programs and governmental action plans to promote international cooperation (*Bolshak* in Kazakhstan, *Ustoz* in Uzbekistan). As Table 3 indicates there was in the decade between 1994 and 2004 a 180 degree move from the use of Russian to English in research papers. This did not mean that simultaneously there were draconian changes in the traditional collaboration partners.

Collaboration Partners of Central Asian Countries

Central Asia is and presumably will stay a zone of Russia's interest and influence. This is because of historical traditions, geographical location and also because over 5 million Russian speakers live in

these countries. Nevertheless there has been a huge shift in broadening the economic base and knowledge sphere of the region.

Table 3. The biggest Import and Export partners of Central Asia countries in 2003 (CIA, 2005)

Country	Import partners	%	Export partners	%
Kazakhstan	Russia Germany China	39,0 8,7 6,2	Bermuda Russia Switzerland	17,0 15,2 13,0
Uzbekistan	Russia USA South Korea	22,3 11,4 11,0	Russia China Ukraine	22,4 9,3 7,5
Kyrgyzstan	Russia Kazakhstan China	24,7 24,0 10,3	UAE Switzerland Russia	24,7 20,3 16,7
Tajikistan	Russia Uzbekistan Kazakhstan	22,2 15,1 10,9	Netherlands Turkey Latvia	25,4 24,4 9,9
Turkmenistan	Russia Ukraine Turkey	21,5 15,3 9,4	Ukraine Italy Iran	39,2 18,1 14,7

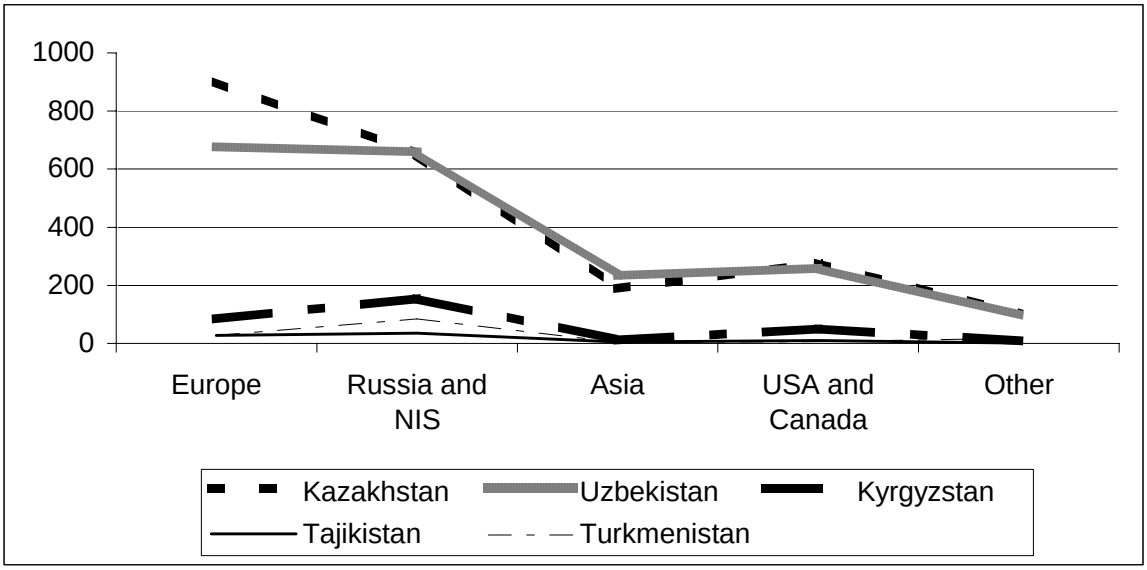

Figure 1. Collaboration trends of Central Asia countries in 1994-2004 by publication performance (ISI, 2005)

We can draw some conclusions in the case of Uzbekistan and Kazakhstan. The other three countries are, economically, still very weak and their collaboration level depends of different accidental circumstances. It is evident from visits to the Central Asia research institutes that USA support is dominant, and collaboration projects lead by several USA institutions are much simpler to deal with compared to their European counterparts. Even so European support networks like INTAS and Framework Programs have been available in Central Asia for around ten years.

Project coordinators from United Kingdom, Germany and France conduct the majority of these projects. It is interesting that those countries that in the near past belonged to the same research system as Central Asian countries (i.e. the Baltic and CEEC countries), and were now members of INTAS, were generally not active in coordination activities at all. Bulgaria had one project with Kazakhstan, Slovakia one project with Uzbekistan and Estonia one project with Tajikistan. In case of the last project, a researcher from Tajikistan migrated to Estonia and is now a colleague of former project partners.

Table 4. Central Asia countries research institution projects in INTAS as Framework Programs (CORDIS, 2005)

Country	Framework Program	INTAS	Total
Kazakhstan	28	144	172
Uzbekistan	19	91	110
Kyrgyzstan	9	27	36
Tajikistan	1	11	12
Turkmenistan	5	14	19

If the data assembled from the Web of Science database is compared we may acknowledge that continuous work is worthwhile. The collaboration with European countries constitutes 42,5% of Kazakhstan' cooperation links and 35,1% of Uzbekistan's.

Competitive Areas

Traditionally former Soviet Union countries were strong in basic research. This is true also for Central Asia research levels. Despite the aforementioned losses in the research system, Kazakhstan is still strong in Physics, Chemistry, Geosciences, Space Science and Engineering. There are, in Kazakhstan, at least ten research institutions that conduct high level research (Al Farabi Kazakh National State University, Institute of Physics and Technology, Institute of Nuclear Physics, Institute of Phytochemistry, Institute of Ionosphere, AB Bekturov Institute of Chemical Sciences, Institute of Organic Synthesis and Coal Chemistry, Karaganda State University, Fesenkov Astrophysical Institute). Uzbekistan is strong in Space Science, Physics, Engineering, Chemistry, and Mathematics. The leading centers belong mostly to Academy of Sciences: Institute of Nuclear Physics, Physical Technology Institute, S Yu Yunusov Institute of Chemical Plant Substances, Institute of Polymer Chemistry & Physics, Institute of General & Inorganic Chemistry, Institute of Chemistry & Physical Polymers, Department of Thermal Physics, AS Sadykov Institute of Bioorganic Chemistry.

Conclusions

Research in Central Asia is mostly carried out by national Academies of Sciences which are the most prestigious centers of scientific research, to the extent that almost all the leaders of each country are full members of their national academy.

Askar Akayev, the former President of Kyrgyzstan (who is both a full member of the Academy of Sciences, and a former President of the Academy) estimated that the future success of the whole of Central Asia would be based on cooperation with Russia, China and USA (Akayev, 2004). The current situation shows also the growing influence of the European Union. Despite the harsh decrease in the number of researchers and the decline in Research and Development funding throughout the region there are first class research centers, which are able to cooperate on level terms.

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