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The Role of Science and Technology Diplomacy in Preventing Nuclear Proliferation (A Case Study: EU and Kazakhstan)

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Abstract

Science and technology diplomacy has been considered as one of the influential tools in the international arena by many countries and even trade and political unions. The European Union has also implemented various programs with Central Asian countries. The research question is what are the goals and objectives of EU science and technology diplomacy in Kazakhstan? The results show that EU scientific diplomacy is pursued in two forms: scientific diplomacy based on technology and scientific diplomacy based on the humanities in Central Asia. For example, 4 to 7-year programs have been implemented in Central Asian countries, such as Kazakhstan include biology, genomics and biotechnology for health, information technologies, nanotechnology, knowledge-based multifunctional materials and new manufacturing processes and tools, air and space, food quality and safety. The main focus of the program is on Kazakhstan. The main objectives of these programs appear to monitor the country's nuclear activities with the aim of preventing nuclear proliferation via support from the model of neoliberal economic development, increase the capacity of civil society, and support the soft power of the union. This research will use descriptive-analytical methods and second-hand data collection.

Keywords: Science, Technology, FPS, Central Asia, European Union, Diplomacy.

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1. Introduction

Science and technology, as in the past, will stimulate growth and development, so neglecting this area will lead to irreparable blows to any activist and reduce its capacity to compete internationally. Of course, success in this area and achieving the goals set in it requires foresight and careful planning (Farajirad and Abdi,2015:59). It is possible to focus on this through trade with other countries, where diplomacy can play a role. Therefore, in the era of globalization, along with other types of diplomacy, we can mention other types of diplomacy. Some believe that the more problems governments face in increasing international influence due to the increase in actors, the more position of scientific societies as new scientific actors will be understood. The role of these societies in both cognitive and political change can be a useful tool for building stronger ties with foreign governments. The European Union has also used this capacity to infiltrate various parts of the world. In fact, the history of cooperation between the European Union and Central Asian countries dates back to the collapse of the former Soviet Union in 1991, and in the form of special programs such as the "Strategy for New Partnership: The European Union and Central Asia" through the Commission European was compiled in June 2007. The strategy strengthens relations in all areas, including strengthening European-Central Asian political dialogue by holding regular meetings between EU and Central Asian foreign ministers, strengthening human rights dialogue, cooperation in education, the rule of law, energy and transportation, the environment and water, common challenges and threats (including border management and fight against drug swindler) and economic and trade relations) (Schuch et al,2012:6-7). At the institutional level, the European Commission also supported trans-European cooperation in science and technology aimed at ensuring and strengthening the EU's partner countries by directing research to the new economic, political and economic needs of developing countries to prevent the spread of knowledge-related militarism. The research question is, what are the objectives of EU diplomacy in science and technology compared to Central Asian countries? The results show that the EU's most important objective of science and technology diplomacy is preventing from nuclear diversion via support the model of neoliberal economic development, increase the capacity of civil society, and support the soft power of the union. In this respect, the first program of this

type was in 1984-87, the second in 1987-91 and the third in 1990-94. So far, 7 programs with this content have been implemented in Central Asia. During this period, international scientific cooperation through individual-person employment contracts (with a specific country) organized by international institutions such as the International Association for the Promotion of Cooperation, the International Center for Science and Technology, the European Cooperation Program in Science Cooperation and Technology (COST), the International Center for Science and Technology in Ukraine, and in particular through the arrangements of international cooperation such as the European Research Cooperation Agency (Roll Et al,2009:22-29). To better understand this research, it is organized in five sections. The first part examines the conceptual and theoretical framework of research, namely science and technology diplomacy, the second part considers the research method, the third part presents the research findings and finally the fourth part analyzes the research findings.

2. Research Method

This research uses a descriptive-analytical method with an incompatible approach based on incomplete meta-analysis and the data collection method is based on library method and second-hand data.

3. Theoretical and Conceptual Foundations of Research

3-1. Science and Technology Diplomacy

Diplomacy means the process of communication between international actors who seek to resolve conflict through negotiation without war. Diplomacy, therefore, is concerned with efforts to manage and establish order within a global system and its purpose is to prevent the transformation of conflict into war. From a micro perspective, diplomacy can be seen as a political tool used by international actors to pursue foreign policy in order to achieve their political goals (Bilis Wasmit,2004:713-16). Todays, diplomacy has turned into various types, including skill diplomacy, public diplomacy, and so on. Science and technology have also emerged as one of the new dimensions in diplomacy. As governments become more difficult to gain influence in the international arena due to the increase in the number of actors and actors, scientific societies are perceived as new scientific actors (Sutcu,2013:241). The use of scientific cooperation between the nation and nationalities to solve common problems and create international relations

has been easy and calculated (Mousavi Movahedi and Kiani,2012:72). Science diplomacy is the interactions of science and technology, both hard and soft, between a country and other international actors that serve the advancement of that country's foreign policy, or political relations between a country and other international actors that pave the way for science and technology interactions. Diplomacy of science requires a political purpose and a political context, but this does not mean that this conceptual approach is purely political. In the diplomacy of science and technology, economic interests must be considered, but these economic interests are achieved through political and scientific contexts, so science and technology diplomacy is considered a multidimensional concept in which all three dimensions of politics, economics and science can be seen. According to the above, it can be said that scientific diplomacy covers a wide range of formal or informal exchanges in the technical, research-oriented, academic and technological fields, etc. (Ghadimi and Manouchehri Qashqaei,2013:52).

4. The Importance of Central Asia and Kazakhstan in the EU's Macro-Strategies

Access to oil and gas reserves of central Asia, sales of goods and services to Central Asia, and increased soft power are among the EU's top priorities for the region (Aminian,2013:85). To achieve these goals, the European Union seeks to bring about change in Central Asian countries, especially as Russia, the United States and China become increasingly influential and regional actors such as Iran and Turkey (Kolaee and Ebrahimi,2013,53).

Given this competition, they intend to present a different picture of themselves in comparison to these important global and regional actors, in which they are able to help Central Asia in the process of modernization and advancement of reforms in a better and more efficient way.

While others are defending conservative forces in favor of maintaining the status quo, the European Union is advocating for and supporting the creation of a driving force for change through civil society. It is natural that in order to achieve these goals, the European Union will have to enter into multilateral cooperation with the countries of the region and especially through incentive processes, will provide the grounds for its comprehensive influence in the region through trustworthy approaches.

The European Union began cooperation and partnership agreements with countries in the region in the 1990s. In 2002, the European Union drafted

the Central Asian Strategic Document for 2004-2004. This document was the first major source for shaping a framework for a new participatory structure in the region. The more important EU document "Europe and Central Asia: New Partnership Strategy" in 2007 as an advisory document set. Of course, this document was not the first strategic document of the European Union in this regard, but it was an important document that individually called for cooperation with the countries of Central Asia after the collapse of the Soviet Union. For example, after the collapse of the Soviet Union, the European Union put technical and development aid on the agenda in the form of "technical advice to the Commonwealth of Independent States." It was not just a technical document; its main purpose was to help Central Asian countries integrate into the global economy.

Finally, the "Regional Strategy Document for Central Asia Consultation for the Period 2007-2013" was adopted by the European Commission in 2007.

In the past, the EU has played the role of a technical and carrier supporter for the transfer of advice to liberal markets in countries in the region. But since then, Central Asia's strategy has portrayed a general strategy that categorizes political goals as proposals to take more precise budget steps compared to previous periods.

This document pledged Europe to bilateral and regional dialogue with different techniques in the form of education, democracy, energy, and transportation (Sahin and Dugen,2015:52-53). In the European strategy, Kazakhstan was the most important country in Central Asia. According to Europeans, the country will become the most powerful actor in the region in the future due to its natural underground capacities and quality population, even without the support of the European Union.

Evidence also suggests that Kazakh officials have taken astonishing initiatives to modernize the military, modernize the education system, and reform at various levels. In addition, the country has shown signs of leadership desire in the region.

They have proven their willingness to integrate into the global economy. With aware of these issues, Europeans are also seeking to fulfill their political and economic commitments in Kazakhstan.

These changes are focused on two areas: The European Union is working with Kazakh elites and civil society groups in Kazakhstan to strengthen economic and social change processes. Secondly, the European Union will

continue its dialogue with Kazakhstan on political reform and institutionalize the rule of law in this country with a focus on the desire of the Kazakhs to establish a stronger link with political and social institutions.
Success in helping Kazakhstan advance European-oriented processes, including modernization and reform, will have a lasting impact on the situation in Kazakhstan and could serve as a model for other Central Asian leaders.
Of course, this can challenge the role of other actors (Melvin,2007:4). In general, in addition to the above stated goals, the European Union seeks to turn Kazakhstan into a successful model of political, economic and even socio-cultural development, and scientific diplomacy provides the EU with powerful tools without sensitization. Therefore, while designing the programs, they have tried to seriously pursue their programs in the fields of sustainable development, strengthening civil society and academic cooperation.

4-1. The Importance of Scientific Diplomacy in Achieving the Goals of the European Union in Central Asia and Kazakhstan

Europe in general and the European Union in particular, has a high level of scientific and technological capacity and is trying to use this scientific capacity as one of the main tools to achieve its goals in various parts of the world, including Central Asia. In this regard, the EU's Commissioner for Innovation and Science, Carlos Modas believes that we must provide the background for achieving our goals outside the European Union by supporting scientific diplomacy. Diplomatically, the EU's Global Strategy for Foreign Policy and Security Policy, implemented in June 2016, also directly addresses scientific diplomacy to resolve disputes and make them more flexible with its neighbors (Selleslaghs,2017:3).
Similarly, the importance of scientific cooperation at the highest levels has been noted by European officials over Central Asia. EU Commissioner for International Cooperation Mariana Cristiano Rousseau made her first foreign trip to Kazakhstan in 2015. During the meetings with the Kazakh officials, the importance of the union's scientific, research and innovative cooperation with Kazakhstan was emphasized. During the meetings, Rousseau invited Kazakh officials to participate in the "Horizon 2020" program, the main goal of which is to develop more cooperation in the fields of research, innovation and energy. During her visit to Kazakhstan,

Christiana Rousseau made it clear that Kazakhstan has a high position as one of the EU's energy suppliers. Kazakhstan currently provides about 5-6 percent of the EU's oil needs and more than 21 percent of the EU's uranium needs (Burger,2015).

The importance and role of scientific diplomacy in achieving the goals of the European Union in Central Asia, especially Kazakhstan, is due to the fact that the political system in Central Asia, including Kazakhstan, is authoritarian and pursues goals through indirect scientific diplomacy with less reaction and sensitivity. In fact, the rulers in these areas are the same as the former nominees who were members of the Soviet Communist Party, so they do not show any interest in democracy and political expansion. As a result, scientific diplomacy especially that which does not directly target political structures, is able to provide a gradual basis for political expansion and regression, especially since much of the EU's scientific diplomacy aims to strengthen civil society. It can be called scientific diplomacy based on the humanities. In fact, supporting reform from the bottom up will perpetuate and sustain the changes that have taken place in the long run. On the other hand, scientific diplomacy causes different institutions in a country to be involved in achieving the desired goal, and this can provide the ground for multilateralism and a kind of institutional dependence. In other words, different institutions have different views on different issues, and this is a kind of practice of democracy from the bottom up, and may force the rulers to make reforms in the long run (Gluckman et al,2017:3).

5. Results

5-1. Framework programs

The European Union's science and technology policy applies to different regions for different periods of 4 to 7 years. For example, in this case, we can refer to "framework programs that were usually implemented with the participation of a third party. Under the influence of various agreements signed with other countries, various science and technology programs are also implemented in them. That is why the European Union has signed agreements with various countries on cooperation in science and technology, including Ukraine and Russia. In the case of Central Asian countries, agreements on cooperation and public participation have been signed between the union and Kazakhstan, which, of course, also cover science and technology cooperation. In the framework of "framework

programs", the promotion of international science and technology cooperation is part of the union's executive policies.
The first such program was in 1987-1988, the second in 1991-1987, and the third in 1990-94. During this period, international scientific cooperation was organized through individual-person employment contracts (with a specific country). International institutions such as the International Association for the Promotion of Cooperation, the International Center for Science and Technology, the European Cooperation for Science and Technology Program, the International Center for Science and Technology in Ukraine and especially through the arrangements of international cooperation such as the European Research Cooperation Agency have been.
As international cooperation with scientists in a third country expanded, a science and technology development program began within the framework of the "Framework Mandatory 4" program. Under the program (FP5), scientists from third countries could participate in EU research projects, which was not possible in FP4. Cooperation on international development and technology within the FP6 was directly and explicitly linked to the EU's political priorities, thereby implementing Lisbon's strategy and the development of the European Research Area.
The FP6's areas of work included the following:
- Biological sciences, genomics and biotechnology for health
-Information technology related technologies
- Nanotechnology, knowledge-based multifunctional materials, and new production processes and tools
-air and Space
-Quality and safety of food
- Sustainable development, global change and ecosystem (p. 22)
During this period, various projects in various fields have been implemented in Central Asia with the financial support of the European Union, which are mentioned in Table (1).

Table (1): Total Executive Projects in FP6 (Time Period 2003-2006)

	All countries	Tajikistan	Turkmenistan	Kyrgyzstan	Uzbekistan	Kazakhstan
The entire project	44	5	3	9	12	15

(**Source**: CORDIS website)

FP6 projects have included projects related to sustainable development, global and ecosystem change, the social sciences and humanities, and tools for international cooperation.

Kazakhstan has had the most cooperation with Denmark, France and the United Kingdom, as well as Uzbekistan and Russia. Of course, Kazakhstan has cooperated more with these countries. One reason for this was Kazakhstan's rapid economic growth between 2003 and 2007. As a result, local Kazakh research institutions received significant financial support from the government. During this time, 19 Kazakh research institutes participated in FP6 projects, 11 received international support, two supported the coherent development of research and innovation policies, and one supported the research infrastructure. Six Kazakh teams participated in research projects such as Sustainable Development, Food Quality, Nanotechnology and Air and Space. During this period, one project was in the field of research infrastructure, the other in food and food safety, one in aerospace, one in nanotechnology, two in the field of sustainable development, one in support of research and support for international action (Roll et al,2009:22-29).

The Almaty Institute of Electrical and Telecommunications Engineering also participated in three FP7 projects, one in the field of sustainable development, one in the field of nanotechnology and the other in support of international cooperation. The Independent Specialized Advisory Institute for Scientific Research in Kazakhstan has also been active in three projects in the areas of sustainable development and food quality. In addition to co-operation between EU and Kazakh government agencies, Kazakhstan's National Technical University, later renamed KA Satpif participated in two international cooperation projects. Academic experts from the country participated in areas such as the combined development of raw materials and minerals, rational use and protection of fuel, raw material-mineral resources, energy and water; nanotechnology and raw materials; information and communication technology, and agriculture.

The Space Research Center also participated in one of the aerospace projects. While all of the above research organizations were from Almaty, the GSC Center for Engineering and Technology Transfer and the Eurasian National University of Astana are also on the FP6 project, as part of supportive activities for the integrated development of research and patent

policies and the university and Turkish International - Kazakh from Turkestan and South Kazakhstan State University from Shimkent. Kazakhstan's most important partners in projects under the FP6 program were Russia, Germany, Uzbekistan, the United Kingdom, France and Ukraine. With the completion of the FP6 program, the next FP7 program was launched, which, like the previous FP7 program, aimed to attract non-European scientists to implement various projects around the world but under the FP7, international cooperation was broader and more in line with the EU's overall foreign policy than through strategic partnerships with third parties, including cooperation in the field of development and science and technology to counter the challenge. Let the world rise and thus provide stability and prosperity in the neighboring areas of the union.

Research topics supported in the FP7 framework included: health; food, agriculture, fisheries and biotechnology; information and communication technologies; nanotechnology, nanotechnology, new materials and technologies; energy; Environment; space (Roll et al,2009:22-29).

5-2. Scientific Cooperation in the Field of Education

The most important currents of cooperation between the European Union and the Republic of Kazakhstan in the field of education have been seen in the "EU Strategy for Central Asia: Updated Priorities for Kazakhstan" for 2007-2013. This common strategy and document includes the development of cooperation between partners and leading universities in the European Union (through student exchange and scholarships), and the development of vocational technical education (through participation in European Education Foundation programs). As part of this strategy, the Tempus initiative in relation to higher education, the Arsmus Mondus initiative in relation to technical work groups and national-level discussions of the European Education Foundation, and another Karen, began providing services to different parts of the world. European foundations also offered scholarships to Central Asian students and students from around the world, such as the British Council, the German Student Exchange Service (DAD), the Office of Educational Cooperation and Linguistics, and the National Center for High School Curriculum (France) (Tolymbek,2006:15). In fact, programs related to EU scientific diplomacy are implemented through Erasmus and Bolgana projects. In essence, the Erasmus program provides credits and procedures for developing educational policy.

The Bulgana process, as a set of ten political areas, sought to reform higher education, and the Arsmus Mundus program sought to link higher education institutions in Central Asia, offices, and students with similar institutions in the European Union. The EU's Erasmus Mundus program has been in place since 2004 and provides a consortium of EU higher education institutions with the aim of mobilizing professors and students and providing them with financial and procedural support. Higher education institutions in other countries can also join the program. With the development of this program and the increase of its budget line in 2007-2013, it will provide conditions for neighboring countries, including Central Asia. As of 2007-2008, € 4.4 million was allocated to Central Asia (Jones,2014:74-75-76)

The Karen Project has also created a wide-ranging network to connect Central Asia's postgraduate educational and research institutions with EU research institutions and the global arena. Eventually, the European Education Foundation will improve the education, training and vocational departments in Central Asia. Kazakhstan and Uzbekistan have now reformed parts of their higher education system by joining the Bolgana Process Guide, and have joined the Bolgana Political Association since 2009 as part of the Foreign Ministry meeting in Lyon, making the Bolgana Process a priority. Both countries have clearly reformed curricula in areas such as engineering, science and technology, social and business sciences, health and social support.

It has also implemented academic management and student service focusing on quality assurance in line with the EU's political development process. It should be noted that among the Central Asian countries, Kazakhstan is the only country that has followed the European model of higher education reform. The foundation was established in 2009 with the launch of a new initiative for Central Asia, including Kazakhstan, Kyrgyzstan and Tajikistan: school development with the aim of lifelong learning established. The German Society for International Cooperation (KTZ) is advising Kazakhstan on the implementation of a dual German vocational education system. Since 2008, the Germans have been trying to persuade the Kazakh government to build a vocational education system in the country. That's why the German Society for International Cooperation has set up offices in Astana and Almaty. The Center for International Migration and Development and the Service of Senior Experts are the second largest

exporters of specialists to Kazakhstan.
In addition to the program, the Goethe-Institute Program and Language Group awarded the "German Academic Exchange Service Training and Training Program" for the third hair. "Central Agency for Teacher Education Program Phase II", has been working in Kazakhstan. These teachers teach students to learn German until graduation. The Robert Bush Foundation also has a training center in Kazakhstan. The German Language Centers in Astana, Carganda, Paulodar, Costa Rica, and Ost Kaminogorsk, as a partner of the Goethe-Institute, provide the Kazakhs with valid German language certificates. Each year, the institute provides funding for 60 to 70 Kazakh students to study for long-term and short-term courses, and provides scholarships for those working on Kazakhstan's government program called Bolshak. Cooperation between Germany and Kazakhstan in higher education is very comprehensive. There are several active university participation programs and student exchanges between the two countries. German language departments are active in seven Kazakh universities. Alexander van Hoombolt Foundation provides scholarships to outstanding Kazakh students. Diplomatic trade is also common between the two countries. The Federal Foreign Office invites Kazakh diplomats to undergo further training in Germany. Since 2004, Kazakhstan has been participating in the Federal Parliament's International Parliamentary Internship Program in Germany. Every year, five Kazakhs are selected for the scholarship. The University of Germany-Kazakhstan was established in 1999 on the personal initiative of German-Kazakh teachers. He works closely with German universities, his work program is mostly about engineering studies, and is funded by the judiciary (http: //www.auswaertiges).

5-3. Executive Projects and their Generalities

Some of these programs are implemented regionally in cooperation with other Central Asian countries. The technical partnership for the energy sector under the Baku Initiative was implemented within the framework of the Inogat program in three common sectors: energy markets, energy security and investment attraction. An important dimension of cooperation includes strengthening environmental protection in the oil and gas industry by strengthening the legal framework (Amini, Mianabadi and Naddaf,2018: 150). In fact, environmental challenges are well addressed through the EU-Central Asia Environmental Dialogue and subsequent measures, especially

in the area of climate change, and the coordinated management of groundwater resources. The most important practical measures in the field of education are through the Erasmus Mondes Academic Mobilization Program, the Tempus Program for the Modernization of Higher Education, the programs for supporting vocational education and research institutions (http://www.increast.eu/en/164.php).

According to the International Center for Science and Technology, the list of projects to be funded includes beneficiary countries and technology fields. Between 1994 and 2013, the International Center for Science and Technology funded 2,794 projects with a total financial value of 879,018,844 dollars.

Table (2): List of Projects Implemented with the Implementing and Partner Countries and the Amount of Investment Made (1994-2014 Period)

Country	Total investment over a 20-year period	The total number of projects in the entire 20-year period	The amount of capital in 2013	The number of projects in 2013	Type of investment
America	219291305	554	845,550,3 dollar	17	Total credit provider
Japan	8,486,738 dollar	138	100 million dollar	1	Total credit provider
European Union	54,054,117 dollar	138	758,300 million dollar	2	Total credit provider
South Korea	2,319,189 dollar	11	0	0	Total credit provider
Canada	622,456 dollar	5	0	0	Total credit provider

(**Source:** Schuch et al,2012)

Table (3): Number of Projects Implemented in the Commonwealth of Independent States by Countries in the Period 1993-2013

Country	Capital allocated over a period of twenty years	The total number of projects over a period of twenty years	Capital allocated in 2013	Number of projects in 2013
Armenia	417,60,810	172	1,001,00	4
Belarus	27,386,964	100	0	0
Georgia	30,554,472	152	869,739	8
Kazakhstan	75,593,162	201	4,779,300	11
Kyrgyzstan	23,778,668	91	1,122,795	4
Russia	667,386,765	2033	0	0
Tajikistan	12,493,351	44	1,205,575	4
Ukraine	64,296	1	0	0
Total	879,018,488	2794	8,978,409	31

(**Source:** Prepared by the author using information from the European Commission Schuch et al,2012)

Table (4): List of Implemented Projects by Subject (1994-2013)

Field Name	The Total Capital Allocated to the US dollar	Total Number of Projects	The Amount of Capital Allocated in 2013	Number of Investment Projects
Agriculture	34,152,144	89	566300	0
Biotech	125,733,294	329	2917800	13
chemistry	55,773,420	208	1247945	5
the environment	136,730,323	440	1112775	3
The reactor split	97,931,67	274	1490000	2
information	28,536,916	107	0	0
Tool	37,324,855	135	0	0
Production technology	21,412,969	75	0	0
Material	69,664,189	216	620000	2
Medical	85,499,130	235	1023589	4
Non-nuclear energy	22,470,981	64	0	0
Others	2,789,135	18	0	0
Aerospace	29,676,620	104	0	0

(**Source:** Schub et al, 2012; Peyrouse, 2014)

The European Union is working to assist Kazakhstan in non-nuclear areas. For example, European financial institutions are investing in parts of Central Asia's economy. The European Bank for Reconstruction and Development last year invested nearly 450 dollar million in Kazakhstan, more than half of which was in the green energy sector. The bank has started investing in solar, wind, hydro and biogas and is considering energy efficiency in areas

such as transportation, electricity and urban infrastructure. Most of these investments were in electricity generation. They are investing in Central Asia, the Kazakh Electricity Distribution Company and the Chardara Water Power Company. The bank has five dealerships in the five cities of Daraamati, Ost-Kamenogorsk, Kustanai, Oktub, Aksai and Shim Kent. He is currently working on 10 projects in Kazakhstan to invest in solid waste management, central water and heat. In addition, he works in the fields of urban public transport and urban lighting. In 2013, for example, the European Bank for Reconstruction and Development invested in 100 environmentally friendly gas-powered buses. In 2010, the bank sponsored research into the carbon market options in Kazakhstan. (Mozingo,2013:20). During this period in Kazakhstan 2 projects in the field of health, 2 projects in the field of food and agriculture, 1 project in the field of communication and information technologies, 2 projects in the field of energy, 1 project in the environment and one related to the people, Inco three. (P. 31) until 2002, Kazakhstan had successfully participated in 212 projects invested by FP4. Kazakhstan's institutions at Eurocat, TACIS / TEMPUS, also requested that the plan be submitted and included. In the FP7, 46 teams from Kazakhstan applied for 10 projects, eight of which were completed as part of successful projects. Two food and biotechnology projects, two environmental projects, one on energy, one on health, one on research infrastructure and one on international cooperation.

The Specialized Advisory Board for Promoting Scientific Research in Kazakhstan has been involved in a project related to Inco and other projects related to food, agriculture and biotechnology. The Center for Reconstruction and Environmental Development of the Republic of Kazakhstan participated in a project on food, technology and food security. The Geography Institute, the Earth Scientific Center for Metallurgy, Metallurgy and Enrichment in Almaty, and the Kazakh special gas company Monay Gas from Astana were each involved in an environmental project.

The Climate Change Cooperation Center was involved in an energy project. The Center for the Study of Public Ideas was also involved in a health project. The Ministry of Education and Science's Younesfar Institute was present in the field of research infrastructure.

As part of Intas' calls from 2003-2006, 17 projects were implemented by the Kazakh team and funded by Intas. Interestingly, from 2003 to 2006,

Kazakhstan often participated in research projects in the fields of biology and human security, and in the social sciences and humanities. Kazakhstan's National University, later renamed Al-Farabi, and participated in two Inattas projects in the social sciences and humanities. Eurasia National University was a partner in one field of mathematics and another in sociology.
The Institute of Chemical Sciences of the Ministry of Science and Education participated in two projects, one on chemistry and the other on human health. The Kazakh Zoological Institute has participated in two BIAS projects related to biology. The Center for the Study of Public Opinion, which was active in FP7, was successfully involved in one of the social science projects. The Republic of Kazakhstan participated in 20 projects funded by the International Science and Technology Research Center, and the National University of Kazakhstan and the Medical University of Kazakhstan participated in a number of projects.

6. Analysis and Interpretation of Research Findings

After the dissolution of the Soviet Union, former Soviet states reached an agreement whereby Soviet military and nuclear forces would remain wherever they were located. At the time, it was not immediately clear whether or not Kazakhstan, along with Ukraine and Belarus, would relinquish former Soviet nuclear arsenals. Kazakhstan found itself an independent nuclear armed state with the world's fourth-largest arsenal of 1,410 nuclear warheads. In addition to logistical challenges of managing and securing such a vast arsenal, it also inherited a large nuclear testing complex. The strategic rocket forces, stationed in Kazakhstan at Leninsk, Zhangiz-Tobe, Derzhavinsk and Semipa-latinsk, were equipped with 104 of the Soviet Union's SS-18 intercontinental ballistic missiles. Each of these was capable of delivering ten independently targeted nuclear warheads. An air base at Chagan hosted 47 TU-92M bombers and 320 nuclear cruise missiles. Kazakhstan also came into possession of a nuclear manufacturing complex at Ust-Kamenogorsk, as well as a nuclear testing and storage facilities at Kokshetau (Oxan,2017). In results global efforts to disarm of Kazakhstan and use nuclear energy peacefully by this country have come to the fore. EU, U.S.A and Russia Together, paved the way for the country's disarmament. The European Union was firmly committed to strengthening nuclear safety, security, safeguards and non-proliferation through a global and effective approach in the areas in which it has competence. In this

regard, the European Union has taken several measures (Andrew,2014:89).
For example, following a review to enhance its effectiveness, the EU's Export Control Dual-Use Outreach Programme, now part of the CoE initiative, will continue in 34countries. To help strengthen a global nuclear security culture, the EU supports the work of the STCUin Ukraine and the ISTC in Kazakhstan via training and projects as part of its overall preventive approach and in accordance with the new lines for action in combating the proliferation of WMD and their delivery systems.
Until now Euratom cooperation agreements in peaceful uses of nuclear energy have been concluded mainly with major suppliers (USA, Canada, Australia, Kazakhstan) or customers (Japan). Euratom's international nuclear cooperation agreements, covering trade in nuclear materials and equipment, require the parties to adhere to the strictest international standards in physical protection and nuclear export controls (Kobia,2017:42). This reflects Euratom's policy of encouraging the responsible use of nuclear energy by countries that choose to include nuclear power in their energy mix. Euratom research Cooperation Agreements focused on nuclear safety with Russia (2002), Ukraine (2002), Kazakhstan (2003) and the US Nuclear Regulatory Commission (2009), which also include security in their scope. Finally, the European Safeguards Research and Development Association (ESARDA) 33and the Institute of Nuclear Materials Management (INMM) 34provide platforms for technical cooperation, exchange and convergence on nuclear safeguards and nuclear security, including nuclear forensic (ec. europa.eu,2016:25).
Similarly,.the.EU has become Kazakhstan's most important trading partner, representing more than 50 per cent of total Foreign Direct Investments (FDI) in Kazakhstan, amounting to nearly US$100bn in 2013. The EU imports around 5-6 per cent of its oil consumption and 21 per cent of its uranium demand. Although Kazakhstan has the world's second largest uranium reserves after Australia, with around 1.5mt (or nearly 15% of the explored global reserves), and is globally the largest uranium producer since 2009 with around 22,500t in 2013 (38% of global production), it had only one nuclear reactor, which it decommissioned in 2001. Hence all produced uranium goes to exports. But Kazakhstan still has plans to build two new 1,500MW nuclear power plants in southeast Kazakhstan, and another one in Kurchatov in the East Kazakhstan Province (northeast of the country). The

Partnership and Cooperation Agreement concluded in 1999 between the EC, its Member States and Kazakhstan states in Article 18 that the European Atomic Energy Community and Kazakhstan should conclude an Agreement on trade in nuclear materials. On 27 June 2000 the Council adopted a Decision issuing directives to the Commission for the negotiation of a nuclear cooperation agreement between Euratom and Kazakhstan. On 18 January 2001, the Commission submitted to the Kazakh authorities a first draft of the agreement, proposing to start negotiations. The negotiations lasted until September 2006, when the text was agreed by both Parties. The provisions of this Agreement shall supersede the provisions in existing bilateral agreements between individual Member States of the Community and the Republic of Kazakhstan providing for rights and obligations contained in this Agreement (see Article 12) (ec. europa.eu,2009). An intergovernmental agreement was signed in September 2014 (Umbach and Slawomir,2015). And in 2017 an agreement was signed for cooperation between the Government of the Republic of Kazakhstan and the European Atomic Energy Community in the field of controlled nuclear fusion. The objective of this Agreement is to maintain and intensify cooperation between the Parties in the areas covered by their respective fusion programmes on the basis of mutual benefit in order to develop the scientific understanding and technological capability underlying a fusion power system (Article 1).

The analysis of the data in Table 4 shows show that 274 projects in the field of the reactor split, 216 projects in the field of materials, 208 in the field of chemistry were implemented in Central Asia during the period 1990 to 213 with the participation of the European side. In other words, it can be acknowledged that most of the projects that have been implemented are somehow related to preventing nuclear proliferation. Support for projects such as biotechnology, non-nuclear energy, nuclear fission, the environment, chemistry, and materials and metallurgy all demonstrate the EU's determination to prevent nuclear proliferation. At the institutional level, the European Union is also seeking to achieve its goals by joining institutions set up to prevent nuclear proliferation. For example, it has been a member of the International Center for Science and Technology since its inception. The International Science and Technology Centre (ISTC) in Moscow deals with the employment and redirection of former weapons

scientists from Russia, Armenia, Belarus, Georgia, Kazakhstan, Kyrgyzstan and Tajikistan. It is operated jointly with the beneficiary states and the EU, US, Canada, Japan, Korea and Norway. The mission of ISTC is to advance global peace and prosperity through cooperative Chemical, Biological, Radiological and Nuclear (CBRN) risk mitigation by supporting civilian science and technology partners and collaboration that addresses global security and advances non-proliferation. In the last 25 years, ISTC has actively engaged over 75000 former weapons specialists in more than 760 research institutes spread across CIS and Georgia in ISTC projects and activities.

EU and Kazakhstan cooperate in areas such as dual-use items: Dual-use items are goods, software and technology normally used for civilian purposes but which may have military applications or may contribute to the proliferation of Weapons of Mass Destruction. As such, the EU and Kazakhstan pay particular attention to the control of their export, transit and brokering to prevent their proliferation. in the framework of the EU P2P project based on the request of the Kazakhstan government to establish dual use identification on nuclear items, EU discuss ways to promote greater regional and cross-border cooperation between the five Central Asian countries and Mongolia. The EU P2P Programme has discussed future activities with Kazakhstan and five neighbouring countries - Kyrgyzstan, Mongolia, Tajikistan, Turkmenistan and Uzbekistan – as well as the programme achievements and also the potential new ways of cooperation on Dual Use Export Control at a regional level. Since January 2014, the beginning of close cooperation with Kazakhstan in the field of strategic trade controls, especially export controls of dual-use items, an intense assistance programme based on a jointly elaborated action plan was developed. Several fields of cooperation were identified, among others also technical assistance in establishing an Identification Centre for nuclear and radioactive materials in Kurchatov, awareness raising campaigns for the private sector and assistance for academia in organizing a university course on strategic trade controls/management (eeas.europa.eu,2017).

It seems that the European Union with aiming to prevent nuclear proliferation has divided scientific diplomacy into two important parts: hard technology-based scientific diplomacy and soft technology-based scientific diplomacy. Although the second type of diplomacy has received less

attention from the union, both types of diplomacy serve to increase the union's soft weight in Central Asia, especially in Kazakhstan. European countries seem to view Kazakhstan as a successful model of economic development in the region and are trying to help the country in this regard. Strengthening civil society in this regard is part of the scientific diplomacy with the approach of the humanities of this union. But it should be noted that EU science and technology diplomacy in Kazakhstan also has one main goal, and that is to counter nuclear proliferation.

For example, nearly 600 projects in Central Asia have been implemented by the European Union in the field of science and technology, all of which have been funded by the EU, most of which are aimed at strengthening people's relationship with the people and political advice. And it has been technical. Recently, about 50 projects in six areas have been implemented by the European Union in Kazakhstan in the framework of the "Central Asian Strategy for Achieving a New Strategy" in Kazakhstan, which are as follows: Democratization; 2. Future investment in youth and education; 3. Improving and promoting economic and social development, investment and trade; Strengthen energy transfer and transport links; 5. Environmental and water sustainability; Dealing with new threats and challenges. In all these areas, the European Union has established a close relationship with national authorities, the private sector and civil society.

It should be noted that Kazakhstan's huge oil capacities have also contributed further. This has led to investment in Kazakhstan-European universities, most of which are funded by European companies. Kazakh students are accepted in European countries with the aim of strengthening civil society: for example, the United Kingdom has strong ties to Kazakhstan's education sector, including technical and vocational education, academic and secondary education. Kazakhstan Technical University - UK Apart from many universities in the UK, it also participates with universities from Canada, China, Germany, Italy, Malaysia, South Korea, Russia, Singapore, Turkey. Bulgaria, France, Greece and Spain are other countries cooperating with Kazakhstan in education, science and technology (Cengel Alpay and Sultangazin,2013).

Some Kazakh students are also studying in France. In Kazakhstan, France, some of those involved in civic activities are trained with the participation of the National School of Management and the Academy of Public Services.

During the 2011-2012 academic year, thousands of scholarship recipients and scholarships were offered in France. It was created in 2011 at the French Education Department in Astana, which allows Kazakhs to continue learning French. In 2012, Kazakhstan's Atom Prom and France's Ariva began a joint study on nuclear fuel production in Kazakhstan. In this way, they will be able to monitor the nuclear activities in this country and prevent any possibility of deviation in the nuclear program of this country. On the other hand, efforts are being made to train elites who will be influential in the country's political system in the future and who will pursue the national interests of these countries in Central Asian countries, including Kazakhstan.

In fact, in this section, through the scientific diplomacy of the humanities, they seek to achieve their goals, because in this type of diplomacy, through the scientific context, the grounds for political change are provided but this means that with this approach, the concept is not purely political. In the scientific diplomacy of the humanities, economic interests must be considered, but these economic interests are achieved through political and scientific contexts, so the scientific diplomacy of the humanities is considered a multidimensional concept that can be all three dimensions of politics, economics and science with a humanities approach. Observed in it. In fact, the economic element is one of the main factors shaping the scientific diplomacy of the humanities. Kazakhstan's huge oil and gas capacity is a key factor in pursuing this type of diplomacy in Central Asia (Gluck man et al,2017:5-6).

Economic incentives lead to joint cooperation between British Petroleum Oil Company and start extensive scientific cooperation with Kazakhstan. For example, a number of universities are offering programs at the Kazakhstan-UK Technical University, where the British Petroleum and Shell Group have planned programs for the postgraduate program.

Since 2001, Kazakhstan-UK Technical University has been accepting students with a special focus on oil, chemistry and ET engineering. The university also offers programs in economics, finance and management. The International School of Economics and Political Science of the Technical University of Kazakhstan and the United Kingdom is the only international program university to award dual degrees in Kazakhstan. It goes without saying that Kazakhstan's peaceful foreign policy role in creating an

environment conducive to the improvement of the EU's scientific diplomacy in this country is remarkable, where its leaders have paved the way for bilateral exchanges in various fields. Goldsons and Gluckmann, for example, in a study entitled "How Small Countries Can Use Scientific Diplomacy: A Look at the State of New Zealand" claim that micro-powers are also able to use the capacity of scientific diplomacy to achieve objective economic benefits. In fact, scientific capacity helps a country like Kazakhstan to use it to achieve its economic interests (Goldson and Gluckman,2014:231-242).

According to this approach, Kazakhstan's scientific capacity among Central Asian countries has strengthened its desire to cooperate with the country through the European Union's scientific diplomacy apparatus, and as a result, has contributed to the formation of joint scientific teams between Kazakhs and European countries. Supporting economic development in Central Asia, especially Kazakhstan, has been an important part of the EU's scientific policy over the years. In particular, the European Union, along with the United States, supports the model of neoliberal economic development, which is why the role of the United States in cooperating with the European Union is so significant. Supporting sustainable development is part of the neoliberal development model. In fact, tackling environmental challenges is an important part of the EU's scientific cooperation program with the Central Asian region, especially Kazakhstan. As can be seen in the tables, most of these projects have been in the areas of environment, biotechnology, physics, and fission reactors. During this time, the United States and Europe have been the largest providers of funding for projects, and Russian research institutions have benefited the most from this funding. However, during this time period, most project support has shifted to Central Asia and the Caucasus. The scientific diplomacy of the humanities can be used in the international system with the aim of increasing the soft power of a country. In fact, the European Union is turning to this type of support because it will increase their soft power in the eyes of global public opinion (Mousavi Zare et al,2017:111). They have graciously understood how scientific diplomacy can go beyond economic interests. Europeans are well aware that they can use scientific diplomacy to provide developmental advice in a variety of dimensions.

In a study entitled The Newton Foundation: Science and Innovation for

Development and Scientific Diplomacy, Grimes and McNulty argue that development counseling is useful when it comes directly to changing the science variable, much of the aid is in the form of technological dimensions, public health, food security and energy, with the aim of diversifying the economy. In fact, the use of scientific expertise with the aim of advancing politics, expressing critical situations, promoting and supporting human development is considered even in countries with the lowest income levels. In this regard, the Government of Canada has put scientific cooperation on the agenda to provide scientific advice to Africans, Asians and even Latin American countries. (Grimes and McNulty,2016).

7.Conclusion

Scientific diplomacy has been considered as one of the main tools to achieve a country's goals in the international arena. This model of diplomacy has been put on the agenda by various actors, including the European Union, because of the EU's high position in the scientific sector. The main objectives of science and technology diplomacy of EU appear to monitor the country's nuclear activities with the aim of preventing nuclear proliferation via support from the model of neoliberal economic development, increase the capacity of civil society, and support the soft power of the union. Europeans are blocking the possibility of deviations in Kazakhstan's nuclear activities in the form of scientific cooperation, especially the implementation of nuclear fission projects. Of course, the complementary goal of this section can also be achieved through cooperation in the fields of aerospace, materials and chemistry. In fact, while injecting the necessary incentive for Kazakhstan to participate in the international community, Europeans have sought to create the conditions necessary to achieve their political goals through a bottom-up approach by strengthening civil society. In this regard, the major European powers, including Germany, the United Kingdom and France, are playing a significant role in providing scholarships to Kazakh students. Indeed, educating elites who can serve the interests of Europeans in Kazakhstan in the future is one of their hidden goals. What is clear is that Europeans are seeking to present Kazakhstan as a successful development model to other countries in the region. In this regard, of course, they also cooperate with the Americans. It is natural that the European Union's approach is to use soft capacities to advance its political goals. Of course, the development-oriented view of Kazakh rulers,

along with the country's vast oil potential and its proximity to Russia, is one of the key points for Europeans to pay special attention to Kazakhstan, even in areas such as science and technology.

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