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## Natural sciences

## Biology

УДК: 598.12

*Kalykberdieva A.T.**KNU n.a. J. Balasagyn, Bishkek**Калыкбердиева А.Т.**КНУ им. Ж.Баласагына, Бишкек***To the study of hematological indexes (the size of erythrocytes) of a Pallas Coluber (*Elaphe dione*), 1773 (Squamata, Serpentes)****К изучению гематологических показателей (размеров эритроцитов) у узорчатого полоза *Elaphe dione* Pallas, 1773 (Squamata, Serpentes)****Наарду сойлоктун *Elaphe dione* Pallas, 1773 (Squamata, Serpentes) гематологиялык көрсөткүчтөрүн (эритроциттердин өлчөмдөрү) изилдөө**

**Abstract:** the article is dedicated to the study of one of the most widespread types of snakes from the genus of creeping colubers—to the Pallas Coluber (*Elaphe dione*), to its morphology and such indexes, as size of red corpuscles, reflecting the physiological state of organism depending on ecological conditions (in this case in the Kochkor Valley, Kyrgyzstan). In this research, the method of intravital determination of blood composition was applied, which is important for saving the population.

**Аннотация:** статья посвящена изучению одного из широко распространенных видов змей из рода ползающих полозов – узорчатому полозу *Elaphe dione* Pall., его морфологии и такому показателю, как размеры эритроцитов, отражающему физиологическое состояние организма в зависимости от экологических условий (в данном случае условий Кочкорской долины Кыргызстана). В исследовании применялся метод прижизненного определения состава крови, что важно для сохранения численности популяции вида.

**Аннотация:** бул макала жыландардын арасынан сойлоктор уруусуна кирүүчү кеңири таралган түр – наарду сойлокко *Elaphe dione* Pall., анын морфологиясына жана экологиялык шарттарга жараша организмдин физиологиялык абалын чагылдыруучу эритроциттердин өлчөмдөрүнө арналган. (Кочкор өрөөнү Кыргызстан). Изилдөөдө түрдүн популяциясынын санын сактоо үчүн маанилүү болгон, кандын курамын аныктоодо тирүү абалында изилдөө методу колдонулду.

**Keywords:** hematological indexes; morphology and physiology of Pallas Coluber; physiological state; quantity and diameter of erythrocytes; activity; artificial hibernation; method of a intravital research.

**Ключевые слова:** гематологические показатели; морфология и физиология узорчатого полоза; физиологическое состояние; количество и

диаметр эритроцитов; активность; искусственная спячка; метод прижизненного исследования.

**Негизги сөздөр:** гематологиялык көрсөткүчтөр; наардуу сойлоктун морфологиясы жана физиологиясы; физиологиялык абалы; эритроциттердин саны жана диаметри; активдүүлүк, жасалма чээнге киргизүү; тирүүлөй изилдөө методу.

Among innoxious snakes of Kyrgyzstan, the Pallas Coluber (*Elaphe dione*) (Genus of rat snakes *Elaphe*, Firz, 1832) is considered to be the most widespread type of *Elaphe* and, of very changeable coloration. [13.6]). Its length is up to 1.2 m. If we take a look at the head pholidosis of this Pallas Coluber, it is visible that prefrontal scutes adjoin with supraorbital ones, and the only jugal scute is trapezium-shaped. As a rule, there are from one to three postorbital scutes, eight supralabial scutes, subcaudal ones – 44-76. Females are bigger than males, and their coeliac scutes reach up to 184-215 in quantity. Proctal scute is usually split; the fourth labial scute adjoins the eyes. Scutes on the back are with weak ribs and two apikal pores, and on the sides of the body they are smooth. On the top surface of the head, a drawing familiar to this type of Pallas Coluber is located, which changes with age. A dark temporal strip passes through the eyes to the neck. The belly part is usually grayish or yellowish; rarely with dark spots. After a molt the coloring becomes more contrast and scutes start to shine.

It lives in the most various conditions in several natural zones of the republic, i.e. it is very ecologically pliant genus. It is spread from steppes and deserts of the Chuy and Talas valley plains up to the mid-mountain and mountain steppes, meadows, deserts and semi-deserts of the Kochkor, Kara-Kuzhur, Dzhumgal, Toktogul and other valleys. They can be found at the floodplains and valleys of the rivers, lakes, in the juniper forests and on stony slopes of the mountains, on the suburbs of the swamps, which rise up to 3200 meters above the sea level. Pallas Coluber may be found in arid landscapes, on saline soils. It often inhabits anthropogenic landscapes: gardens, kitchen gardens, crops and irrigated lands. It perfectly climbs and quickly moves on branches of trees and bushes and on the ground, perfectly swims and dives. It eats small mammals (voles, mice), amphibians, fishes and insects, eats baby birds and bird eggs, easily climbs at steeps seeking for bird nests. It is usually active during the day.

The Kochkor Valley, is located in the Central part of Tien Shan, and differs by its orographic state and a number of ecological conditions. Dwelling of many animals in such conditions, including reptiles, to which Pallas Coluber belongs, influences morphological and physiological (hematological) indexes [6].

In the Kochkor Valley, we have found it in the village of Arakol (coordinates: height 1998 –2001m; N42°11' 038", E 075° 28' 409" and N42°10' 157", E 075° 29' 299") where it has occupied a piedmont part of the valley and was found along wetlands stretching to the north of the village and occupy scores of hectares. Abundance is little – one or two specimen per hectare. Under the conditions of mountainous semi-desert and steppes, what Shamsi is like (coordinates: height of 2397-2500 m, N42°19' 711", E 075° 24' 348"), the Pallas Coluber is spread sporadically and occupies semi-desert and steppe sites. In a high-mountain part of the Kochkor Valley with the Chaar-Arch rift (coordinate: height 2752-3041m; N42°02' 687", E 075° 10' 492" - N42°03' 951", E 075° 10' 061") with its rugged landscape and various elevation changes, Pallas Coluber was found at the threshold of this rift, where it occupied a meadow and steppe zone. However, we should note that the population in these conditions was low, and we found only two specimen.

In the conditions of the Kochkor Valley, the Pallas Coluber falls into hibernation at the beginning of September, and it lasts till March or April. Both leaving for wintering and the beginning of copulation depends on altitudinal belt. In a plain part of the valley (the Arakol village, Kochkorka village, Cholpon, etc.), the Pallas Coluber falls into hibernation at the end of September, and it lasts till April or the beginning of May; in an alpine part (the Shamsi village, Ormonkhan, Chaar-Archa, etc.) – at the end of August, and it lasts till May. According to data, it is known that males mature before females [14]. For the first time, the blood was taken from a Pallas Coluber from the Kochkor Valley to identify the size of red corpuscles, more precisely, to identify their diameter from different habitats depending on a physiological condition of an organism.

**Resources and work procedure.** The material for this work was (as an ecologically pliant genus) **the Pallas Coluber, which was caught from different areas.**

The blood draw and sample was made, taking into account the sex, season, age and physiological conditions of animals. We applied a method of intravital blood draw, which is important for saving the population of a genus. There are several methods of intravital blood draw from snakes and lizards. Many researchers use the reptiles' tail part of the body for blood draw. It is a widespread blood draw method of dissecting or incision of a tail tip of turtles [16], snakes, small lizards and crocodiles [15, etc.]. Tail amputation allows receiving the necessary amount of blood for hematological and biochemical researches. The punctures of orbital, carotid

and sciatic arteries of snakes, offered by Olson [15] and other researchers, are not used nowadays, because of the small amount of blood received, which is insufficient for hematological researches.

We applied a method of blood draw by dissecting away a tail tip. We were convinced the amount of blood is enough for hematological research, especially for receiving good quality samples which is important while studying red corpuscle and measuring their diameter.

Determination of blood composition was made in the period of activity (June-July), i.e. in vivo and after it quits natural hibernation which corresponds to the state after keeping it at a temperature of  $+1^{\circ}\text{C}$ ,  $+2^{\circ}\text{C}$  artificially. Smear was carried out by the standard methods in medical industry and animal ecology [11, 5], with some modifications in relation to poikilothermal animals. Duration of smear coloring was selected based on a dye. Preparations were kept fixed in the 96<sup>0</sup> ethylenic alcohol, fixing lasted up to one minute, the coloring was carried out by azur-eosine according to Romanovsky, and duration was 20-25 min. Smears dried usually on open air at ambient temperature until disappearance of the wet gloss, because the cells are colored in better way. [10].

The painted dry smears then were looked through with the immersion system of a microscope. In the thin place of a smear, we measured the diameter of 200 red corpuscles. As the red corpuscles of poikilothermal vertebrata are ellipse shaped with core in the center, the measurement was performed in length and width (length x width), and for calculation of the effective diameter of red corpuscles (EDRC) and for more convenient calculation of differences reliability between size groups only indexes of big diameter, i.e. length of red corpuscles were taken.

To receive a reliable image, the calculation was made from one preparation of diameter of 100 red corpuscles for calculation of EDRC [12, 2, 3], and minimum 2-3 smears were taken from one animal. We measured the red corpuscles of 13 preparations, which were received from snakes of different inhabitation and at a different physiological state – in the period of activity and during the hibernation, i.e. after artificially created hibernation in a cold storage room. The sizes of erythrocytes received this way are divided into three size groups – red corpuscles from 8 to 10 microns in recalculation turned out to be 10.3-12.8 microns, from 11 to 15 microns or 14.9-17.5 microns and from 15 to 17 or 18.6 – 21.3 microns or above. It should be noted, that human's red corpuscles are distributed by their sizes to microcytes, normocytes and macrocytes (it is necessary to consider that the size do not coincide with reptiles' red corpuscles), we also will adhere to

such distribution and call red corpuscles nominally in the same way. The obtained data was processed by a statistical method with finding the reliability of distinctions – t. For establishment of distribution of red corpuscles in their magnitude, we calculated the ratio of different size groups, expressed in a percentage (%).

The effective diameter of red corpuscles (EDRC) is calculated by results of red blood cell count, by multiplication of each percent of cells with a particular diameter on its value in microns, and by summing up these products and dividing it by 100 [11,9]. For example, 10% of red corpuscles with a diameter of 10 microns, 60% - with a diameter of 13 microns and 30% - with a diameter of 16 microns. Thus, EDRC is calculated as follows:

$$\text{EDRC} = \frac{(10 \times 10) + (60 \times 13) + (30 \times 16)}{100} = \frac{100 + 780 + 480}{100} = 13.6 \text{ microns}$$

**The results and discussion.** Diameters of red corpuscles vary differently at different genus. The least diameter of red corpuscles have mammals, the largest red corpuscles are of batrachians. Fish red corpuscle diameters are equal to 10.5x19.7 microns and 6.0x12.0 microns [9]. According to G.N. Kalashnikov [8], the size of red corpuscles of fish are higher, than of the majority of mammals, but less than of the other representatives of poikilothermal animals. The quantity of red corpuscles in a unit of blood volume is linked to the intensity of an animal's metabolism. The greatest number of red corpuscles is in mammals' blood, the least – of reptiles, amphibians and fish, and in particular of cartilaginous fishes [4].

The respiratory properties of reptiles' blood research are of interest, because for the first time they have exclusively pulmonary respiration and skin respiration loses its importance [1]. The author has determined that a Caucasian agama has more red corpuscles in its blood than a turtle. Reptiles have lower number of red corpuscles than birds, though their red corpuscles are smaller in size: lizard's (*Lacerta muralis*) length of red corpuscle ranges from 12.5 to 14.0 microns, width – from 5.5 to 7.0 microns; turtle's (*Emys orbicularis*) – 15.5 – 18.5 and 10.0 – 12.5 microns respectfully [4].

The shape and size of red corpuscle are the function of metabolism, and thus torins the shape, which helps to fulfill the function. The research of the size and shape of red corpuscle and their variability has to lead to understanding of the delicate mechanisms of its function [13].

According to our data, for Palla Coluber (*Elaphe dione*) from different landscape zones with different ecological conditions EDRC ranges widely and the percentage ratio of size groups of red corpuscles is unequal (see Table 1).

Table 1. Red corpuscle size of Pallas Coluber during the activity and hibernation periods

№ pre para tion	Place of catching	Quanti ty of counte d cells	Effective diameter of red corpuscles (EDRC) according to the biggest diameter (in microns)					
			$\overline{M} \pm m$ 11,3 – 13,8	% ED RC	$\overline{M} \pm m$ 11,3 – 13,8	% CДЭ	$\overline{M} \pm m$ 11,3 – 13,8	% EDR C
1	Arakol village	100	13,2 ± 0,15	34	16,2 ± 0,16	57	19,2 ± 0,24	9
2		100	13,2 ± 0,18	22	16,3 ± 0,13	60	19,6 ± 0,28	18
3		100	13,2 ± 0,16	32	16,3 ± 0,13	57	18,5 ± 0,09	11
4*		100	13,0 ± 0,19	30	16,1 ± 0,15	54	19,0 ± 0,10	16
5*		100	13,2 ± 0,18	31	16,5 ± 0,14	57	19,9 ± 0,12	15
6	Chaar- Archa	200	13,8 ± 0,18	22	16,4 ± 0,13	64	19,1 ± 0,16	14
7		200	13,8 ± 0,24	25	16,3 ± 0,12	68	19,3 ± 0,30	8
8*		100	13,9 ± 0,25	24	16,5 ± 0,13	67	18,9 ± 0,29	11
9	Shamsi	200	13,5 ± 0,13	20	16,2 ± 0,12	70	18,7 ± 0,03	10
10		100	13,0 ± 0,16	24	16,3 ± 0,10	66	18,8 ± 0	10
11		100	13,6 ± 0,09	24	16,2 ± 0,13	68	18,7 ± 0,03	8
12*		100	13,3 ± 0,16	25	16,3 ± 0,12	57	19,3 ± 0,20	18
13*		100	13,5 ± 0,14	21	16,4 ± 0,13	59	19,4 ± 0,21	17
	Total:	1600						

Note: \* preparations were drawn during the artificial hibernation period

Red blood cells count for Pallas Coluber blood during the different physiological states - the period of activity and hibernation – has showed the following picture: the puberal Pallas Coluber, with a total body length of 710 mm from Arakol village, has the average size of red corpuscles of 0.1-0.5 microns, which is bigger than of a Pallas Coluber's from Shamsi village. However, we noted red corpuscles with narrow width. Therefore, red corpuscles with effective diameter of 12.9x7.2 microns make 34%, with sizes of 16.0x8.2 microns – 57% and 18.8x9.7 microns – 9%. After staying in hibernation, this specimen shows the red corpuscles dilatation due to the expansion of their small diameter. Thus, microcytes with sizes of 13.2x8.4 microns make 30%, normocytes – 16.2x9.5 microns - 54% and macrocytes – 19.1x10.3 microns – already 16%. The reliability of differences between the second and the third size group is higher, than during the active period and it makes 16.3 against 10.4.

In June, the quantity of red corpuscles of Pallas Coluber from Chaar-Archa alpine, is 770 thousand/mm<sup>3</sup>, the size of big diameter of red corpuscles ranges within 13.1 – 19.3 microns, of small diameter – 7.9 – 9.8 microns. Microcytes with a diameter of 13.1x7.8 microns make 21-25%,

with EDRC of  $16.3 \times 9.5$  microns and  $16.4 \times 9.3$  microns - 64-68% and with EDRC  $-19.1 \times 9.8$  microns –  $19.3 \times 9.1$  microns make only 8-14%. The reliability of differences between the first and second size group is equal to 15.4 and between the second and the third – to 12.8.

The puberal Pallas Coluber (total body length is 670 mm) from Shamsi area in August has 495 thousand/mm<sup>3</sup> red corpuscles in blood. After the wintering, the number of red corpuscles has considerably increased and made 950 thousand/mm<sup>3</sup>. In the period of activity, the volume of EDRC is equal to  $13.5 \times 9.0$  microns and makes 20%, at the average size of  $16.2 \times 9.9$  microns – 70% and  $18.7 \times 10.5$  microns – only 10%. After being in hibernation, it is noted that the quantity of red corpuscles has increased, and the size make  $13.6 \times 10.1$  microns (occurrence of these red corpuscles is 24%); with size of  $16.2 \times 10.3$  microns, the occurrence makes 68%, and with size of  $18.7 \times 10.1$  microns – 8%; so, between the size groups the distinctions reliability of  $t$  is equal to 16.3 and 15.6.

Thus, by studying Pallas Coluber in different ecological conditions and in different physiological states, we may trace the adaptive character of reptiles to different altitudinal belts at the tissue level. Blood, being an important index of a physiological condition of an organism, especially of poikilothermal animals, which are the reptiles, is a feedback response to the changing of habitat conditions. As we noticed, Pallas Coluber's size group of normocytes in blood is greater than, for example, of micro- and macrocytes, and there is a big reliable difference between size groups. The red corpuscles' size change shows their volume; hence the response of an organism to the changing environment conditions depends on altitudinal belts.

For the first time the method of intravital capture and blood composition determination applied for the study allowed revealing a physiological condition of an organism, without doing an essential harm to the ecology, while keeping the genus population.

Thus, during the summer period Pallas Coluber species from different habitats have more normocytes in their blood, at effective diameter of 16.1 – 16.5 microns, which accounts for about 54-70%. Macrocytes in all cases range within 18.5 – 19.9 microns, and the % of EDRC makes 8 - 18%. In general, the considered Pallas Colubers' blood has more of the first and the second size groups, in comparison with the third group.

On the basis of the foresaid, it is possible to come to a conclusion that red corpuscle size changes in animals have an adaptive value and depend on a physiological condition of an organism. In the period of activity, Pallas Colubers have rather low content of red corpuscles in blood, and during hibernation period, their quantity increases. Along with the last one, EDRC changes towards the growth, in average of 0.1 – 0.6 microns and more.



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### Features of the 1000 grain mass inheritance in hybrid combinations of winter wheat

**1000 дандын массасынын күздүк буудайдын гибридик комбинацияларында тукум куучулугунун өзгөчөлүктөрү**

**Особенности наследования массы 1000 зерен в гибридных комбинациях озимой пшеницы**

**Abstract:** the article is devoted to the problem of drought tolerance of grain crops that is an actual for the agriculture of Kyrgyzstan. In the conditions of Kyrgyzstan, crops are grown in different soil and climatic zones both on irrigated and on rainfed lands, located at an altitude of 500 to 2000 meters, where the total precipitation is 200-800 mm per year. In this regard, for the rainfed areas, it is a need for early ripening, hot and drought tolerant varieties with intensive growth in spring and rapid grain filling, resulting from air and soil drought. Weight of 1000 grains is dominant trait, due to this the study of inheritance of 1000 grain mass in hybrids is carried out by crossing of geographically remote varieties of winter wheat from the International CIMMYT-ICARDA Centers and Kyrgyz Breeding.

**Аннотация:** статья посвящена актуальной для сельского хозяйства Кыргызстана проблеме засухоустойчивости зерновых колосовых культур. В условиях Кыргызстана зерновые культуры выращивают в разных почвенно-климатических зонах, как на орошаемых, так и на бозарных землях, расположенных на высоте от 500 до 2000 метров, где общая сумма осадков составляет 200 - 800 мм в год. В этой связи для полуобеспеченной и необеспеченной осадками богары нужны скороспелые, жаро- и засухоустойчивые сорта с интенсивным ростом весной и быстрым наливом зерна, уходящие от воздушной и почвенной засух. Масса 1000 зерен - доминантный признак, поэтому для изучения особенностей наследования массы 1000 зерен проведено скрещивание географически отдаленных сортообразцов озимой пшеницы из Международных Центров СИММИТ-ИКАРДА, ближнего зарубежья и кыргызской селекции.

**Аннотация:** макала Кыргызстандын айыл чарбасы үчүн актуалдуу болгон дан өсүмдүктөрүнүн кургакчылыкка туруктуулук проблемасына арналган. Кыргызстандын шартында өсүмдүктөр 500 – 2000 метрде жайгашкан сугат жана кайрак жерлерде өстүрүлөт. Бул жердеги жаан-чачындын көлөмү 200-800 мм түзөт. Ошондуктан мындай шарттарда эрте бышуучу, кургакчылыктын баардык түрлөрүнө туруктуу сортторду чыгаруу зарыл. 1000 дандын массасы доминанттык белги болгондуктан, ушул белгинин гибридик тукумдарга берилүү өзгөчөлүктөрүн аныктоо максатында эл аралык борбор СИММИТ-ИКАРДадан алынган жана кыргыз селекциясынын күздүк буудайларынын сортторун кыйыштыруу жүргүзүлдү.

**Keywords:** *drought tolerance; hybrid combinations; domination; heritability; transgression; phenotypic domination; segregation of hybrid generation; perspective lines.*

**Ключевые слова:** *устойчивость к засухе; гибридные комбинации; доминирование; наследование; трансгрессия; фенотипическое доминирование; расщепление гибридных комбинаций; перспективные линии.*

**Негизги сөздөр:** *кургакчылыкка туруктуулук; гибридик комбинация; доминанттуулук; трансгрессия; фенотиптик доминанттуулук; гибрид тукумдарынын ажыроосу; перспективдүү линиялар.*

## **Introduction.**

Wheat is major crop in dryland agriculture [1]. A total volume of wheat production in the world makes currently more than 600 million tons [2]. By 2020, the world would need 840 million metric tons of wheat and 2/3 of this need to be produced in developing countries [3]. More than half of wheat yield in the world (237 million hectares) are periodically subjected to drought. In the developing countries of North Africa, Central and West Asia there are accounted for 45% or 120 million hectares of all wheat crops [4]. The annual harvest of wheat in arid zones is only half of the potential harvest under optimal cultivation conditions [5].

During the period of grain filling, the influence of high temperatures, when accompanied by dry winds, even if there is a sufficient amount of moisture in the soil, can cause a decrease in winter wheat yield by 30-50% or more [6]. Wheat varieties adapted to this area require good seedling vigor, early maturity combined with competitive grain yield [7].

The modern crop breeds are developed not only to produce high yield but also achieve sustainable yields through the years. Yield increase as well as stabilization of grain production are priority challenges for the scientists and farmers for achievement of food security [8].

It is known that hybridization of ecologically and geographically remote genotypes is very effective. Top crosses, back-crosses and repeated selections are the basic methods of breeding [9]. The hybrids  $F_1$  and  $F_2$  usually have better productivity and better resistance to biotic and abiotic conditions. Plant height and number of grains per spike are intermediate characters of inheritance. Weight of 1000 grains is dominant trait [10].

Byerlee and Traxler [11] in their studies have shown that the increase in yields is influenced by selection based on more clearly inherited qualities.

As a result of Kovtun's studies, the leading elements in the structure of the crop are the mass of grain from the spike, the number of spikelets and grains in the spike and the mass of 1000 grains [12]. A number of scientists have proved that wheat varieties having a high mass of 1000 grains can have a high degree of drought resistance [13]. Many studies [14; 15] show that in a number of cases when a general decrease in yield the mass of 1000 grains may remain high.

Grain yield or grain weight per unit area is the main indicator of the economic value of the variety and is closely related to all elements of productivity [16]. The most stable elements of the crop structure are the mass of 1000 grains, the length and number of spikelets in the ear. The most variable value among the elements of productivity is the mass of grain from the plant, productive bushiness, the number of productive spikelets per square meter, the mass of grain from the main spike. Slightly variable are due to more varietal features, and highly variable ones largely depend on external conditions [17].

Selection should be conducted in the direction of increasing the productivity of the ear (the number of spikelets and grains in the ear), the mass of grain from the ear and the mass of 1000 grains.

In the conditions of Kyrgyzstan, crops are grown in different soil and climatic zones both on irrigated and on rainfed lands, located at an altitude of 500 to 2000 meters, where the total precipitation is 200-800 mm per year.

In our republic, wheat occupies the third part of the whole arable land. On average, 300 thousand hectares of wheat are spread on irrigated land; about 200 thousand hectares are in the zone of rainfed farming.

Most of the rainfed lands are located in insufficient and semi-arid area, where their amount rarely exceeds 300-400 mm per year. The accumulation of moisture usually begins in October. Maximum reserves accumulated in the spring, but in May the rainfall stops and there is a period of intensive water consumption due to evaporation and transpiration [18].

In this regard, for the rainfed areas, there is a need for early ripening, hot and drought-resistant varieties with intensive growth in spring and rapid grain filling, resulting from air and soil drought.

When creating varieties for the conditions of the rainfed areas, it is necessary to have a diverse gene pool with a wide range of variability, which would ensure a directed selection of varieties of the required type. To create such a source material, hybridization of specially selected parental pairs is carried out, which are preliminarily studied in local conditions to identify positive and negative characteristics and properties.

Currently, released varieties in years with insufficient moisture form a small, unfulfilled grain, resulting in a significant decline in yield. Despite significant success in breeding, it is necessary to create new varieties combining resistance to drought with high and stable productivity.

#### **Methods and materials.**

Field experiments are conducted in experimental farms of the Kyrgyz Agricultural Research Institute on rainfed zones, located in the foothills of the Chui Valley, on the south-western outskirts of Bishkek city. Altitude - 829 m, average summer temperature - 22-25 ° C, the average relative air humidity during the grain filling period is 40%; and in conditions of semi-provided rainfed, located 110 km from the city of Bishkek in the seed farm "Jany-Pakhta", altitude - 650 m, average summer temperature is 23.5-24.5 °

C, the average relative air humidity during the grain filling period is 32-35%, where the samples and the hybrid material are selected. These zones are also differentiated by the soil cover.

Basic soil cultivation is carried out in late October after the previous crop harvest plow with coulters at a depth of 23-25 cm.

Annually before the sowing on the experimental site, the soil is treated with discs harroned with rollers or paw cultivators with simultaneous harrowing. In spring, after atmospheric precipitation ammonium nitrate is applied 60-70 kg/ha. Harrowing is carried out during the tillering phase in spring.

556 samples of winter wheat, represented by 10 species and populations: grekum, erythrospermum, lutescence, nigroaristatum, albidum, alborubrum, eritrolekum, kesium, milturum и ferrugineum are studied to search for and identify sources of resistance to drought by international centers CIMMYT-ICARDA, neighboring countries and Breeding institute of Kyrgyzstan. The international nurseries from Turkey-CIMMYT-ICARDA program in Turkey, CIMMYT-ICARDA program in Syria and CIMMYT headquarters in Mexico are annually shipped to almost all the wheat breeding programs in Central Asia and Caucasus [19]. Since 1995-1996 Kyrgyzstan started to get the genetic samples from CIMMYT-ICARDA [20].

The studies of winter wheat are conducted by the classifier of breeding characteristics of Triticum species. Repetition: fourfold; row length: 1,6m; row spacing: 22-25cm; seed sowing was carried out manually. The standard is released variety – Adyr, for rainfed areas, which was located every 10 rows. High-yielding samples and perspective lines are sown in the breeding nursery of the second year (SN-2), repetition: threefold, area of plots: 7.5 m<sup>2</sup>.

The initial assessment of drought tolerance and heat tolerance are carried out under laboratory conditions. Physiological analyzes for drought tolerance of winter wheat samples are determined by germination of seeds on sucrose solutions with high osmotic pressure, according to the methods of Oleynikova TV., Osipova UF. [21]. Determination of the relative heat tolerance of the samples is carried out according to the methods of Volkova AM., Perepadya UG. [22], heating samples in temperature of 54 and 56°C.

Field method for determining drought tolerance is used according to the scale of assessment of Udolskaya NL. [23].

Sample selection is based on the results of a study of the effect of environmental conditions on economically valuable characteristics and field resistance to drought. Analyzes on the quality of grain (protein, gluten) are made in the technological laboratory of the Kyrgyz Agricultural Research Institute by using "Informatik"- tool.

The data obtained are subjected to statistical processing [24]. The most interesting and productive samples are involved in crossing.

Phenologic observations, description of vegetative features, eye estimation of the vegetation state, disease resistance (powdery mildew, yellow rust) and pests are carried out in accordance with the Classifier of Selection Characteristics of the Triticum species.

To determine the nature of the variability and inheritance of productivity elements are identified: the degree of phenotypic dominance (hp), degree of dominance ( $D^I$ ), heritability ( $H^2$ ) and transgression ( $T_L$  – level of transgression;  $T_F$  – frequency of transgression).

Phenotypic dominance was identified according to Abramova ZB. [25]:

$$hp = F_1 - MP / HP - MP$$

HP – the maximum value of the characteristic for the parent form;

MP – the average arithmetic characteristics of both parental forms;

$F_1$  – an average arithmetic characteristics of  $F_1$  plants;

hp – degree of phenotypic dominance.

The degree of dominance was calculated by Gustafson A. and Dormling B. [26].

$$D^I = F_1 - P_{\min} \times 100\% / P_{\max} - P_{\min}$$

$P_{\max}$  – the maximum value of the characteristic for the parent form;

$P_{\min}$  – the minimum value of the characteristic for the parent form;

$F_1$  – an average arithmetic characteristics of  $F_1$  plants.

The heritability ( $H^2$ ) and transgression ( $T_L$ ) were calculated according to Abramova ZB. [25]:

$$H^2 = \sigma_{F_2}^2 - \sqrt{\sigma_{P_1} \times \sigma_{P_2}} \times 100 / \sigma_{F_2}^2$$

$\sigma_{F_2}^2$  –  $F_2$  variance;

$\sigma_{P_1}$  and  $\sigma_{P_2}$  – variances of parent forms.

$$T_L = MF_2 - MP \times 100 / MP$$

$T_L$  – degree of transgression in %;

$MF_2$  – the maximum value of the characteristic for  $F_2$  hybrids;

MP – the maximum value of the characteristic for the parent forms.

To study the inheritance of *productivity elements in hybrids (1000 grains, the mass of grain from the spike, the mass of grain from the plant, and the number of grains in the main spike)*, is carried by crossing of geographically distant varieties of winter wheat from the International CIMMYT-ICARDA Centers and Kyrgyz Breeding. Parental components are selected according to the timing of flowering. As a maternal form, in most cases, the varieties from CIMMYT-ICARDA are selected, since their flowering occurred 2-4 days earlier compared to the varieties of Kyrgyz breeding.

During the research, a different degree of binding of hybrid seeds (from 0 to 100%), depending on the selection of parental forms was observed. The seeds are sown in a thin manner to obtain a higher multiplication factor according to the scheme: ♀-hybrid-♂, the number of rows is determined by the presence of hybrid seeds, the parent forms are

sown in one row; seed sowing is carried out manually. Hybrid material are studied in comparison with the parent forms and the standard Adyr variety, sown every 10 numbers.

### The results and discussions

**Inheritance of 1000 grain mass.** The variability of the 1000 grain mass in parental ( $V = 1.0-6.5\%$ ) and hybrid combinations ( $V = 2.1-9.1\%$ ) is insignificant. According to the nature of the inheritance ( $D^1$ ) of the sign of 1000 grains mass, heterosis (20%), dominance of the signs of the best parent (12%), intermediate inheritance (28%), predominance of signs of the worst parent (28%) and depression (12%) were observed.

*Table 1*

#### *The nature of 1000 grain's weights dominance*

Hybrids	1000 grain mass, g			$D^1$
	$P_1$	$P_2$	$F_1$	
Intensivnaya/Grekum634/1	44.4±0.2	48.0±0.3	39.1±0.3	-90
Mironovskaya61// Khersonskaya ostistaya/ Skifyanka	42.6±0.9	40.9±0.9	49.1±0.8	430
4777/2/Fkn/Gb/3/Vee'S'/Pvn'S'/5/Ald'S'/3/Cc//Inia/Bb/6/Gerek 79	42.7±0.7	40.1±0.1	45.1±0.5	150
4777/2/Fkn/Gb/3/Vee'S'/Pvn'S'/5/Ald'S'/3/Cc//Inia/Bb/6/GRK	42.3±0.5	47.5±0.1	44.4±0.9	-10
71 <sup>St</sup> 2956/Grow'S'/3/Agaf//MCX/Tob/4/Gerek79	40.6±0.2	44.4±0.2	48.2±0.5	90
Ducula/Grekum1634/1	48.8±1.9	46.1±0.4	50.1±0.9	70
Atilla/Bolal	38.0±0.1	37.5±0.7	45.6±0.9	110
Maya74'S'/On//IIGo.147/3/Bb/GII/4/Agaf'S'/Bow'S'/ Erythrospermum2078/1	41.1±0.2	42.9±0.1	43.5±1.7	-30
Bow 'S'/Seri82//Erythrospermum1676/1	40.3±0.5	50.1±0.1	40.6±0.7	-50
Bow 'S'/Seri82//Lutescens 42	40.3±0.2	49.0±0.2	47.9±0.4	40
Mtl 'S'/Cham-4//N1038/1	44.2±0.8	42.3±0.4	41.6±0.6	-90
Cham-4//GH'S'/ Bow 'S' //Lutescens1557/1	43.1±0.3	48.4±0.3	45.8±2.7	2
Seri82//Shi#4414/Grow 'S'//Adyr	52.8±0.3	53.2±0.2	55.0±1.7	500
Seri82//Shi#4414/Grow 'S'//Grekum1634/1	51.9±0.1	46.5±2.1	44.7±2.4	-80
Vee'S'//CebeCo148/3/Ron/Cha//Bb/Nor67/5/HR138MA/4/477 7//Rei/y/3/KT/6/ Frunzenskaya 60	43.4±0.3	47.2±0.2	48.9±2.7	90
Cham-6/Frunzenskaya 60	41.1±2.2	48.2±0.4	47.0±0.4	40
Vee'S'//CebeCo148/3/Ron/Cha//Bb/Nor67/5/HR138MA/4/477 7//Rei/y/3/KT/6/Atay/Galvez87	32.2±2.0	47.3±1.0	47.1±2.6	70
Psn'S'/Bow'S'//Kauz'S'/3/Atay/Galvez87	38.8±0.1	41.3±0.1	39.1±0.3	-40
Moro//Roga/Una	24.9±0.1	53.8±1.3	49.1±1.7	20
Clement//Roga/Una	45.7±0.3	53.8±1.3	46.1±1.5	-40
Compare//Ahtymar/Frunzenskaya60	43.8±0.1	54.3±0.4	53.2±1.7	40
Acocet'S'//Roga/Una	51.9±0.8	53.8±1.2	57.1±1.5	230
Fed/Kavkaz//Ahtymar/Frunzenskaya 60	37.9±0.8	53.7±0.4	41.6±0.5	-30
Kalyansona//Ahtymar/Frunzenskaya 60	25.3±0.2	53.5±0.4	40.6±0.4	10
Cook//Ahtymar/Frunzenskaya 60	36.3±0.3	53.5±0.4	39.9±1.6	20

The indicators of the degree of phenotypic dominance ( $hp$ ) have shown on this basis heterosis in 20% of hybrid combinations, the dominance of the signs of the best parent - 16%, intermediate inheritance - 24%, dominance of signs of the worst parent -24% and depression -16%. In 52% of hybrid  $F_1$  combinations, the heritability ( $H^2$ ) ratio is high, making 55.9 - 92.9%, and in  $F_2$  this index is high in 60%, amounting to 51.5-83.7% (table 2).



Table 2

*Inheritance of 1000 grain's weight in hybrid combinations*

Hybrids	hp	H <sup>2</sup>	
	F <sub>1</sub>	F <sub>1</sub>	F <sub>2</sub>
Intensivnaya/Grekum634/1	-0.9	38.5	56.6
Mironovskaya61// Khersonskaya ostistaya/Skifyanka	4.3	36.1	44.5
4777/2/Fkn/Gb/3/Vee'S'/Pvn'S'/5/Ald'S'/3/Cc//Inia/Bb/6/Gerek79	1.5	44.5	73.6
4777/2/Fkn/Gb/3/Vee'S'/Pvn'S'/5/Ald'S'/3/Cc//Inia/Bb/6/GRK	-0.1	69.8	42.0
71 <sup>S</sup> 2956/Grow'S'/3/Agaf//MCX/Tob/4/Gerek79	0.9	41.5	76.3
Ducula/Grekum1634/1	0.7	55.9	19.8
Atila/Bolal	1.1	92.9	83.7
Maya74'S'/On//IIGo.147/3/Bb/GII/4/Agaf'S'/Bow'S'/Erythropermum2078/1	-0.3	66.5	32.9
Bow 'S'/Seri82//Erythropermum1676/1	-0.5	33.2	2.2
Bow 'S'/Seri82//Lutescens 42	0.4	40.9	79.3
Mtl 'S'/Cham-4//N1038/1	-0.9	67.4	58.0
Cham-4//GH'S'/ Bow 'S' //Lutescens1557/1	0.02	9.9	51.5
Seri82//Shi#4414/Grow 'S'//Adyr	5.0	48.5	15.2
Seri82//Shi#4414/Grow 'S'//Grekum1634/1	-0.8	78.9	16.6
Vee'S'//CebeCo148/3/Ron/Cha//Bb/Nor67/5/HR138MA/4/4777//Rei/y/3/KT/6/Frunzenskaya 60	0.9	70.5	39.7
Cham-6/Frunzenskaya 60	0.4	35.4	50.0
Vee'S'//CebeCo148/3/Ron/Cha//Bb/Nor67/5/HR138MA/4/4777//Rei/y/3/KT/6/Atay/Galvez87	0.7	67.4	57.3
Psn'S'/Bow'S'//Kauz'S'/3/Atay/Galvez87	-0.4	62.3	73.1
Moro//Roga/Una	0.2	65.2	12.2
Clement//Roga/Una	-0.4	30.6	61.9
Compare//Ahtymar/Frunzenskaya60	0.4	78.4	59.5
Acocet'S'//Roga/Una	2.3	72.9	72.9
Fed/Kavkaz//Ahtymar/Frunzenskaya 60	-0.3	53.4	67.3
Kalyansona//Ahtymar/Frunzenskaya 60	0.1	36.7	58.9
Cook//Ahtymar/Frunzenskaya 60	-0.3	29.0	34.3

The F<sub>2</sub> plants are segregated into three phenotypic classes: 13.2% of plants had a mass of 1000 grains less than the lowest values of plants in their parental forms; 72.2% of the F<sub>2</sub> plants are distributed in the same phenotypic classes as the plants of the parent forms, and 6.6% of the F<sub>2</sub> plants had a large mass of 1000 grains than the parent forms. The segregation of the hybrid combinations of F<sub>2</sub> was 13.2: 72.2: 6.6 (3: 12: 1), with the compliance criterion being  $\chi^2 = 0.94$ . This shows that the anticipated deviation (13.2: 79.6: 6.6) from the actual data is not high.

Positive transgression (T) by weight of 1000 grains is obtained in 56% of hybrid combinations. The degree (T<sub>L</sub>) of this indicator ranged from 0.8 to 25.9, and its frequency (T<sub>F</sub>) is 6.7-26.7, this proves that selection on this basis is of some importance (table 3).

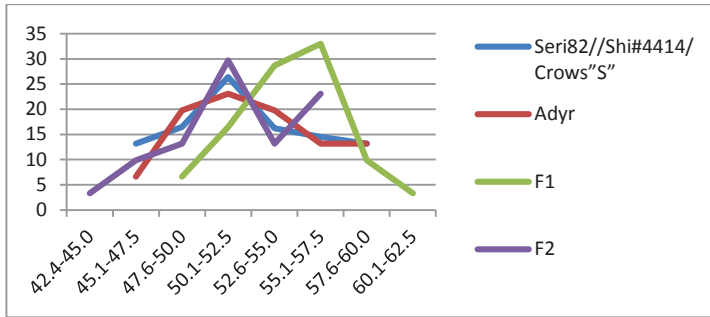
The distribution of plants by weight of 1000 grain mass is considered using the hybrid combination Seri82 // Shi # 4414 / Grow'S ' / 3 / Adyr. Plants F<sub>1</sub> exceed the parameters of parental forms, i.e. heterosis is observed in this indicator (Fig.1).

Table 3

### Transgression indexes of 1000 grain's weight in hybrid materials of F<sub>2</sub>

Hybrids	The maximum expression of the trait, g		Transgression level	
	parental forms	F <sub>2</sub>	level, T <sub>L</sub>	frequency T <sub>F</sub>
Intensivnaya/Grekum634/1	56.0	50.0	-2.8	-
Mironovskaya61// Khersonskaya ostistaya/Skifyanka	47.9	68.7	22.7	10.0
4777/2/Fkn/Gb/3/Vee'S'/Pvn'S'/5/Ald'S'/3/Cc//Inia/Bb/6/Gerek79	56.0	56.3	17.5	16.7
4777/2/Fkn/Gb/3/Vee'S'/Pvn'S'/5/Ald'S'/3/Cc//Inia/Bb/6/GRK	50.5	55.8	10.5	23.3
71 <sup>s</sup> 2956/Grow'S'/3/Agaf//MCX/Tob/4/Gerek79	50.0	52.1	3.2	10.0
Ducula/Grekum1634/1	59.0	59.5	0.8	6.7
Atilla/Bolal	48.0	548	14.2	20.0
Maya74'S'/On//IIGo.147/3/Bb/GII/4/Agaf'S'/Bow'S'/Erythrospermum2078/1	53.6	50.8	-5.2	-
Bow 'S'/Seri82//Erythrospermum1676/1	54.8	69.0	25.9	13.3
Bow 'S'/Seri82//Lutescens 42	55.8	60.4	8.2	10.0
Mtl 'S'/Cham-4//N1038/1	53.6	53.2	-0.7	-
Cham-4//GH'S'/ Bow 'S' //Lutescens1557/1	53.5	52.9	-1.1	-
Seri82//Shi#4414/Grow 'S'//Adyr	54.0	62.8	16.3	23.3
Seri82//Shi#4414/Grow 'S'//Grekum1634/1	58.2	59.5	2.2	6.7
Vee'S'//CebeCo148/3/Ron/Cha//Bb/Nor67/5/HR138MA/4/4777//Rei/y/3/KT/6/Frunzenskaya 60	54.0	53.2	-1.5	-
Cham-6/Frunzenskaya 60	51.9	53.3	2.7	16.7
Vee'S'//CebeCo148/3/Ron/Cha//Bb/Nor67/5/HR138MA/4/4777//Rei/y/3/KT/6/Atay/Galvez87	49.6	47.1	-5.0	-
Psn'S'/Bow'S'//Kauz'S'/3/Atay/Galvez87	49.0	48.6	-0.8	-
Moro//Roga/Una	44.5	52.8	18.6	23.3
Clement//Roga/Una	56.1	54.8	-2.3	-
Compare//Ahtymar/Frunzenskaya60	60.6	68.7	13.4	26.7
Acocet'S'//Roga/Una	53.8	57.1	6.1	20.0
Fed/Kavkaz//Ahtymar/Frunzenskaya 60	53.7	46.4	-13.6	-
Kalyansona//Ahtymar/Frunzenskaya 60	53.5	48.6	-9.1	-
Cook//Ahtymar/Frunzenskaya 60	53.5	52.6	-1.7	-





**Fig.1.** Distribution of plants by weight of 1000 grains in combination Seri82//Shi # 4414/Grow'S ' / 3 /Adyr: 0-35 – % of plants having 1000 grains' mass; 42.4-62.5 – the masses of 1000 grains in gram.

### Conclusion

1. Hybrids obtained from crossing selected samples of CIMMYT-ICARDA and varieties of Kyrgyz breeding are characterized by different types of inheritance: heterosis, dominance of the signs of a better parent, intermediate inheritance, dominance of the signs of the worst parent and depression.
2. The mass of 1000 grains and the mass of grain from the main spike are highly inherited traits and their variability is hereditarily caused.
3. The development of a hybrid material by the dominant effects of the action of genetic systems and the presence of transgressions on these grounds should contribute to an increase in the efficiency of the selection process.
4. The nine prospective winter wheat lines for rainfed conditions were transferred to the Selection and Primary Seed Production Department of Kyrgyz Agricultural Research Institute for further breeding.

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## Chemistry

УДК: 544.726:544.732.2

*Karabaev S.O., Gainullina I.P., Subankulova D.A.**KNU n.a. J. Balasagyn, Bishkek**Карабаев С.О., Гайнуллина И.П., Субанкулова Д.А.**КНУ им. Ж. Баласагына, Бишкек*[karabaev\\_s@mail.ru](mailto:karabaev_s@mail.ru)**The specific surface area of the sorbents based on solid products of incomplete combustion of Kara-Kече brown coal****Удельная площадь поверхности сорбентов на основе твердых продуктов неполного сгорания бурого угля Кара-Кече****Толук эмес күйгөн Кара-Кече күрөң көмүрүнүн катуу продуктуларынын негизиндеги сорбенттердин салыштырмалуу беттик аянты**

**Abstract:** adsorption of methylene blue, methyl orange from aqueous solutions on solid products of incomplete combustion of Kara-Kече brown coal was studied. It is shown that in the series of studied sorbents, the dispersed product of incomplete combustion of fuel in the ascending air flow has the largest specific surface area.

**Аннотация:** исследована адсорбция метиленового голубого, метилового оранжевого из водных растворов на твердых продуктах неполного сгорания бурого угля Кара-Кече. Показано, что в ряду исследованных сорбентов диспергированный продукт неполного сгорания топлива в восходящем потоке воздуха обладает наибольшей удельной площадью поверхности.

**Аннотация:** толук эмес күйгөн Кара-Кече күрөң көмүрүнүн катуу продуктуларында метилен көк менен метилен сары кызылдын суудагы эритмелеринен адсорбцияланышы изилденген. Каралган сорбенттердин катарында, абанын агымында толук эмес күйгөн, майдаланган продукт эң чоң салыштырмалуу беттик аянтка ээ боло тургандыгы көрсөтүлгөн.

**Keywords:** adsorption; sorbent; dye; surface; brown coal.

**Ключевые слова:** адсорбция; сорбент; краситель; поверхность; бурый уголь.

**Негизги сөздөр:** адсорбция; сорбент; боёк; үстүнкү катмар; күрөң көмүр.

**Introduction.** The search for new sorbents on the basis of the secondary sources of carbon and mineral raw materials is among the priorities of rational nature management. In this regard, the study of the adsorption properties of solid products of incomplete combustion of coal is one of the topical problems in the physical chemistry of disperse systems. The present work is devoted to the comparative characterization of the

specific surface area of solid sorbents based on products of incomplete combustion of Kara-Keche brown coal.

**Experiment.** Brown coal of Kara-Keche deposit was used in the work; its physicochemical characteristics are described in [1]. The fuel was burned in a steel reactor. Schematic diagram and general view of the experimental stand are presented in [2]. The combustion process was carried out by feeding oxygen (air) into the combustion chamber at a flow rate of 3 liters per minute. The front of the combustion spread to meet the flow of oxygen (air), with the flame spreading over the entire section of the pipe, filled with 1 kg of coal. The temperature in the burning zone of coal under the counterflow of oxygen reached 800°C, and in the burning zone of coal under the counterflow of air - 700°C. The time of fuel burning was 30 minutes. The mass of unburned residues was not more than 500 g.

Four samples of sorbents on the basis of solid products of incomplete combustion of Kara-Keche coal were considered:

**Zug(B)** – a sample of the sorbent obtained in the incomplete combustion of Kara-Keche coal in a reactor with an ascending air flow. The particles of the sorbent are granules of black color, their size not exceeding 3 mm.

**Zugd(B)**– a sample of the sorbent obtained by dispersing the Zug (B) sample on a ball mill for 1 minute. The powder is black in color with particle sizes not exceeding 0.5 mm.

**Zug(O)** – a sample of the sorbent obtained with incomplete combustion of Kara-Keche coal in the reactor with an ascending flow of oxygen. The particles of the sorbent are granules of black color, their size not exceeding 3 mm.

**Zugd(O)** - a sample of the sorbent obtained by dispersing the Zug (O) sample on a ball mill for 1 minute. The powder is black in color with particle sizes not exceeding 0.5 mm.

The determination of the surface area of the studied sorbents was carried out by the adsorption method. As organic markers, methylene blue and methyl orange were used. The procedure for adsorption of dyes from aqueous solutions on the surface of solid adsorbents is described in [3]. The adsorption values were calculated from the following equation:

$$a = \frac{(c_o - c_p) \cdot V}{m} 1000 \quad (1),$$

where  $C_o$  and  $C_p$  are the initial and equilibrium concentrations of the adsorbate, (M);  $V$  – volume of the solution from which adsorption takes place, (l);  $m$  – mass of adsorbent, (g); 1000 – the conversion factor used for the adsorption values to be expressed in mmole/g.

Adsorption isotherms are shown in Fig.1 and 2.

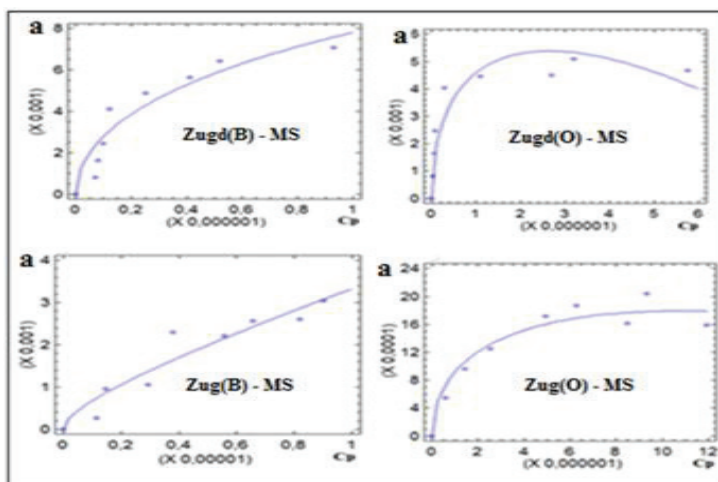


Fig.1 Adsorption isotherms of methylene blue on solid products of incomplete combustion of Kara-Keche coal at 298<sup>0</sup>K

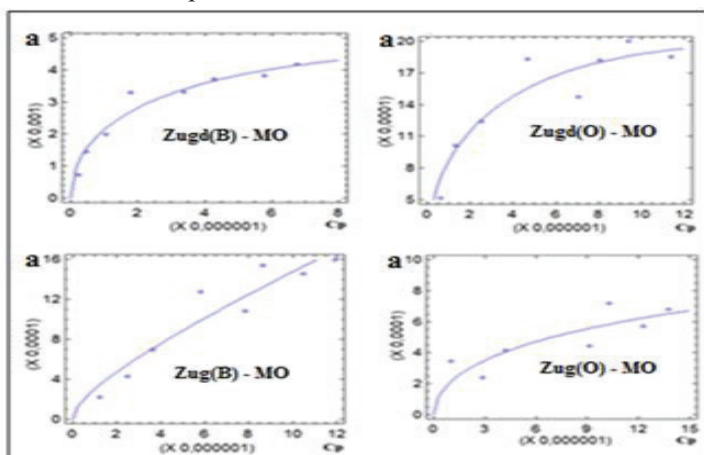


Fig.2 Isotherms of adsorption of methyl orange on solid products of incomplete combustion of Kara-Keche coal at 298<sup>0</sup>K

**Results and discussion.** It can be seen from the Fig. 1 and 2 that the adsorption of methylene blue from aqueous solutions on solid Zug (B), Zugd (B), Zug (O), Zugd (O) sorbents is always greater than that of methyl orange. The nature of the dependencies of adsorption values from the dyes equilibrium concentrations are close to the Langmuir type. At the same time, the following series is performed:

$$a_{\text{Zugd(B)}}^{\text{MS}} > a_{\text{Zugd(B)}}^{\text{MO}} > a_{\text{Zugd(O)}}^{\text{MS}} > a_{\text{Zugd(O)}}^{\text{MO}} > a_{\text{Zug(B)}}^{\text{MS}} > a_{\text{Zug(B)}}^{\text{MO}} > a_{\text{Zug(O)}}^{\text{MS}} > a_{\text{Zug(O)}}^{\text{MO}} \quad (I)$$

According to this series, the adsorption of dyes is greatest on the dispersed product of incomplete combustion of Kara-Keche coal -Zugd (B)

and the smallest on the product of incomplete combustion of Kara-Keche coal-Zug (O). Preferential adsorption of the cationic dye, compared with an anionic, indicates a prevalence of negative charged adsorption centers in the researched samples of sorbents. At the same time, significant changes in the pH of aqueous solutions of methylene blue and methyl orange after adsorption on slightly alkaline solid products of incomplete combustion of Kara-Keche coal were not detected (Tables 1 and 2).

The obtained results indicate a small effect of the ion exchange mechanism of cationic and anionic dyes adsorption on the studied sorbents, although it is not completely excluded.

Thus, the experimental data allows us to assume that in the studied systems, in general, selective adsorption of methylene blue chloride and the sodium salt of methyl orange occurs on the suitable adsorption centers of solid products of incomplete combustion of Kara-Keche coal.

Table 1

*pH of aqueous solutions of methylene blue after adsorption on solid products of incomplete combustion of Kara-Keche coal*

№	C <sub>0</sub> (mole/l)	Methylene blue				
		pH <sup>0</sup>	pH <sup>p</sup> <sub>Zug(B)</sub>	pH <sup>p</sup> <sub>Zugd(B)</sub>	pH <sup>p</sup> <sub>Zug(O)</sub>	pH <sup>p</sup> <sub>Zugd(O)</sub>
0	H <sub>2</sub> O	5,75	7,10	7,32	7,10	7,20
1	0,00000167	5,59	6,95	7,25	6,92	6,97
2	0,00000335	5,64	6,98	7,20	7,11	7,02
3	0,00000502	5,66	7,15	7,33	7,05	7,25
4	0,00000837	5,68	7,07	7,43	7,15	7,21
5	0,00001000	5,72	7,14	7,55	7,13	7,26
6	0,00001170	5,76	7,25	7,62	7,16	7,39
7	0,00001340	5,79	7,27	7,64	7,20	7,37
8	0,00001510	5,83	7,30	7,76	7,23	7,45

Table 2

*pH of aqueous solutions of methyl orange after adsorption on solid products of incomplete combustion of Kara-Keche coal*

№	C <sub>0</sub> (mole/l)	Methyl orange				
		pH <sup>0</sup>	pH <sup>p</sup> <sub>Zug(B)</sub>	pH <sup>p</sup> <sub>Zugd(B)</sub>	pH <sup>p</sup> <sub>Zug(O)</sub>	pH <sup>p</sup> <sub>Zugd(O)</sub>
0	H <sub>2</sub> O	5,74	6,90	7,41	6,90	6,56
1	0,00000167	5,85	7,39	7,19	6,88	6,86
2	0,00000335	5,95	7,32	7,38	6,95	7,30
3	0,00000502	6,03	7,13	7,36	6,98	7,18
4	0,00000837	6,09	7,16	7,48	7,00	7,12
5	0,00001000	6,14	7,20	7,50	7,15	7,20
6	0,00001170	6,24	7,38	8,28	7,06	7,38
7	0,00001340	6,63	7,22	8,70	7,25	7,48
8	0,00001510	6,35	7,34	8,37	7,36	8,09

To complete the characterization of the adsorption of charged probe particles from aqueous solutions on the studied samples of sorbents, the data from Fig. 1 and 2 is considered in the coordinates of the Langmuir equation. Note that the linearization of the corresponding dependencies was carried out though the linear regression method using the demo version of the statistical software application package Statgraphics Centurion. The results are shown in Fig. 3.

It is seen from Fig. 3 that linear dependences with high correlation coefficients are observed. This allows us to assume that selective adsorption of dyes is realized, mainly, on the surface adsorption centers of solid products of incomplete combustion of Kara-Keche coal.

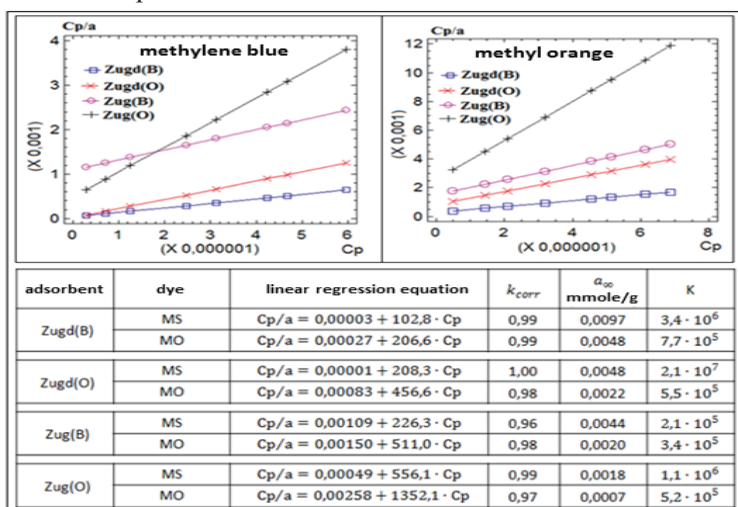


Fig.3 Adsorption of methylene blue and methyl orange on solid products of incomplete combustion of Kara-Keche coal in the coordinates of the Langmuir equation

Large values of the adsorption equilibrium constants in the studied systems (Fig. 3) do not exclude the possibility of chemisorption of cationic and anionic dyes on the corresponding adsorption centers of the studied sorbents.

The linear regression equations presented in Fig.3 were used to calculate the limit adsorption values of methylene blue and methyl orange from aqueous solutions on solid adsorbents. The corresponding values are given in the table in Fig. 4. Calculation of the limiting values of the specific areas of the sorbents surfaces [4] was carried out using the following equation:

$$S_{\infty}^{yd} = N_A \cdot a_{\infty} \cdot \omega \quad (2),$$



where  $N_A$  – Avogadro's number;  $a_\infty$  – limit adsorption;  $\omega$  – a site occupied by one dye molecule [5].

The results of the calculations are shown in Fig. 4. It can be seen from Fig. 4 that the specific surface areas of the samples of solid products of incomplete combustion of Kara-Kече coal regularly change in the series (II).

Thus, it can be concluded that the sample Zugd (B), which is a dispersed product of incomplete combustion of Kara-Kече coal in the ascending airflow at 700°C, has the largest specific surface area.

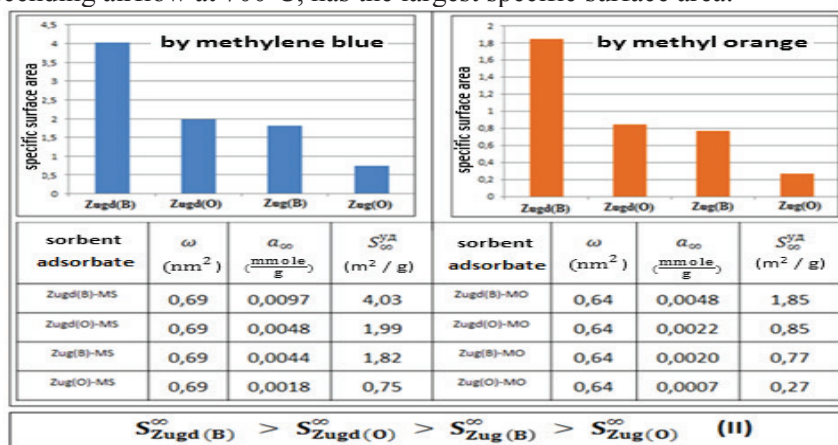


Fig.4 Histograms of the specific areas of surface of the solid products of incomplete combustion of Kara-Kече coal

At the same time, the sample Zug (O), which is the initial product of incomplete combustion of Kara-Kече coal in the ascending flow of oxygen at 800°C, has the lowest specific surface area in the series of the studied sorbents.

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## Ecology

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[zhusupkeldiev@bk.ru](mailto:zhusupkeldiev@bk.ru)**The content of the suspended air particles along the Balykchy and Cholpon-Ata cities****Содержание взвешенных частиц воздуха вдоль трассы  
Балыкчы – Чолпон-Ата****Балыкчы – Чолпон-Ата жолундагы абадагы бөлүкчөлөр**

**Abstract:** in this article, the content of the suspended particles smaller than 10  $\mu\text{m}$  along the route Balykchy - Cholpon-Ata is considered. The quantitative content in the air of suspended particles (PM1, PM2.5, PM4 and PM10) in spring in the cities of Balykchy and Cholpon-Ata is shown. Data is presented on the effect of the suspended particles of less than 10  $\mu\text{m}$  in size on the health of the population.

**Аннотация:** в данной статье рассмотрены вопросы содержания взвешенных частиц размером меньше 10 мкм вдоль трассы Балыкчы – Чолпон-Ата. Показаны количественные данные содержания в воздухе взвешенных частиц PM1, PM2.5, PM4 и PM 10 в весенний период в городах Балыкчы и Чолпон-Ата. Приведены данные о влиянии на здоровье населения взвешенных частиц размером меньше 10 мкм.

**Аннотация:** бул макала Балыкчы – Чолпон-Ата жолундагы абадагы 10 мкмдан төмөн болгон бөлүкчөлөрдүн камтылышын кароо маселеси каралган. Жай мезгилиндеги Балыкчы жана Чолпон-Ата шаарларындагы PM1, PM2.5, PM4 жана PM 10 бөлүкчөлөрүнүн абадагы сандык камтылышы, ал бөлүкчөлөрдүн ден-соолукка болгон таасири каралган.

**Keywords:** suspended particle; air pollution; concentration; morbidity.

**Ключевые слова:** взвешенная частица; загрязнение воздуха; концентрация; заболеваемость.

**Негизги сөздөр:** бөлүкчөлөр; абанын булганышы; концентрация; индикатор; оорушу.

**Introduction**

In the middle of March, the total sum of suspended PM particles and its total TSP concentration in the air were measured along the Balykchy - Cholpon-Ata route using the AEROSOL MASSMONITOR - 831. The very route was selected due to the fact that this northern region has a well-developed road system; also, in summer it is the main tourist area of Kyrgyzstan, where, along the road, there are many boarding houses and recreation areas on the coast of the Issyk-Kul Lake.

Therefore, measurement and analysis in the spring period makes it possible to assess the problems of air pollution in the wake of the winter period. It should be noted that during this period, the total duration of daylight is increased up to three hours, nevertheless, in the morning, in the evening and at night, the air temperature in this region drops to  $-15^{\circ}\text{C}$ . The residents along the route use solid and partly liquid fuel for heating their houses.

Thus, during this period, a large amount of solid unburned particles (soot, ash, digging, dust), harmful gases (carbon dioxide, carbon monoxide, nitrogen oxide) and vapors, as well as other harmful to the atmosphere substances and biosphere organisms are ejected. After the usage, these substances do not enter the natural cycle. The vapors and gases form mixtures with the air, and solid and liquid particles form aerodisperse systems-aerosols.

The quality of life of the population depends on the interrelated economic, social and environmental factors, for example, the ecological situation affects the level of public health. Nevertheless, quantitative and qualitative estimation of air with the content of finely dispersed suspended particles of the Issyk-Kul basin is new for scientific researchers of the Kyrgyz Republic. According to new estimates (March 15, 2016) of the World Health Organization (WHO), in 2012, approximately 12.6 million people died of living or working in unhealthy conditions - this is almost one in four people of the total number of deaths in the world. The emergence of more than 100 diseases and injuries is facilitated by the environmental risk factors such as air, water and soil pollution, chemicals effect, climate change and ultraviolet radiation.

Therefore, the quantitative assessment of the suspended particles with diameter less than 10 microns (PM<sub>10</sub>, etc.) in the air due to the combustion of hydrocarbons during winter and by transport along the Issyk-Kul Lake route is an actual and topical task.

The authors of the work [1] noted that the 1999 Gothenburg Protocol on Suppression of Acidification and Ground-level Ozone was adopted by the Executive Body of the Convention. For the first time, the revised Protocol contains commitments to reduce emissions of fine particulate matter (PM<sub>2.5</sub>). In addition, black carbon or soot appears in the new edition as an important component of PM<sub>2.5</sub>. Black carbon is a pollutant that has a negative impact on the health of the population.

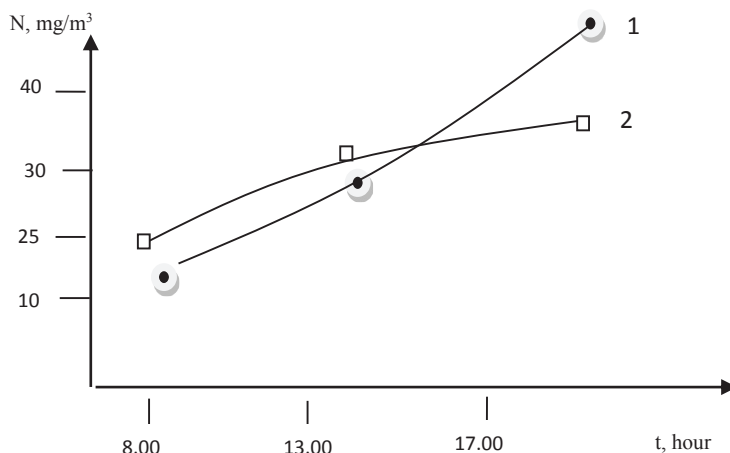
#### ***Spring suspended particles along the Balykchy - Cholpon-Ata route***

Suspended particles (PM) are a widespread air pollutant, which includes a mixture of solid and liquid particles. Indicators that are commonly used to characterize PM and are important for health include the mass concentration of particles with the diameter of less than 10  $\mu\text{m}$  (PM<sub>10</sub>) and particles smaller than 2.5  $\mu\text{m}$  in diameter. In addition to these particles,

ultrafine-dispersed particles with a diameter of 0.1  $\mu\text{m}$  to 1  $\mu\text{m}$  also exist in the atmospheric air. The most common chemical PM components are sulfates, nitrates, ammonia, other inorganic ions, organic and elemental carbon, minerals of the earth's crust, water-bound particles, and metals. Also, biological components, such as allergens and microorganisms [2] of 0.1  $\mu\text{m}$  to 1  $\mu\text{m}$  can be in the air for many days and weeks, and their physical and chemical characteristics vary with location.

PM<sub>10</sub>, PM<sub>4</sub>, PM<sub>2.5</sub> and PM<sub>1</sub> can penetrate the thoracic part of respiratory system and, depending on the time of the presence of human in this environment, cardiovascular morbidity, exacerbation of asthma, etc., as well as mortality from cardiovascular and respiratory diseases and from lung cancer [2] emerge.

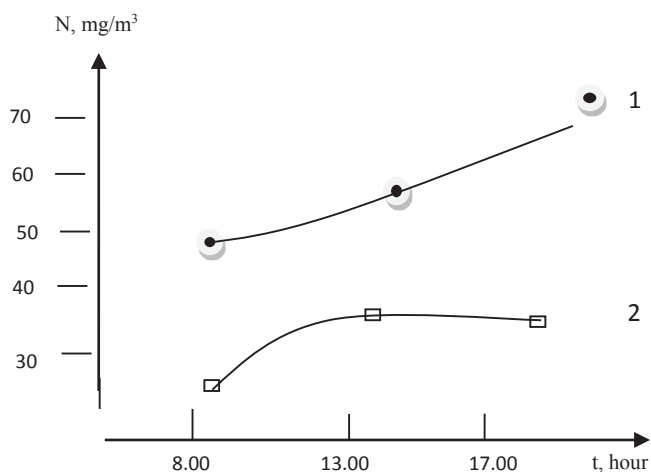
Measurements of suspended particles from 15.03.2017 to 17.03.2017 along the route Balykchy - Cholpon-Ata showed that, in the city of Balykchy the concentration of PM<sub>2.5</sub> in the evening is almost two times higher than in the city of Cholpon-Ata. This is explained by the fact that the traffic flow in Balykchy is almost three times higher than in Cholpon-Ata (Fig. 1).



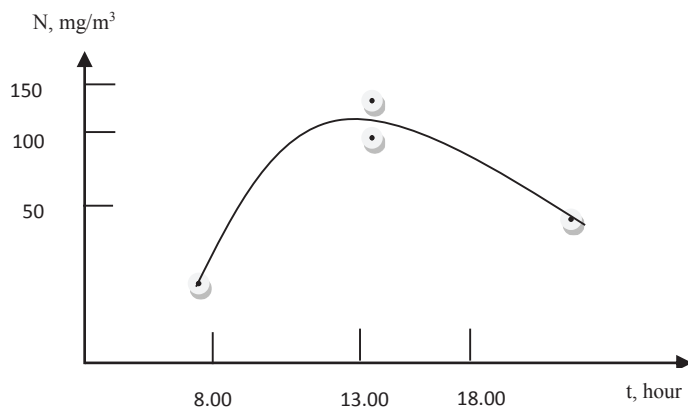
**Fig.1.** PM<sub>2.5</sub> day time changes: 1 - Balykchy; 2 - Cholpon-Ata

For other values, the PM<sub>10</sub>, PM<sub>4</sub> and TSP suspended particles in the above-mentioned cities are also not comparable in spring, this is evidenced by Fig.2-Fig.7. It should be noted that in both cities PM<sub>1</sub> values lie at one level (Fig.8), the results of other measurements of the settlements of Sary-

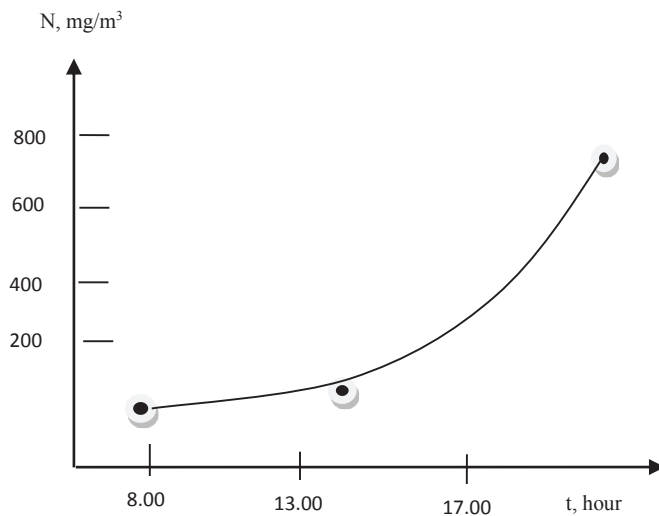
Kamysh, Chyrpykty-Baet have shown that the concentration of suspended particles along the road is much lower than in the cities of Balykchy and Cholpon-Ata.



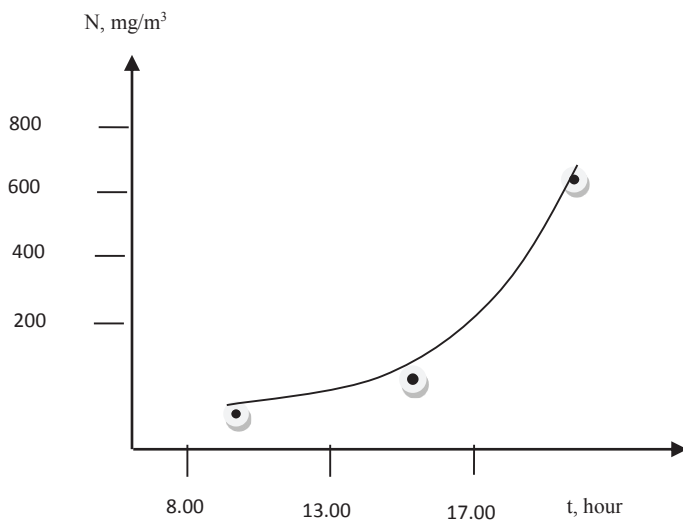
**Fig.2.** PM4 changes: 1- Balykchy, 2 - Cholpon-Ata.



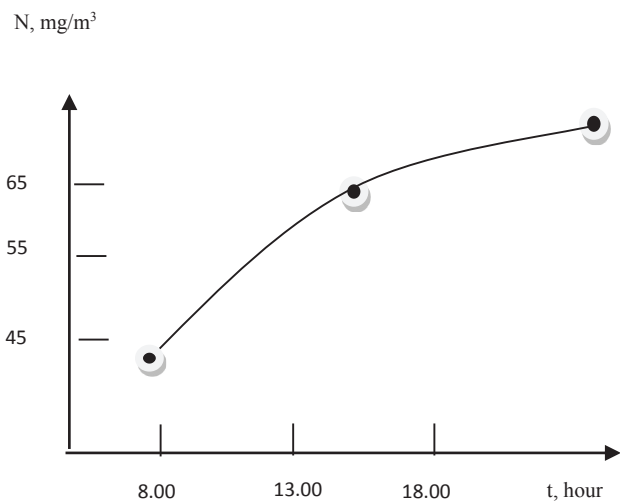
**Fig.3.** PM10 changes (Cholpon-Ata)



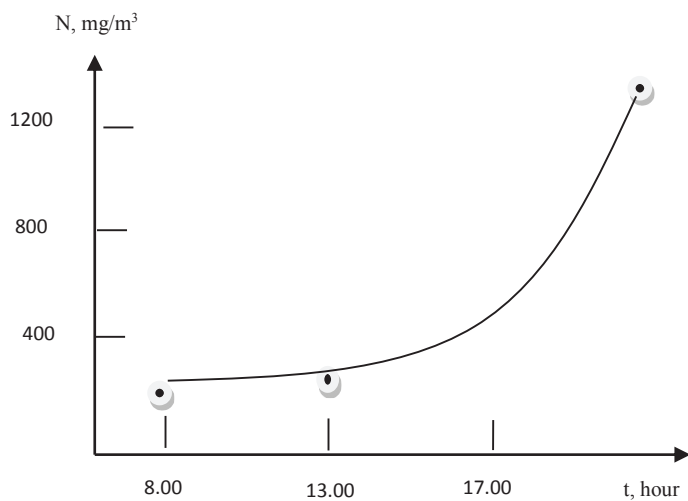
**Fig.4.** PM10 changes (Balykchy)



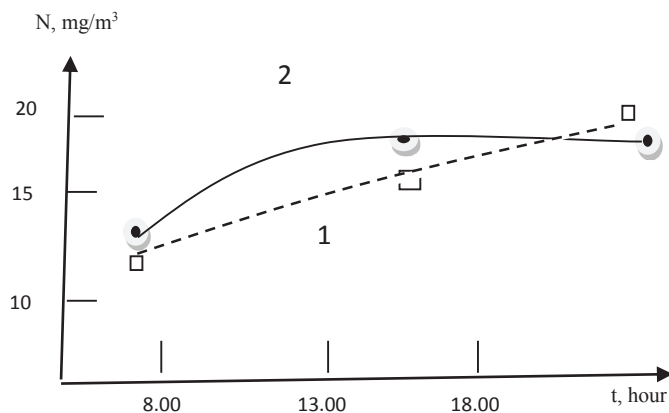
**Fig.5.** PM10 changes (Balykchy)



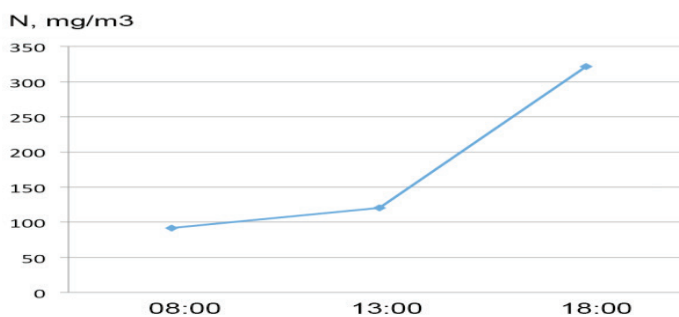
**Fig.6.** TSP changes (Cholpon-Ata)



**Fig.7.** TSP changes (Balykchy)



**Fig.8.** PM1.0 changes (1 - Balykchy; 2 – Cholpon-Ata)



**Fig.9.** PM1.0 changes (Balykchy)

### Conclusion

The results of the measurements showed that at certain parts in Balykchy, there is a slight excess of air pollution in both PM4 and PM10 suspended particles, especially PM10, which is a warning to the population of Balykchy about the importance of air quality, and on the impact of pollutants on the health of the urban population. The results of measurement indicate the need for an analysis in the summer, since at this time the air temperature is normalized and the release of solid fuel is completely eliminated.

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## **Condition of glaciers of the area of activities of the Kumtor gold mining enterprise in Kyrgyzstan**

### **Состояние ледников района деятельности золоторудного предприятия «Кумтор» в Кыргызстане**

#### **Кыргызстандындагы «Кумтор» алтын кен ишканасы жайлашкан аянттындагы мөңгүлөрдүн абалы**

**Abstract:** This article studies the impact of the activities of "Kumtor Operating Company" (KOC), a gold mining company, in the mountain range glacier Ak-Shyirak in Kyrgyzstan. Company "KOC" actively uses "Lysyi" and "Davydov"'s glaciers as a place of storage of waste rock dumps. Large areas of the ice melted away during the operation of the Kumtor gold deposit between 1996 and 2015.

**Аннотация:** исследуется влияние деятельности золотодобывающего предприятия «Кумтор Оперейтинг Компани» (КОК) на ледники хребта Ак-Шыйрак в Кыргызстане. Предприятие «КОК» активно использует ледники «Лысый» и «Давыдова» как места складирования отвалов пустых пород. Большие площади льда потеряны при эксплуатации золоторудного месторождения «Кумтор» в 1996-2015 гг.

**Аннотация:** макалада «Кумтор Оперейтинг Компани» алтын кен ишканасынын (КОК) Кыргызстандагы Ак-Шыйрак тоосунун мөңгүлөрүнө тийгизген таасири изилденилет. «КОК» «Лысый» жана «Давыдов» мөңгүлөрүн касылып жаткан бош тектин төгүндүлөрүн сактоочу орду катары пайдаланат. Муздардын чоң көлөмү 1996-2015 жылдарда Кумтор алтын кенин казыланып иштетүү учурунда жоюлган.

**Keywords:** gold mining; disappearance of glaciers; Ak-Shyirak Ridge; technogenic influence

**Ключевые слова:** золотодобыча; исчезновение ледников; хребет Ак-Шыйрак; техногенное влияние.

**Негизги сөздөр:** алтын казуу; мөңгүлөрдүн жоголушу; Ак-Шыйрак тоосу; техногендик таасири.

#### **History of research, orography, topography and climate**

The history of the study of the glaciers of the Ak-Shyirak range traces back a century and a half. Ak-Shyirak glaciation and orography were first time mentioned by A.V. Kaulbars. He named the largest glacier after Lieutenant Petrov, who made a survey in these cold places.

In 1886, some areas of the Tien Shan were visited by A. N. Krasnov. A.N. Krasnov explored the history of the development of the Tien Shan



flora, but we can find in it some information on glaciers and the Petrov glacier.

In 1911-1913, the Military Topographic Department conducted instrumental topographic surveys in Tien Shan mountains. These maps were highly rated by N.N. Palgov and T.A. Avsyuk.

In 1925, Central Asian Meteorological Institute researchers headed by A. K. Davydov visited the northwestern part of Ak-Shyirak. In 1929 N.M. Prokopenko climbed up the Petrov Glacier. From the end of 1929 the meteorological station "Tien Shan", located near the Petrov Glacier, conducts regular observations. In his "Catalog of Glaciers of Central Asia" N.L. Korzhenevsky tells about 29 glaciers of the Ak-Shyirak ridge [2].

The second international polar year (1932-1933) was a turning point in the study of the Ak-Shyirak glaciation of. Members of the Naryn-Khantengri research group used theodolites to cover the ends of many glaciers and were the first to describe such interesting glaciers as the glaciers of the hanging valleys.

In 1932, a group of climbers led by A.A. Letaveta ascended the peak of the SNK of Kyrgyzstan and collected some material on the glaciation of Ak-Shyirak. After a long break, the study of the Ak-Shyirak glaciation is resumed based on the Tien Shan Physicogeographical Station. Between 1946-1947 and 1949 T.A. Aksyuk [2] studied the of Ak-Shyirak glaciers. He proposed a new scheme for glaciological zoning and outlined new views on the Ak-Shyirak orography.

In 1957-1959, Tien Shan Physicogeographical Station took part in the work within the program of the International Geophysical Year. The Ak-Shyirak glaciers were studied by using exact methods of research (photo-theodolitic surveying, determination of glacier movement velocities, observation of ablation, etc.). It is proved that "a small area of Ak-Shyirak Range houses almost all types of glaciers characteristic of the vast expanses of the Tien Shan, and therefore Ak-Shyirak can be called a kind of glaciological museum of the world." In subsequent years the Ak-Shyirak glaciers were studied by M.V. Maksimyak, V.K. Tkachenko, V. I. Burakov, R.D. Zabiroy, L.G. Bondarev and others [2,7].

Ak-Shyirak consists of three closely-spaced parallel ridges, located in an orderly manner and oriented from the northeast to the southwest. There is watershed of two large Asian basins on the territory of Ak-Shyirak. The rivers of the western part feed the upper reaches of the Naryn River belonging to the Aral Sea basin with their waters, and the rest of the territory belongs to the Sary-Jaz (Aksu) basin in China.

The Alpine relief zone lies 4000-4100 m above. The slightly hilly swampy space of the Arabel and Kumtor valleys adjoining the western slope of Ak-Shyirak is a region of ancient glacial accumulation. The average absolute height here is 3550-3650 m, the relative excess is 1000-1200 m.

The depressions of the ancient moraine relief have many lakes some of which have no runoff.

The climate in the region is severe. The average annual air temperature is  $-8.1^{\circ}\text{C}$ . A. Kh. Zavodovsky [2] compares the climatic conditions of the upper reaches of Naryn and Matochkin Shar (Polar region). In winter, the minimum temperature can drop to almost  $-50^{\circ}\text{C}$ .

### **Analysis of glaciers before the start of gold mining "Kumtor"**

Ak-Shyirak is the third largest in terms of size, and the middle in terms area glaciation area of the Tien-Shan ( $432.2 \text{ km}^2$ ) [1]. Ak-Shyirak glaciers are concentrated in a relatively small space, about 33-37 km. Glaciers occupy  $\frac{1}{3}$  part of this rectangle. Ak-Shyirak range has 131 independent glaciers (including small hanging glaciers). With the tributaries of the valley glaciers considered, the total number of glaciers exceeds 150. The total volume of ice and firn of Ak-Shyirak glaciers in water transfer is equal, according to G.A. Avsyuk's estimates, to 39052 million  $\text{m}^3$ , and the annual flow is 727 million  $\text{m}^3$  [2].

Below, we will look only at those glaciers, where the Kumtor company is extracting gold.

**The "Lysyi" Glacier** originates in a vast two-chamber circle with asymmetric glaciers that gravitates toward the most shaded areas. The glacier is also fed from the left slope of the north-eastern valley. The right slope is strongly dissected right slope, and its upper erosion reaches have small hanging glaciers and snowfields at altitudes of 4120-4230m.

The height of the snow line within the valley is unstable. On the shaded slope of the north-eastern exposition it is 4100-4150 m, and on small glaciers of the right slope it rises to 4350-4400 m. The area of the Lysyi Glacier is  $4.4 \text{ km}^2$ , and together with the hanging glaciers on the right slope the glaciation occupies is  $4.65 \text{ km}^2$ . Ice thickness near the end of the main glacier reaches 70 m, its surface in the axial part is calm and smooth with the  $4-5^{\circ}$  average slope.

The first information about "Lysyi" Glacier refers to 1927 (L. K. Davydov). In 1932, S. V. Kalesnik found the marks left by L. K. Davydov near the glacier, which made it possible to determine its spatial variation between 1925 and 1932. For 7 years, the glacier retreated by 13 m. Information on annual changes in the glacier during the seven-year period can be found in the works of N.L. Korzhenevsky [2]. In 1926, "Lysyi" Glacier retreated by 1 m, in 1927 - by 6 m, and the years of 1929, 1932 and 1933 saw the glacier advancing. In 1932-1943, the end of the glacier maintained a stationary position. In the period between 1943 and 1957 the glacier retreated to 60-70 m. In 1961, L.K. Davydov's marks were found and the magnitude of the reduction for 1925-1961 equalled to 174.5 m. The shape of the end part of the glacier has also changed. The steepness of the tail was  $10-50^{\circ}$  ( $21-26^{\circ}$  in 1980-1990), and  $14^{\circ}$  (later -  $4-5^{\circ}$ ) on the flattest middle part [2].

**The «Davydov» Glacier** has an area of 12.13 km<sup>2</sup> with a length of 4.4 km. It was already in a state of degradation in 1932. In 1933, the participants of the Naryn-Khantengri research group found that the glacier was retreated by 15.5 m per year. S. V. Kalesnik considered this figure an exaggeration.

The magnitude of the linear retreat from between 1932 and 1943 is equal to 290m; from 1943 to 1957 - 380 m. The annual flattening of the glacier (1.6 m per year) for a profile of 300-350 m from the end of the glacier is determined by the difference in heights of the watercourse terraces that drained the lake at the left edge of the glacier. By interpolation, it was found that the average annual flattening value over the same period for the entire surface of the glacier was 0.7 m per year [2].

The glacier regression is also evidenced by the presence of 10-15m tall ablative breaks along the edges of the tongue. They arise due to melting from the heat radiated by stony slopes. Between 1943 and 1957 the upper reaches of these ablative forms constituted 350 m upstream.

**The "Sary-Tor" Glacier** has an area of 3 km<sup>2</sup> and a length of 4.2 km. During the 2<sup>nd</sup> International Polar Year, in 1932 this glacier was described under the name "Sary-Tor-2", and its end was surveyed by using a theodolite. Twenty-five years later, during the glaciological studies conducted by the Tien-Shan Physics and Geography Station within the International Geophysical Year Program, a phototheodolite survey of the glacier was performed. When comparing these materials, it can be seen that the glacier has changed insignificantly, with slight retreat (by 50-70 m) of the left end.

On July 31, 1961, a mark established in 1932 by the Naryn-Khantengri research group was discovered. This made it possible to determine the amount of retreat of the left part of the glacier between 1932 and 1961. The glacier retreat equals to 71m.

It is interesting to note a noticeable slowing of the ice movement, although the speed of "Lysyi" and "Davydov" Glaciers movement was determined during the 2nd International Polar Year as well as the 3rd International Geophysical Year. A zone of fixed ice was identified at the right edge of the "Davydov" glacier. Obviously, these changes have resulted from the reduction of these glaciers and a decrease in their capacity [2].

During the reduction of glaciation over the past 20 years, several glaciers in Ak-Shyirak have fallen into separate parts. Directly, such disintegration is a result of cumulative processes, including:

- ablation;
- changing nature of complex glacier movement;
- eroding effect of meltwater currents;
- impact of technogenic processes.

The "Lysyi" and "Davydov" Glaciers were one joint piece in 1993 and their disintegration into two or three glaciers was especially fast.

Large (in percentages) ice areas were lost during the operation of the Kumtor gold-mine company in 1994-2013. This is due to the fact that gold mining is intensive, and the process of decay and melting of glaciers occurs quickly and irreversibly. At present, the Lysyi Glacier is destroyed, because it is now the quarry of a Canadian enterprise, and the «Davydov» Glacier is used as a dump of overburden removals (Fig. 1).

### **Evolution of glaciers between 1996 and 2013.**

Within the period of 1978 and 1990, the Kyrgyz exploration geologists discovered, explored, and calculated the reserves of gold, silver, tellurium, tungsten and pyrite sulfur in the region of Kumtor glaciers («Petrov», «Lysyi», «Davydov» and «Sary-Tor») and have them approved in the State Commission on Mineral Reserves under the Council Ministers of the USSR (GKZ USSR). In 1992-199, the Canadian company Cameco received a concession for the development of the Kumtor field for a period of 50 years.

According to the feasibility study (Feasibility Study), the extraction of ore was projected to be carried out in an open manner. The quarry is located at 3.5 km south-east of the concentrator. In total, within 11.2 years of the exploitation of the quarry, 273 million tons of gangue and material with a low gold content, as well as 53.481 million tons of ore will be excavated. The preparation of the field will take approximately 3 years. During this time, prior to the start-up of the concentrator, it will be necessary to build a road for transportation of ore between the quarry and the crushing plant, build access roads to the upper ledges of the quarry, remove ice, perform an overburden of the ore body, make pitches in the quarry for the main mining equipment and prepare ore dumps. The deposit is located in the zone of permafrost development and partially covered with ice. The ice thickness in the quarry section reaches 50 m, and therefore, according to estimates, it will be necessary to remove 8 765 000 m<sup>3</sup> of ice.

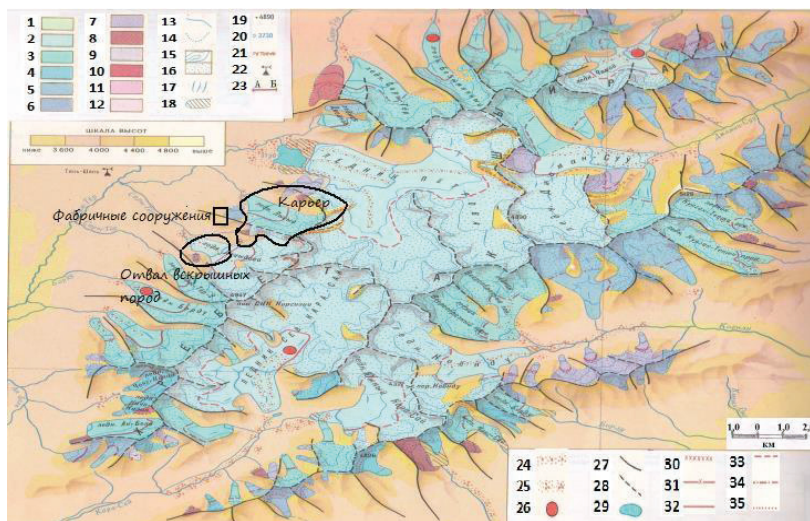
The project provides monitoring of glaciers. In 1995, a network of monitoring points was installed on the "Davydov" and "Lysyi" Glaciers to monitor the movement of glacial masses. The monitoring points were established due to the fact that waste masses were being dumped on the slopes of both glaciers. The following monitoring data on the movement of glaciers are extracted from the environmental reports of Kumtor Operating Company (KOC) [3,4,5,6].

#### **The "Lysyi" Glacier**

The "Lysyi" Glacier has a network of 31 monitoring points installed, and they can be reinstalled, if needed. The dumps of waste rock No. 3 and No. 4, as well as the experimental dump are located on the western side of the glacier.

Over the past year, the glacier movement over the open pit was estimated to range from 0.4 to 1.9 m/year, an average of 0.08 m/month. Observations of the territory located above the waste rock dump No. 3 and

the experimental dump show the absence of significant movements. According to monitoring data, during the year the *movement of the glacier* was in the range from 0.9 to 2.7 m/year, an average of 0.16 m/month. There is a tendency that *glacier moves* more actively in summer compared to winter. A more intensive *movement of the glacier* was noted at the monitoring points located above the lower edge of the waste rock dump # 3.



**Fig. 1.** Glaciation of the Ak-Shyirak massif [1]

Morphological types of glaciers: 1 - dendritic; 2 - complex valley; 3 - the valley; 4 - caro-valley; 5 - hanging valley; 6 - carous; 7 - Carob-suspended; 8 - suspended; 9 - hanging carous; 10 - flat top; 11 - prasclonovy; 12 - sloping; 13 - the boundaries of glacial languages; 14 - boundaries of the firm basins; 15 - ice surface; 16 - firm fields and snowfields; 17 - glacial cracks; 18 - ice booked moraine; 19 - elevation marks; 20 - water marks; 21 - rocks; 22 - meteorological stations; 23 - profile lines on glaciers; 24 - surface moraines; 25 - delayed moraines; 26 - pulsating glaciers; 27 - watersheds; 28 - ice breaks; 29 - Preglacial lakes; height of the feed boundary: 30 - below 4 000 meters; 31 - 4 000-4 100 meters; 32 - 4 100-4 200 meters; 33 - 4 200-4 300 meters; 34 - 4300-4 400 meters; 35 - above 4,400 meters.

#### **The «Davydov» Glacier.**

The "Davydov" Glacier has 48 monitoring points, which can be reinstalled if necessary. The waste rock dumps are located along the center line and to the bottom of the glacier.

The upper reaches of the "Davydov" Glacier above the waste rock dumps is moving at a speed of 7.9 to 10.3 m/year.

The movement of the central part of the glacier was also noted, which is not affected by the waste rock dumps. The speed of movement ranges from 1.1 to 9.6 m/year, which averages 0.4 m/month. These data were obtained at a site where the slope of the glacier is smaller compared to its



upper part, which causes a smaller displacement of the glacier in the lower part than at the top.

The movement of the glacier is especially marked on the territory of the waste rock blanket No. 1 - from 11.8 to 150 m/year. The intensity of the movement is affected by the slope of the glacier and the close location to the base of the waste rock dumps No. 3 and No. 5. The weight of the waste rock dumps continues to influence the intensity of the movement of the «Davydov» Glacier.

### ***Impact of dust on glaciers***

There are two main sources of dust. The first source is the result of the operation of equipment used in mining, and blasting operations in the quarry. Dust formed as a result of developments, affects only the areas within 10-20 m of the quarry. Dust from drilling and blasting is scattered by the wind and has no effect on the glacier. Dust formed on an open pit has no effect on the natural "dirty" surface of the glacier, which becomes noticeable during the summer. This conclusion is confirmed by the fact that from the first development of mine in 1995 melting of the glacier did not increase.

In 1998, Kuzmichenok, the head of the Geoinformation Systems Laboratory of the Kyrgyz Republic determined the degree of dust exposure at the mine's territory. In the course of this work, field studies were carried out, computer modeling was done with subsequent correction of the results. Upon completion of the work, he concluded that the dust resulting from mining operations and deposited on the glacier is 3-20 times less than the natural amount of dust deposited on the glacier.

### ***Data on water pollution.***

Empty rocks dumping sites are located to the north and west of the quarry, directly adjacent to the northern and western edges of the glacier and occupy an area 2-3 times the area of the quarry itself. They are separately standing mountains with an inclined truncated peak, which rises above the level of the pit's mouth by 70-90 meters. These dumps, consisting mainly of rocks of the black shale sequence of the Lower Paleozoic, cover the entire western part of the "Lysyi" and "Davydov" glaciers. The western foothills of the artificial mountain formed on the "Davydov" Glacier is washed by the Chon-Sary-Tor river. During heavy rains, the water in the river becomes dark gray. Unfortunately, the company's management does not allow public organizations to test water from this stream.

The slopes of the dumps are quite steep - up to 45-50° - because of the predominance of the large-block constituents in the mass of the dump rocks and shale "cement". Continuous observations are conducted on the physical condition of the body of the dumps, the change in its position in space, dynamics (if any), on the devices installed in the dumps.

It was mentioned above that part of the glacier is blocked by fresh dumps. A lot of small streams flow out from under the dumps, which testifies to the melting of the glacier under the influence of gravity of the

body weight of the dumps and natural heating from it. Theoretically, it can be assumed that in this way, as a result of a gradual decrease in the volume of ice by melting under the heaps, all the voids that increase in size will form, where the body of the dump will fail, movements, landslides, landslides may occur. There may be overlapping of the Chon-Sary-Tor river, the accumulation of water in the dam and its breakthrough, which will present a danger to the lower buildings.

It was mentioned above that part of the glacier is blocked by fresh dumps. A lot of small streams flow out from under the dumps, which testifies to the melting of the glacier under the gravity of the body weight of the dumps and natural heating from it. Theoretically, it can be assumed that in this way, as a result of a gradual decrease in the volume of ice by melting under the heaps, all the voids that increase in size will form, where the body of the dump will fall, by resulting in landslides. They might block and accumulate the Chon-Sary-Tor river, and its breakthrough presents a danger to the buildings down the stream.

In addition, the dumps present a potential ecological hazard to the environment, primarily human health, as they contain (although in low concentrations) salts of heavy metals. They easily wash out by rain and melting waters, because rocks in dumps, in comparison with the root, have a large specific surface of crushed and significantly loosened mass. Further, these harmful elements can freely flow into the Naryn (Syr Darya) river.

According to Dr. Robert E. Moran (Ph.D.), an independent expert from the United States, who prepared an expert report entitled "Kumtor Gold Funds, Kyrgyzstan: Comments on Water, Environment and Related Issues, September 2011" notes that Centerra (a Canadian company that owns the Kumtor mine) "pollutes local waters and glaciers, hiding evidence of such negative consequences from public control" [9]. For example:

- The Petrov Lake, which is the largest regional source of water to the transboundary Naryn River and the main source of water in the mine, continues to be polluted by field development activities;
- Since the start of the development, the the Kumtor Operating Company produced 89 million tonnes of waste, some of which are stored in unstable conditions, and presenting a potential threat in the event of an earthquake;
- Annually the company uses about 3,650 tons of cyanide, and there is no investigation on how much of it contained in the water below the mine.

According to the Kyrgyz ecologists, the analyzes performed by domestic and foreign laboratories on soil, water, bottom sediments have established that the distribution of heavy metals at the sampling points above and below the main sources of man-made pollution exceeds maximum permissible

standards by 2 to 6,5 times. In particular, arsenic - 4 times, lead - 3.43 times, cadmium - 4, 68 times, antimony - 2.8 times, cobalt - 4, 27 times [9].

Given this, it is of utmost importance to study the composition of the waters of the Chon-Sary-Tor River, and constantly monitor its chemical composition to take appropriate emergency clean-up measures in case of contamination above permissible standards.

To substantiate the decision on storing waste rocks on the Kumtor glaciers, M.B. Dyurgerov's conclusion was used. M.B. Dyurgerov's, Head of the Laboratory of Glaciological Forecasts of the Institute of Geography of the USSR Academy of Sciences (Moscow), prepared this conclusion in January 1989 specifically for a feasibility study developed by the "Ginalmazzoloto Project Institute". The conclusion indicates that the loading of a part of the "Davydov" Glacier is permissible under the supervision of glaciologists [8].

The Feasibility Study of "Ginalmazzoloto" indicates that the maximum height of stable dumps on the glacier should not exceed 35 meters. However, due to lack of practices of piling up dumps for powerful ice strata, it is advisable to continue research.

Unfortunately, the recommendations of the leading glaciologists of the USSR and designers from Ginalmazzoloto were ignored, and local "experts" from the "Ken-Too" Development Research Centre recommended to increase the height of the dumps to 90m (in fact, in a number of cases, dumps were piled up to 120m in height). By their recommendations, local «experts» authorized dumping of giant masses of rocks on the "Davydov" Glacier. In addition, the conclusion on the placement of rock dumps was received from government agencies.

This gross violation of the common practice of mining by the Kumtor Operating Company leadership is also a violation of §79 of the Uniform Security Rules [9]. Specific properties of ice and its bearing capacities that differ sharply from similar properties of rocks were simply ignored. To date, the capacity of the dumps on the "Davydov" Glacier reached 150-200m. The total mass of rocks dumped on the "Davydov" Glacier is several hundred million tons, which is comparable to 500 million tons or 430 million m<sup>3</sup> of ice. All this caused a change in the hydrothermal regime of the glacier with increased melting of ice and increased inflow of water into the central quarry. Over the past three years more than 54 million US dollars have been spent on pumping water from the central pit.

Thus, because of the mine's operations, the "Davydov" Glacier was virtually destroyed together with millions of tons of fresh water.

Dumping of rocks on the glacier resulted in economic damage. Dumps, stored on a glacier, had to be taken to another place, and this is additional transportation and loading costs.

In a word, in spite of the decision made by the feasibility study to dispose dumps in rock dumps located in the valleys of the Lysyi and Chon-



Sarytor streams, the leadership of Kumtor Operating Company decided from the start to dump the rock on the “Davydov» Glacier. All this threatens to turn into the destruction of the glacier, and serious environmental problems of long-term systematic nature by polluting surface waters in the Kumtor-Naryn river basin.

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## Ecological condition of oak plantations in Bishkek

### Экологическое состояние дубовых насаждений в городе Бишкек

### Бишкек шаарындагы эмен дарактарынын экологиялык абалы

**Abstract:** this article reveals the results of the researches carried out by the author in 2013-2017, examined the species composition of oak trees and their role in the Bishkek ecosystem. Biology and ecology of primary and secondary pest species of oak plantations in urban environment were investigated. And also indicators of damages to oak trees by insect pests in various cities of Kyrgyzstan have been determined.

**Аннотация:** в статье приведены результаты проведенных автором в 2013-2017 годах исследований, рассмотрен видовой состав дубовых деревьев и их роль в Бишкекской городской экосистеме. Исследована биология первичных и вторичных видов вредителей дубовых насаждений в городских условиях. А также определены показатели поврежденности дубовых деревьев насекомыми-вредителями в различных городах Кыргызстана.

**Аннотация:** макалада автордун 2013-2017-жылдардагы Бишкек шаарынын экосистемасындагы эмен дарактарынын орду, түрдүк курамы, жана ал дарактарга зыян келтирүүчү биринчилик жана экинчилик зыянкечтери жана алардын биоэкологиясы жөнүндөгү изилдөөлөр камтылды. Мындан сырткары Кыргызстандын ар кандай шаарларында эмен дарактарынын зыянкеч курт-кумурскалардын таасиринен жабыркоо деңгээлинин көрсөткүчү аныкталды.

**Keywords:** entomology; oak; insect pests; pollution; invasion; ecosystem; bioecology; introduction.

**Ключевые слова:** энтомология; дуб; насекомые-вредители; загрязнение; инвазия; экосистема; биоэкология; интродукция.

**Негизги сөздөр:** энтомология; эмен дарагы; зыянкеч курт-кумурска; булгануу; жуктуруу; экосистема; биоэкология; интродукция.

## Introduction

Oak (*Quercus*) - one of the most valuable breeds of our city. These wood crops are of great economic importance and are a powerful natural protective factor. High growth and ornamental quality, and resistance to unfavorable factors the most important ecological functions, from which it is especially necessary to distinguish water keeping, water regulating, soil-

protective as well as its sanitary and hygienic qualities put it among the main breeds for gardening of city ecosystems [1]. Its high oxygen productivity is superior to other hardwood species to the impact on the environmental sanitation.

Today the state of oak plantings in Bishkek and other cities of the Chui region (Kant, Novopokrovka, Tokmok, Sokuluk, Kara-Balta and others) are critical. This is the result of massive proliferation of harmful insects and adverse environmental factors (cold, droughts, fluctuations of solar activity, environmental pollution, global changes of climatic conditions). Based on the foregoing it can be said that the preservation of these species has become an actual problem of our time.

The purpose of this research is studying of the state and influence of harmful insects on oak plantations, comparing the territories of Bishkek and other cities of Chui region (Kant, Novopokrovka, Tokmok, Sokuluk, Kara-Balta, etc.), Jalal- Abad region (Jalal -Abad, Kerben) and Issyk-Kul region (Balykchy).

### **Subjects and the methods of research**

When determining category of the damage a 6-point scale is used to estimate the condition of trees: 0 – not corrupted, I - II – slightly damaged, III - IV – moderately damaged, V - VI – heavily damaged [ 5].

For each trial area the percentage of trees of different status categories were determined and the percentage of damage was calculated, then the conclusions on the condition and the degree of weakening of the trees were made.

### **Results and analysis**

Oak belongs to the genus *Quercus* L. and represented by a large quantity of species with very complex and diverse taxonomy. Due to this, up to now it is not precisely determined how many species of oak contains this kind, as well as how many of them there are in the world.

M. Golenkin and N. Kobranov (1931) indicate that the number of oak species exceeds 200. V.F. Ovsyannikov (1931) reported that the genus *Quercus* contains more than 300 species and varieties, and F.L. Shepotev (1949) and G. Hegyi (1925) think that there are more than 200. A. Camus (1936-1939) described in details the 292 species of oak, as well as many subspecies and hybrids. According to V. N. Sukachev (1938) only in the Caucasus, there are 17 species of oak. V. P. Maleev and S.Y. Sokolov indicate that the genus *Quercus* has about 600 species [13].

Oak (*Quercus*) is the introduced species in our country. The first trees of petiolate oak (дуба черешчатого) appeared here in the late XIXth century (1881-1895) since the bookmark in Frunze (now Bishkek) Karagachevaya Grove and the Oak Park. Organization of the Botanical Garden in the capital (1937) made it possible to experience the culture in a variety of species of this genus, and by 1978 at the Botanical Garden 33 kinds and oak form different geographical regions of the world were successfully introduced. [1]and 19 species of oak successfully grow here today. They belong to two sections subgenus *Erythrobalanus* Spach and 4 sections of the subgenus *Lepidobalanus* Endl. (Table 1)

**Table 1. Species composition of oak trees in Bishkek**

Subgenus	Section	Forms
<b>1.Erythrobalanus</b> Spach.	<b>1.1. Section</b> <i>Phellos</i> Loud.	<i>Quercusimbricaria</i> Michx.
	<b>1.2.Section</b> <i>Rubrae</i> Lound.	<i>Q. borealis</i> Michx. f.
<b>2.Lepidobalanus</b> Endl.	<b>2.1. Section</b> <i>Cerris</i> (Spach.) <i>Oerst.</i>	<i>Q. serrata</i> Thunb.
		<i>Q. castaneifolia</i> C. A. M.
	<b>2.2. Section</b> <i>Cerridopsis</i> <b>Maleev</b>	<i>Q. macranthera</i> Fisch. et Mey
	<b>2.3. Section</b> <i>Dentatae</i> C.K. <i>Schneid.</i>	<i>Q. dentate</i> Thunb.
	<b>2.4.Section</b> <i>Eulepidobalanus</i> <b>Orst.</b>	<i>Q. hartwissiana</i> Stev.
		<i>Q. robur</i> L.
		<i>Q. macrocarpa</i> Michx.
		<i>Q. erucifolia</i> Stev.
		<i>Q. pubescens</i> Willd.
		<i>Q. mongolica</i> Fisch.
		<i>Quercusacuminata</i>
		<i>Q. imeretina</i> Stev.
		<i>Q. longipes</i> Stev.
		<i>Q. petraea</i> Liebl.
		<i>Q. muehlenbergii</i> Engelm.
		<i>Quercus variabilis</i> Bl

The oak plantations have a high transpiring ability. Their evaporated moisture is 20 times higher than the area occupied by them, greatly increasing humidity and reducing the temperature of air. And also they significantly reduce the rate of air masses, i.e. promote horizontal and vertical airing (aeration) leading to an improvement in the composition of

air. Foliage of woody plants reduces noise in residential and industrial areas for 2-2,5 times. Besides, the oak plantings clean (clear) the city air from dust, significantly reduce the concentration of harmful gases in the air [8].

Thus, the preservation of oak and other trees is very important for optimization of the urban environmental landscaping.

Unfortunately, today the Bishkek oak plantations are in depressing condition. There is a small number of publications devoted to the study of the reasons of the oak weakening. Measures for pest control and restitution of oak plantings are not developed.

Let us consider in more detail this phenomenon on the example of Bishkek and other cities of Chui region (Kant, Novopokrovka, Tokmok, Sokuluk, Kara-Balta, etc.), Jalal- Abad region (Jalal- Abad, Kerben) and Issyk-Kul region (Balykchy).

The vegetation in Bishkek city is under strong anthropogenic pressure and is subjected to chemical, physical, biological and integrated effects (pollution of water and air, violation of irrigational system, pollution of soil, temperature and water regime of air and soil, its chemical and physico-mechanical properties, contamination by toxic substances, the presence of underground utilities and structures, the influence of asphalt pavement of roads and streets, excessive recreational exposure, additional lighting to gardens later in the evening and at night, mechanical damage to plantations) [6]. All these factors lead to the weakening of trees, and appearance of the primary and secondary insect pests, which strike oak phytocenosis and thus causing the disruption of the ecological balance, water regime, light and temperature conditions of the plantations.

The oak plantations are damaged by a huge number of pests and diseases. Among the most common pests that damage the foliage are: 5 species of Bombycidae, 5 species of Noctuidae, 6 species of Geometridae, 8 species of Nepticulidae, 8 species of Symphyta, 2 species of Psyllidae, 11 species of Cynipoidea, 2 Tortricidae, 5 species of Curculionidae, 2 species of Adelgidae, 5 species of Aphidoidea. Buds and flowers hurt 12 species of Cynipoidea. Acorns are hurt by 2 species of Tortricidae, 3 species of Curculionidae and 1 type of Cynipoidea. The trunk and branches are damaged by 8 species of Scolytinae, 7 species of Cerambycidae, 3 species of Siricidae, 2 species of Lyctidae, 1 species Anobiidae, 3 species of Buprestidae, 1 type of Platypodinae and 1 type of Cossidae [6].

In our conditions, the most common and dangerous pests of oak are primary pests: *Profenusapygmaea* (Klug, 1814), *Lymantriadispar* L., *Malasomaneustria* L., *Euproctischrysorrhoea* L., *Operophterabrumata* L.,

Erannisdefoliaria Cl., secondary pests: Scolitusintricatus Ratz., Aeolesthessarta Sols and a fungal disease - farinose dew.

Among the pests of oak plantings the most malware is secretly living pest of oak leaf-mining. These pests have a hidden lifestyle, while staying in plant tissues, which makes it difficult to fight with them, because they are in the external environment for a short time. They inhibit the plants, reducing photosynthetic surface of the leaves, causing premature abscission of the leaves (mid-August), degrade the aesthetic value of the plantings.

The **oak leaf –mining Sawfly** –monifah. These insects dwell only oak, and bring significant damage eating plates of leaves thereby reducing the photosynthetic area of the leaves. They are able to give short-term outbreaks and damage oak stands to a great extent on large areas. Massive damage of these sawflies even kill trees.

Imago of Profenusapygmaea of a small size (to 5 mm) and live for a short time (not more than 2 weeks). Moth flight occurs in late April — early May. Males are not found, they are extremely rare or there are none at all. Females choose leaves of a certain age for a oviposition. Profenusa pygmaea submerge eggs under the epidermis of the lower side of the sheet, develop (according to our data) in 14-17 days. Mines on the leaves of the oak become visible in late May — early June. Larvae at hatching from the eggs do not go to the surface of the leaf, but bite into it.

Profenusa pygmaea is an obligate miner, the complete larval development of which takes place inside the leaf blade. The larvae of the Profenusa pygmaea use only easily digested leaf tissues and do not eat the epidermis, the cuticle and tissues of the vascular bundle, that is why their development is much faster than that of the free-living phyllophagous.

The shape of Profenusa pygmaea is irregular, often pear-shaped, upside, clearly visible and not masked by any special twists and folds of the leaf and can take from  $\frac{1}{4}$  to  $\frac{1}{2}$  of the leaf area, sometimes the whole surface.

In urban oak plantations the level density of populations of leaf-mining the foliage of woody plants insects in recent years has been at a constant and relatively high level. During the spring and summer time periods they represent a great threat to the condition of the oak plantings [7].

The high number of the Profenusa pygmaea on oak trees is noted in Bishkek, Kant, Tokmok, Sokuluk, Kara-Balta and Kerben. And in IssykKul area the oak leaf-mining Sawfly is seen singly or not at all. Such fluctuation of number is bound to air temperature, the air temperature and the land weather is higher, the number of the wrecker is higher and vice versa.

**Lymantria disparis L.** is one of the important objects of the control services of forest protection in several countries of Eurasia, North America and Africa. The larvae can damage more than 300 species of plants [3].

Biology and ecology of the *Lymantria disparis* is well researched and includes many of the writings of [2, 4].

In Bishkek the *Lymantria disparis* has one year generation. Butterflies of *Lymantria disparis* is characterized by a pronounced sexual dimorphism: males and females look different. The wingspan of the male is 45 mm, antennae plumose, wings are dark grey or brownish-grey with dark stripes. The female is larger than the male and lighter in color, wingspan of about 75 mm, with thread-like antennae and the thick abdomen.

Time of flying the *Lymantria disparis* begins in early May, the duration is 2.5 months. Females can mate with males shortly after emerging from the pupae. After mating, the ability to attract males fastly disappear. The female begins egg laying 2-3 days later after hibernation.

The detailed description of the Gypsy moth eggs is found in researches of V. Benkevich [2].

The output of the caterpillars from the eggs begins when the average weekly temperature exceeds 10°C and maintained for 2-3 weeks. The output of the tracks coincides with the period of leafing on their main prey species. In conditions of Bishkek output of the tracks begins with the second decade of May-first decade of June. For caterpillars of *Lymantria dispar* typical 4 or 5 molts. Males have five instars, females six. Before each molt the caterpillar stops moving and eating. The total duration of life of the caterpillars ranges from 40 to 60 days.

The doll of *Lymantria dispar* is matte, dark brown or almost black, covered with rusty-brown hair length from 1.8 to 3.07 cm. Healthy pupa is very active, reacts to the slightest touch, making the lower end of the abdomen an undulating motion. The pupal stage lasts from 10 to 12 days.

**Malasomaneustria L.** is a butterfly of the family of the lappet moth, pest of pome and stone fruit crops, and many forest species. The female butterflies are ochre-yellow or reddish-brown, extent of wings of 3.5 - 4.4 cm; on the front wings there is a dark transverse band edged with pale stripes, on the hind wings the same figure expressed not sharply. Males are distinguished by smaller size (wingspan of their wings is 2.6 - 3.3 cm) and well-defined combed antennae. A dark-colored butterflies dominate the beginning of the outbreak.

Eggs are laid off by a close spiral around thin branches. The eggs are upright, shaped like a truncated cone, tapering somewhat to the base. They



are so tightly glued to each other dark-grey secretions of the accessory genital glands of the females that are visible only the tops of the eggs, testicles are dark-grey, 1,3X0,8 mm in size, their structure is fine-grained, the upper roller of them is porcelain-white, winter with developed caterpillars inside.

Adult caterpillars are of 4,5 – 6,0 cm, bluish-grey, with the same color of head, on the sides there are orange black-striped strips. There are the rarely located bunches of blackish hairsprings on a spinal side, and light-brown hairsprings thickly grow above feet and there is a dark fleshy wart on eleventh tergite.

Dolls are to 2,5 cm long, dove-coloured-brown, with the bright orange edges of sternites and some tergites. The rounded top of cremasters is not armed, but its slopes, and also sides and partly tergites of the 8th and 10th segments are covered with reddish tiny hooked and simple bristles. 9th and 10th segments are extended. Cocoons are disposed among the clamped mulberry leaves, often there are few cocoons in one nest of pupation. At mass reproductions cocoons can be found on fences, buildings, usually at corners [3]

**Operophterabrumata L., Erannisdefoliaria Cl.** are butterflies of different size with wide wings and thin slender body, a caterpillar is naked, with two pairs of pectoral feet, at a movement bending the body pulling up the back-end to front. The dolls have no cocoons.

Male of *Operophterabrumata* has a wingspan of 20 - 25 mm, female with rudimentary wings does not fly. Front wings of male are yellow-grey with dim wavy and transversal bars, back wings whitish-grey. Flying starts in October and lasts 40 - 50 days. Most intensive fly come in 6 - 10 days after its beginning and proceeds 17 - 19 days. Sometimes flying lasts till January. There are cases when single pupas overwinter and butterflies took off only in spring. Maximum activity of butterflies occur in the twilight, the males fly to the light.

After leaving the pupae the females climb trees and lay eggs near the buds and internodes, cracks and irregularities of the bark of thin branches, along the whole length of the crown, and also on the cortex of the trunk. The female lays one or two eggs, or in groups of 10-20. Female fecundity is very changeable.

**Erannisdefoliaria Cl.** Male has a wingspan of 30 -40 mm, the female is wingless. The front wings of the male are brown the female is dark yellow. Biologically is close to the *Operophterabrumata*. Flight in September - October and overwinter in the egg stage, the tracks appear in April – May,



of a year generation. Polyphage. It prefers oak and fruit trees. It often occurs in conjunction with the previous species.

Eggs are light green, pistachio color, in 6 - 10 days after laying of eggs they become orange. Before hatching of caterpillars the eggs become grey-violet. Caterpillars are large, from grey till yellow-brown color, have all typical signs of the family. Dolls are red-brown, bright, differ on a cremaster.

Primary insects usually attack outwardly healthy trees. Especially dangerous are outbreaks of mass reproduction of primary pests that last for several years and cause repeated eating of oak tree foliage. The weakened trees are exposed to a complex of secondary stem pests.

**S. intricatus Ratz.** is found throughout the oak habitats. Occasionally settled on a hornbeam, chestnut, birch, maple and other species, but their threat is not listed. Populates mostly dying young oaks around the trunk and in older trees, avoids thick crust and populates their middle part, the top and branches. Uterine transverse passages are simple, short. Flight of beetles in June, after which they are within 10 - 12 days extra feed in the crowns of perfectly healthy oaks. For this the beetles are introduced into thin terminal branches at the points of their articulation. Initially, they make superficial bites and only a few days later completely penetrate deep into the branches, making there stroke length of about 0.5 cm. Oviposition in the second half of June-July. They hibernate in the stage of larva, pupate in the spring of the following year at the end of April-May, of one year generation. [3].

**Aeolesthesarta Sols.** widely distributed in Central Asia, including Kyrgyzstan, where causes great damage to many tree species, especially growing in the urban conditions settings of oaks, poplars, white acacia, walnut, etc. Beetle with a length of 28 - 47 mm, dark grey-brown, with silvery hairs on elytra.

Flying is from late April to mid-June. Females lay one egg in crevices and recesses of the bark of trunks of trees of all ages, mostly old. Only one female lays up to 270 eggs.

After hatching, the larvae dig under the bark, feed on the inner bark at first, then navigate tortuous passages, strongly affects sapwood, and are moving in the wrong oval cavity, dramatically crashing into the phloem and the cork bark. In the fall the larvae go deep into wood and winter there, and the next year continues to progress. First it is laid down, then bends sharply hooked and directed upwards, parallel to the surface of the barrel. Young beetles appear in late summer and overwinter in the tunnels. Generation of two

years. *Aeolesthes sarta* attacks externally healthy, still quite viable trees and gradually leads them to death.

It is important to note leaf-eating group of insects, the most numerous ones. Their damage quickly becomes evident as leaf-eating insects roughly devour the leaves, eating holes in them.

Eventually we can conclude that primary pests lead to disruption of the normal functioning of trees and shrubs, the decline of their productivity and other valuable properties in the first place – decorative. In addition, severe damage by primary insects leads to the inevitable move their insects that will entail drying of skeletal branches and death of the whole plant. It is important to note that the affected trees and shrubs fall before the time foliage, and plants with damaged wood become brittle, why during a strong wind or snowfall the branches of these plants break off easily, which can lead to accidents or casualties.

The emergence of pests in urban green spaces is closely related to the mistakes of carrying out measures to care for them, and also neglect of carrying out scheduled maintenance work. Trees and shrubs in urban environment is a means of protecting the population from negative impact of a surrounding medium, and affected plants cope with this role much worse. And the lack of attention to regulating the numbers of most insects through regular trimming of trees and shrubs, rejuvenation of old plantations, processing soil cover can annihilate all landscaping work in the city.

The specific structure of wood vegetation in the urban environment defines possibility of formation of a peculiar specific structure of entomokomplex of dendrophag and their steady populations.

At the same time adaptation and action for decrease of number of wreckers at entomophages are much lower here as parazitoides and predators develop the new habitat much more slowly. Besides in city ecosystems there are adverse conditions for development of a number of species of parasitic and predatory entomophages [3], especially in cases of distribution of invasive types in the urban environment. Thus, particularly in urban plantings the extremely favorable environment for penetration and distribution of stranger or invasive organisms – invayder- is formed. In the course of formation of an ecological niche after establishment of trophic communications, the invayder quite often gives the strong flash of mass manifolding [6].

Different types of wreckers differently damage oak trees. Results of overseeing for 2013-2017 are given in the table 2.

As shown in the table 2, the primary and secondary pests often arrive under the genus **Lepidobalanus** than oaks under the genus **Erythrobalanus** particularly damaged species is the *Q. robur* L., *Q. mongolica* Fisch., *Q. dentata* Thunb., *Q. macranthera* Fisch. et Mey. *Q. longipes* Stev.

Heavily damaged trees are found in all districts of Bishkek, Cant, Tokmok, Sokuluk. Particularly, plants growing along motor roads subject to damage.

It is noteworthy bad condition of the oak trees in Bishkek, having average category of state from shares of the defective trees on the main wreckers of 69%, and in Tokmok, Kant and in Sokuluk their number decreases and the condition of trees is slightly better.

**Table 2. The degree of damage of oak trees on points.**

	The degree of damage points						
	Profenusa pygmaea	Lynantria dispar	Malasoma neustria	Euproctis chrysorrhoea	Operophtera brumata	Erannis defoliaria	Aeolesthesaria
<i>Quercus imbricaria</i> Michx.	II	II	-	-	I	I	-
<i>Q. borealis</i> Michx. f.	-	-	I	-	I	I	-
<i>Q. serrata</i> Thunb.	II	I	-	-	II	I	-
<i>Q. castaneifolia</i> C. A.M	III	III	I	I	-	-	-
<i>Q. macranthera</i> Fisch. et Mey	III	IV	I	I	I	I	-
<i>Q. dentata</i> Thunb.	III	I	II	I	II	I	I
<i>Q. hartwissiana</i> Stev.	I	-	I	-	I	I	-
<i>Q. robur</i> L.	VI	III	III	II	II	III	I I
<i>Q. macrocarpa</i> Michx.	VI	II	III	I	II	II	I
<i>Q. erucifolia</i> Stev.	V	II	I	I	II	I	I
<i>Q. pubescens</i> Willd.	VI	II	I	I	I	II	-
<i>Q. mongolica</i> Fisch.	IV	I	I	II	II	III	II
<i>Quercus acuminata</i>	V	I	II	I	I	I	I
<i>Q. imeretina</i> Stev.	VI	III	II	-	-	-	I
<i>Q. longipes</i> Stev.	V	III	I	I	-	-	I
<i>Q. petraea</i> Liebl.	I	-	I	-	-	I	-
<i>Q. muehlenbergii</i> Engelm.	III	I	II	I	I	I	-
<i>Quercus variabilis</i> Bl	II	-	II	I	II	II	-

Note: 0 – not corrupted, I-II – slightly damaged, III-IV – moderately damaged, V-VI – badly damaged.

## Conclusion

On the basis of the conducted research the species composition of the oak plantings in Bishkek were studied. In the course of work there were identified 19 species and forms of oak introduced from different geographical regions of the globe. They belong to 2 sections of the subgenus **Erythrobalanus Spach.** and 4 sections of the subgenus **Lepidobalanus Endl.**

Species composition, bio-ecology of major pests (primary and secondary) and the degree of damage of oak trees were identified. The insects – phyllophagous, miners and xylophagous and damaging leaves and trunk are of particular danger. The phyllophagous and miners belong to the group of primary pests, as they are the first to populate the plants, weaken them and dramatically reduce the decorative appearance.

These studies can form the basis for improving the state of urban ecosystem, developing a concept and techniques for combating specific pests.

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## Humanitarian sciences

## Philology

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*Aidralieva A. A.**KNU n.a. J. Balasagyn, Bishkek**Айдралиева А. А.**КНУ им. Ж. Баласагына, Бишкек*[alimana82@mail.ru](mailto:alimana82@mail.ru)**Pragmatic content of speech etiquette in English and Kyrgyz****Прагматическое содержание речевого этикета в английском и кыргызском языках****Орус жана кыргыз тилиндеги кеп маданияттын прагматикалык мазмуну**

**Abstract:** the article analyses the pragmatic co-meanings, acquired by etiquette units during communication. The pragmatic (here, pragmatics is understood as relation to signs by those who interpret them) content of the units of speech etiquette is characterized. After the consideration of the politeness category, which is basic for verbal etiquette, and the analysis of the universal and idioethnic values lying in the basis of the etiquette language formulas, the article infers generality of the pragmatic content of the speech etiquette in English and Kyrgyz languages.

**Аннотация:** в статье анализируются прагматические со-значения, приобретаемые этикетными единицами в актах коммуникации. Характеризуется прагматическое (при широком понимании прагматики как отношения к знакам тех, кто их интерпретирует) содержание единиц речевого этикета в английском и кыргызском языках. После рассмотрения базовой для вербального этикета категории вежливости и анализа универсальных и идиоэтнических ценностей, лежащих в основе этикетных языковых формул, делается вывод об общности прагматического содержания речевого этикета в английском и кыргызском языках.

**Аннотация:** кептик этикеттин прагматикалык бирдиктеринин мазмуну мүнөздөлөт. Илимий макалада универсалдык жана идиоэтникалык анализ жана вербалдык этикеттин сылык категориясын базалык кароодон кийинки прагматикалык маңызы, этикеттик, тилдик формулалардын негизинин прагматикалык мааниси анализденет., кеп маданияттын англис жана кыргыз тилиндеги прагматикалык мазмуну менен жыйынтыкталат.

**Keywords:** units of speech etiquette; speech etiquette; pragmatics; cultural stereotypes; speech genre; cross-cultural communication; process of teaching; politeness category; formulas of speech etiquette.

**Ключевые слова:** единицы речевого этикета; речевой этикет; прагматика; культурные стереотипы; речевой жанр; межкультурная коммуникация; процесс обучения; категория вежливости; формулы речевого этикета.

*Негизги сөздөр:* кеп маданият бирдиктери; кеп маданият; прагматика; маданий стереотиптер; кептик жанр; маданият ичиндеги коммуникация; окутуу процесси; сылык категориясы; кептик этикеттин формулары.

Both in active use, and in real communication with native speakers of each ethnic group, stable speech and speech patterns for repeated situations are formed, i.e. cultural stereotypes. The norms of communication spread and occur through the demonstration and assimilation of these samples. Each cultural stereotype is a complex mix of social and individual, created by the national tradition. Stable etiquette formulas have harmonizing speech influence on communicants. The etiquette value can have a variety of human movements, postures and positions that it takes.

It seems interesting for the researcher to compare the pragmatic content of speech etiquette in English and Kyrgyz.

Speech etiquette is a system of rules of speech behavior and stable formulas of polite communication. The study of speech etiquette occupies a special position at the junction of Linguistics, theory and history of culture, Ethnography, Regional Studies, Psychology and other humanitarian disciplines [1]. It is an integral part of national language and culture of any people. Possession of speech etiquette promotes the acquisition of authority, generates trust and respect among people. In addition, knowledge of the rules of speech etiquette, their observance allows a person to feel confident and at ease, not to experience embarrassment and difficulties in communication, conversations and important negotiations. In addition, speech etiquette has a national specificity.

Each nation has created its own system of rules of speech behavior. Yet, speech etiquette is closely related to the practice of communication, its elements are present in every conversation. Observance of the rules of speech etiquette will help to communicate intelligently your thoughts to an interlocutor, to achieve rapport with him/her more quickly. Mastering the etiquette of speech communication requires obtaining knowledge in the field of various humanitarian disciplines: Linguistics, Psychology, cultural history and many others. For more successful acquiring communication culture skills, one can use such a concept as formulas of speech etiquette.

Formulas of speech etiquette are certain words, phrases and stable expressions used for three stages of conversation:

- 1) the beginning of conversation (greeting / acquaintance),
- 2) the main part,
- 3) the final part of conversation.

Basic formulas of speech etiquette are acquired at an early age, when parents teach the child to say 'hello', 'thank you', ask forgiveness for misbehavior. Getting older, people learn more and more intricacies in communication, mastering various styles of speech and behavior. The ability to properly assess the situation, to start and maintain a conversation with a stranger, correctly articulate one's thoughts, distinguishes a person of high culture, educated and intelligent. Speech etiquette in a broad sense fits with the general problems of linguistic pragmatics, and should be considered in the context of pragmalinguistic studies.

English speech etiquette has a long and very authoritative tradition - any deviation from the speech etiquette is perceived as a manifestation of bad manners or as deliberate rudeness. English speech etiquette is important not only for the English themselves, but for all the students of English as a foreign language. English speech etiquette has a serious practical value, deserves special and thorough study and constant improvement in it.

Here is one example when an Englishman's watch has stopped, so he had to specify the time. Turning to his friend, the Englishman asks: "What time is it, Tom?" The question "What time is it?" demonstrates the familiar style of speech and is relevant at the familiar level of courtesy - in family, in a close circle, among friends.

A polite request: "Excuse me, could you tell me the time, please?" - corresponds to a neutral level of politeness and a neutral style of speech, but at a familiar courtesy level, in a family circle or among friends, the phrase "Excuse me, could you tell me the time, please?" will seem unnatural in tone or artificially pompous. In an official setting, at an official level of politeness, the question about time can be completely out of place, if, for example, a subordinate enters the office to the chief only to clarify the time. However, and at the official level of politeness, the question of time is possible, if, for example, chief suggests that subordinates check the watches in order to operate smoothly according to the plan, which is painted on minutes.

Elements of speech etiquette are present in everyday practice of any native speaker (including poorly proficient in the norm), which easily identifies these formulas in the flow of speech and expects interlocutor to use them in certain situations.

Elements of speech etiquette are so deeply absorbed that they are perceived by the linguistic consciousness as part of the everyday and natural behavior of people. Ignorance of the requirements of speech etiquette and, as a result, their non-fulfillment (for example, in case of an appeal to an adult



unfamiliar person to you) is perceived as a desire to offend or as a sign of bad manners.

On the other hand, speech etiquette can be considered from the point of view of the language norm. The idea of correct, normalized speech includes certain ideas about the norm in the field of speech etiquette. English literature testifies to that huge role which, given the title and class differences in the society, is an example of a stereotype related to the culture. The English are not irritated by class differences; they are tolerant to privileges and proud of their titles. Here is an example of the importance of titles from a story taking place in English society, an excerpt from the story "Jeeves and the hard-boiled egg":

" - If the Duke of Chiswick is his uncle, I said, Why has not he a title? Why is not he Lord What-Not? - Mr. Bickersteth is the son of his grace's late sister, sir, who married Captain Rollo Bickersteth of the Coldstream Guards. " He's an uncle of the Duke of Cheswick, I asked, Why does not he have a title? " Why is not he a lord like-him-there?

" Mr. Bickersteth is the son of the late sister of his mercy, sir, who married the captain of the Royal Guard Rollo Bickersteth. "

" Aunt Isabel does not like you. She asked me what you did for a living. And when I told her that I did not do anything, I thought she was thinking a lot of things and that you were a typical example of a useless and decaying aristocracy. " You did not like Isabel. She asked me how you make a living, and when I answered that you did not work at all, I said that I understood this from the first minute, since you are a typical representative of a worthless, rotting aristocracy. " [2]

Thus, English speech etiquette is a traditional phenomenon, fixed in speech practice by many generations, stable and socially determined.

Now let us consider the features of the speech etiquette of the Kyrgyz. The author used information from various sources: ethnographic, linguistic, folklore, literary. The valuable material for this study was the Koran, the Manas epic story, the works of Kyrgyz thinkers, as well as our own observations. As a result, it was revealed that three main factors play the main role in the Kyrgyz etiquette: age, gender and social status, the emergence of which goes back to the historically established hierarchy of relations that were formed at the heart of the clan system. Of course, in modern society, the rules of behavior vary within different social strata (rural residents, towns people, etc.).

In the modern Kyrgyz culture of communication, there is a very extensive system of terms - appeals (vocabulary), which is based mainly on



the terminology of kinship. Probably, the emergence of the tradition of using vocals can be traced back to the past and associated with a number of precepts that forbade people to pronounce the names of people so as not to attract the attention of evil spirits. In the city, it is already more blurred than in rural areas, where the etiquette associated with the use of vocals is strictly observed.

The greeting of all the Muslims begins with the words "Ассалому алейкум". From our great-grandfathers, the custom passed - to greet each other with the words "Ассалому алейкум", "Ва аллейкум Ассалам". However, unfortunately, recently especially young people, schoolchildren begin to forget it. To greet and respond to greetings is a sign of respect. Nowadays, when there is a question of strengthening international friendship in a democratic society - this problem is urgent. After all, education begins with a friendly greeting.

The custom of greeting using the phrase "Ва аллейкум Ассалам" should not be forgotten, starting with the family, children's institutions, schools, and other educational institutions, from any organizations, public places, etc. After all, if you think about the meaning of the word "Ассалому алейкум", it means "I wish you peace, tranquility, health". The response to the greeting "Ва аллейкум Ассалам" means "I wish the same" (in Arabic). At present, elderly people still adhere to these rules and greet each other in this way, young people prefer to be modern and for greeting each other, they use the phrase "Кандайсыз?" (*How are you doing?*), and to with people of the same age "Кандай?" All this make us understand that we live in another time and people behave differently, and these details depend on one's consciousness.

To greet and respond to a greeting, you need to clasp your right hand to your chest and slightly nod with your head. If we analyze the word "you" and "You", usually "you" is spoken between peers, or if you know a person well. The word "You" expresses a certain estrangement, an appeal to a person whom you do not know much about, or a senior. Saying "You" is a sign of being educated. The national and cultural specifics of greetings is manifested "in tactics of achieving a communicative goal, in the functions of selected utterances, in the features of combining with other speech acts in this context, in the possibility of non-verbal reaction and frequency indices of a particular response, as well as gender and age social and role constraints."

*"Саламатсызбы, кечинде кайда бара жатасыз?" – Чоронун үнүнөн чочуп кетти. Толгонай унчукпай баса берди. Чоро акырындап*

*басып келе жатат: "Амандык сурашса, амандашпаганыңыз эмне, киши ушунчалык мерез болобу?" - деген.*

Etiquette, as already noted, gives a certain set of forms and rules of greeting for each individual. Etiquette represents a certain possibility of choice: the variety of forms and methods of their realization is sometimes difficult to describe. A nod with a head, a bow, a handshake, a kiss, an "air kiss," a simple "good day" or "hello" can be performed in a variety of ways, depending on objective and subjective circumstances, on the form of relationship, on historical and ethnographic factors. The researcher of the Kyrgyz etiquette A. Muratov writes that the Kyrgyz always welcome first. The younger welcomes the senior, regardless of gender. The pedestrian welcomes the rider, the entered welcome the seated. But the person sitting should get up quickly and respond to the greeting, except for older people who, because of respectful age, are not allowed to get up [3].

In the Kyrgyz language, unlike English, there are welcome expressions used to the addressee by age and gender.

Welcoming expressions for age and gender designation are used in relation to:

1. senior in age: a) respectful man's greeting: "Ассалом алейкум!", and response to him: "Алейкум Ассалом!": *"Салом Алейкум ..." - "Алейкум Ассалом!". "Иш кандай, Буйлаке?"*

b) Elderly women respectful: "Арба! Арыбаңыз!" (Do not be tired! Cheer up!), and reply: "Бар бол!" (Hello!): *"... арба! Арбаңыз! Саламатсызбы, иш илгери! деген мааниде. Жооп иретинде- Бар болуңуз! Албетте" арыба, чарчаба "дегенден өзгөргөн": Арыбаңыз, байбиче! Жакишы турасыңарбы?" - деп койду.*

c) Both older women and men respectful: "Күүлүсүзбү? Демдүүсүзбү?" (Are you still well?) [4], and reply: "Күүлү! Демдүү! Жакшы!": *"Ассалом аллейкум! Адака, күүсүбү?" - Абышканын алган билеттери боюнча ордуна отургуздум."*

2. Comparable with the English speech etiquette is the Kyrgyz prosthetic greetings of children by adults: "Чоңойдунбу?", which literally means "Are you growing up?" [5] In the Kyrgyz verbal etiquette, adults greet the children with the phrase, "Are you growing up? Have you grown up?": *"... бала-бакырлар чоңоюп жатабы?"* After all, growing up children become independent, they start helping their parents. Kyrgyz people strongly encourage the independence of children, so from a young age they are taught to behave in an adult way: submit rivers to the elders, provide them with services, pay attention, and do the feasible work around the house.

3. In Kyrgyz, as in English, there are official and semi-official

welcoming expressions used for different times of the day:

Кутмандуу таың менен! / yz / Good morning! Кутмандуу күнүңүздөр / ү / / өг менен! Good afternoon! Кутмандуу кечиң / from / ер менен Good evening!

One of the most important functions of speech etiquette is contact-fixing. Appeal - the most frequent in communication and a unit of establishing contact with an interlocutor, attracting one's attention. In Kyrgyz speech etiquette, by name and patronymic, one is treated in an official and business setting, usually for people in official relationship: boss and subordinate, among colleagues. *The greens of the coming people. We put in the same number, Ракима Садыковна.*

In a friendly, informal atmosphere, among friends, people are addressed by first name: "Hello, Fred. How are you?" A more formal form is a "title" + last name, or surname: "Good morning, Mr (s) Robinson" / "Good morning, sir / Madam Robinson".

"Excuse me, Madam, would you mind if I opened the window?" / "Excuse me, madam, do you mind if I open the window?"

Woman, as a rule, does not use the word "Madam" in relation to the representative of one's own sex, unless she is a servant or a hired worker who addresses the hostess.

Etiquette vocabulary of farewell as well as greetings can be divided into clichés, formulas, provisions, etc.

In the Kyrgyz language, the most frequently used in speech are imperative formulas of farewell: "Кош болуңуз!", "Саламатта калыңыз!", "Аман эсен баргыла!", etc.

#### **Neutral or formal ways to say goodbye:**

Have a good day / Have a nice day / Have a good evening / Have a good night - Applies to people who are not close (colleagues, workers, acquaintances). This is often heard in restaurants.

**Take care:** Bye! Be healthy. Neutral expression, it usually does not apply to close friends and relatives. Use "take care" if you do not see a person for at least the next week.

*I have to go now. - Ok, take care.*

**See you later / See you:** See you! - A universal phrase, it can be used with any person.

*It is already 10 o'clock! See you later!*

**Talk to you later:** See you soon. If you are talking on the phone and do not see the interlocutor, then "Talk to you later" is the perfect way to say goodbye.

**Catch you later:** See you soon. This phrase is not used in the official situations.

*Catch you later then? – Yes, tomorrow at the party.*

**Farewell:** Goodbye – A very dramatic expression suggests that you will never meet with a person again. Rarely used in life, if only in the theater or cinema.

*I guess this is it. – Yes, farewell, Mr. Thomason.*

(1) Жакшы кал: – if you leave him / her (literally: “it’s good for you to stay”)

(2) Жакшы калыңыздар – if you leave from them (literally: “it’s good for you to stay”) (3) Жакшы бар: – if he / she leaves you (literally: “it’s good for you to go”) (4) Жакшы барыңыздар – if they leave you (literally: “it’s good for you to go”)

Every person has faced the need to congratulate a friend or close friend in English on many occasions. Such situations are encountered if you have friends living abroad, colleagues whom you often have to cooperate, or just relatives who will be pleased to receive the original greeting in a foreign language. After all, English is one of the most popular and common languages of communication.

#### **Colleague or business partner:**

I hope you and all your coworkers, family, and friends have fun. Best wishes for a new year! Thank you for giving me the opportunity to work with you this year. It has been an honor and an invaluable experience for me. I wish you a merry Christmas and a new year filled with all good things.

Thank you for the pleasure of working with you. Happy holidays!

1) Туулган күн кут болсун! – Happy Birthday!

2) Урматтуу тай эже, сизди бүгүнкү туулган күнүңүздөр менен куттуктаймын!

Асел, сени келе жаткан Жаңы жылың менен куттуктайм. Чын ден соолук, узун өмүр, бакыт таалай каалайм.

4) Мээрим эже. Сиз бактылуусуз! Улуунузду чонойтуп, үйлөп, ата энелик милдетти аткардыңар. Эми балаңыз бактылуу болсун! Келиниңиз дайыма сиздерди сыйлап турсун. Көп неберелүү болгула!

5) Урматтуу агайлар, сиздерди эртеңки «Мекен коргоо күнү менен» чын жүрөктөн куттуктайм. Сиздерге ден соолук, бакубат жашоо, үй-бүлөңүздө тынчылык, токчулук, ынтымак башка жакшылыктардын баарын каалайм. Силер дайыма мекенди коргоп, анын ичинде бизди да коргоп жүрө бериңиздер.

Very often, when it is simply vital to provide moral support to other people, to express your sympathy or condolence on this or that occasion, to say the right words, for some reason these very words do not come to mind:

1) sympathy – симпатия, сочувствие, сострадание

2) a man of wide sympathies – отзывчивый человек — Bill is a man of wide sympathies and you can always rely on his support – Билл – отзывчивый человек и вы всегда можете полагаться на его поддержку.

3) you have my sympathies/ my sympathies are with you – я вам сочувствую, я на вашей стороне

4) to sympathize with somebody. — сочувствовать кому-л. Или жалеть кого-л.— I sympathize with poor girl – мне жаль бедную девочку

5) to sympathize with somebody. In his /her/ feelings — разделять чьи-л. Чувства — I sympathize with you in your fear — я разделяю ваше опасение.

6) to feel sorry for somebody — сочувствовать кому-либо — I feel sorry for him – я сочувствую ему

7) I'm so sorry – мне так жаль — I'm so sorry you have lost your job – мне так жаль, что вы потеряли работу.

In Kyrgyz language it might look like:

1) Сиздер бул жерде жакшы калыңыздар, жакшы отуруңуздар. Кеч болуп баратат. Мен кайтайын.

2) Ушуну менен катымды аяктаймын, жакшы отуруңуздар. Көрүшкөнчө тынч болгула.

3) Ошентип оокат тиричиликтин айынан чет мамлекетке жумушка аттанып жатамын. Жакшы калгыла, менин бир туугандарым!

4) Канча жыл силер менен чогуу иштеп күндөрдү өткөрдүк. Айла жок жумуш, жумуш экен, башка жумушка которгулганга байланыштуу, силерге уйкудук таштап жатам. Аман эсен көрүшкөнчө! Жакшы туруңуздар!

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## **The brief history of Psycholinguistics and the beginning of its study in Kyrgyz Philology**

### **Краткая история психолингвистики и начало ее изучения в кыргызской филологии**

### **Психолингвистиканын кыскача тарыхы жана анын кыргыз филологиясында изилденип башталышы**

**Abstract:** the article reviews the history of the development of Psycholinguistics. The article gives an analysis of some of the most significant scientific works of foreign and Soviet scientists, the founders of Psycholinguistics. Psycholinguistics in Kyrgyzstan is a new direction, Kyrgyz linguistic scholars' approaches to the study of Psycholinguistics are reflected in their works.

**Аннотация:** статья посвящена краткому обзору истории возникновения и развития психолингвистики. Дается анализ некоторых наиболее значимых научных трудов зарубежных и советских ученых, основоположников психолингвистики. Отмечается, что психолингвистика в Кыргызстане является новым направлением, подходы к ней имеются в нескольких научных трудах кыргызских ученых-лингвистов.

**Аннотация:** макала психолингвистиканын пайда болуусунун жана өнүгүүсүнүн тарыхына арналат. Психолингвистиканын илим катары калыптанышына салым кошкон чет элдик жана советтик окумуштуулардын эмгектерине кыскача анализ берилет. Психолингвистика Кыргызстанда жаңы илимдин тармагы болгондугу жана кыргыз окумуштууларынын бул багыттагы илимий эмгектери белгиленет.

**Keywords:** psycholinguistics; history of Psycholinguistics; speech activity; society and individual; speech generation; perception of text; language; consciousness; thinking; Psychology; Linguistics; concept; speech; text.

**Ключевые слова:** психолингвистика; история психолингвистики; речевая деятельность; социум; индивид; порождение речи; восприятие текста; язык; сознание; мышление; психология; лингвистика; концепция; речь; текст; направления психолингвистики.

**Негизги сөздөр:** психолингвистика; психолингвистиканын тарыхы; кеп ишмердүүлүгү; социум; инсан; сүйлөшүүнүн жаралуусу; сүйлөшүүнүн кабыл алынуусу; тил; акыл-эс; ой жүгүртүү; психология; лингвистика; концепция; сүйлөшүү; текст; психолингвистиканын багыты.

Recently, there have been research developments on issues such as “Language and Mind” and “Language and Thinking” which are considered

as the main subject areas within Humanities. Psychological and linguistic aspects of understanding a text, various special and multi-faceted functions of language, its use and perception draw attention of linguists, pedagogues, psychologists and philosophers.

Given current scientific and technological advances, it is crucial to explore functions of language. In spreading information, investigating communication, forming a bond with an audience and in the social affairs, it is now necessary to research not only semantics of speech but also the ways of creating and understanding a speech. Due to such needs, Psycholinguistics has emerged as a science from the intersection of Psychology and Linguistics.

The foundation of psychological component of Linguistics starts from Vilhelm Von Humboldt's concept of the spirit of people, the psychology of people, individual and psychological approach to language. This approach started developing from the second half of the XIX century. [1]

The psychological concept of Linguistics was developed by criticizing linguistics' naturalistic-biological concept's regulations. Exploring the concept 'Psychology', Heymann Steinthal (1823-1889) urged to look at language as, first, individual psyche's activity's special mechanism, and individual consciousness' mechanism, second.

During the development stage of Psychology and Linguistics in the 50s, 'Psycholinguistics' emerged as a science. This science further strengthened psychological components of language; in other words, the link between language and thinking, regular contact of a speaker to language, influence of sociological factors were identified and explored.

Psycholinguistics explores speech creation processes comparatively to the language structure. Compared to general language science, Psycholinguistics seeks external and internal factors which affect the development and functioning mode of language. Due to this, the research scope of this science is quite wide. One of the main subjects of Psycholinguistics is a speech elaboration. Psycholinguistics is close to language science in terms of research subject, and shares similar research methodology with Psychology.

The term "Psycholinguistics" was first used by American psychologist N. Pronko in his article 'Language and Psycholinguistics' in 1946. This term was presented at the scientific seminar held in Bloomington, Indiana, in 1953. The term came into use after Ch.E.Osgood and Th.A.Sebeok published their work on "Psycholinguistics" based on the



results of the seminar. Foreign Psycholinguistics, thanks to the wide support, gained a tremendous success. N. Chomsky, following Ch. E. Osgood brought innovations into the field. The idea of Chomsky was further promoted by G.A. Miller, D. Slobbin and J. Fodor.[2]

The history of the origin and development of the science of Psycholinguistics (PL) is presented in detail in the works of A.A. Leont'ev (123, 139, etc.). Based on an in-depth analysis of this question, A.A. Leont'ev singled out several successive stages in the development of Psycholinguistics as a science, which he defined as the concept of psycholinguistic "generations". Representatives of Psycholinguistics of the first generation were Ch. Osgood, J. Carroll, T. Sibeok, F. Launsbury, and others. The brightest representatives of second generation were J. Miller, N. Chomsky and D. Slobin. Psycholinguistics of the third generation, or, as termed by a prominent American psychologist and psycholinguist J. Verch the "new Psycholinguistics", was formed in the mid-1970s of XX century. In the USA, it is associated with the names of J. Bruner and J. Werch; in France – J. Mehler, Georges Noise, Daniel Dubois; in Norway - with the name of the talented psycholinguist R. Rommetveit.

As A. A. Leont'ev points out, the main feature of first-generation Psycholinguistics is its reactive nature. It completely fits into the behaviorist "stimulus-reaction" scheme, in its modernized version. Its orientation is purely psychological, it is based on a certain interpretation of the behavioral processes, i.e. speech behavior.

N. Chomsky developed the concept of the transformation model of language. As noted by A.A. Leont'ev (131, 139) [3], the "transformational approach" in Linguistics was first proposed by N. Chomsky. The merit of N. Chomsky is that he realized this approach in the form of a holistic model of the functioning of language in speech communication - the theory of generative grammar. According to this, there are special transformation rules or operations applied to the syntactic construction of a sentence as a whole.

The most important difference between Psycholinguistics of the second generation in comparison with that of Ch. Osgood was in the interpretation of the language acquisition. According to the views of representatives of the school of N. Chomsky, the mastery of the language is not the mastery of separate linguistic elements (words, etc.), but the assimilation of a system of rules for the formation of the meaningful.

A typical representative of third generation Psycholinguistics is, according to A. A. Leontiev, the French psycholinguist Georges Noise. Statements on J. Noise, specific psycholinguistic operations are

simultaneously cognitive and communicative in nature. They acquire a cognitive character in communication, interaction, speech influence. J. Noise, like his co-thinker J. Mehler, consider Psycholinguistics ("Linguistic Psychology") part of Cognitive Psychology. [3]

For Psycholinguists of the third generation critical is the concept of N. Chomsky on the role of innate universal language structures in the formation of the human language ability.

The modern period of development of Psycholinguistics coincides with the development of cognitive sciences. Cognitive Psychology is an area of Psychology that studies how people receive information about the world, how this information is perceived and realized by a person, how it is stored in memory and transformed into knowledge; How this knowledge affects our attention and behavior. [3]

The International Society of Applied Psycholinguistics (ISAPL) with its headquarters in Lisbon (Portugal) was established in the 80s of the last century. International symposia of Psycholinguistic scientists with the participation of linguists and psychologists are held once in three years. Osaka (Japan) publishes the International Journal of Psycholinguistics - "International Journal of Psycholinguistics" ("International Journal of Human Communication"). The issues of Psycholinguistic covered in this journal include: understanding and production of speech, psycholinguistic aspects of studying a foreign language, translation as a type of speech activity; language and education; bilingualism; speech disorders, speech technologies and models of human communication; the problem of language development, non-verbal aspects of communication, the analysis of the literary text, speech technologies and models of human communication.

The first researches on Psycholinguistics started around 60s within the Russian Language Science.

Based on an open approach to a language that regards it as a result of speaking activity, the research object of Psycholinguistics allowed it to recognize as a text. Primarily, the science which studies verbal text is called 'Linguistics'. V.V. Vinogradov, D.N. Shmelev, N.Y. Shvelova, L.A. Novikov, P.N. Denisov and others were working on traditional issues of Linguistics. V.A. Zvegintsev, N.D. Aryutnova, E.A. Bryzgunova and G.A. Zolotova have been working on sentence issues. However, the semantic issues of the text were not deeply explored. By the time Psycholinguistics has emerged, a text had been researched from a different angle.

In this direction, it is possible to single out the work by V.P. Belyanin "Psycholinguistic Aspects of the Artistic Text" published in 1988.

The paper presents a psycholinguistic typology of artistic texts on the emotional-semantic dominant. Based on psychiatric criteria, such types of texts as "light", "dark", "sad", "funny", "beautiful", "complex" are identified. The work is written on the basis of a large number of texts of Russian and world literature in the mainstream of Psycho-Psychology and Psycho-Stylistics and represents a new direction in the analysis of the literary text - psychiatric literary criticism.

Text is not only linguistic unit, but also a reflection of the reality in the linguistic system (Leontyev, 1979).[3]

Text is the basic communication unit.

Text is a way to pass and accept information.

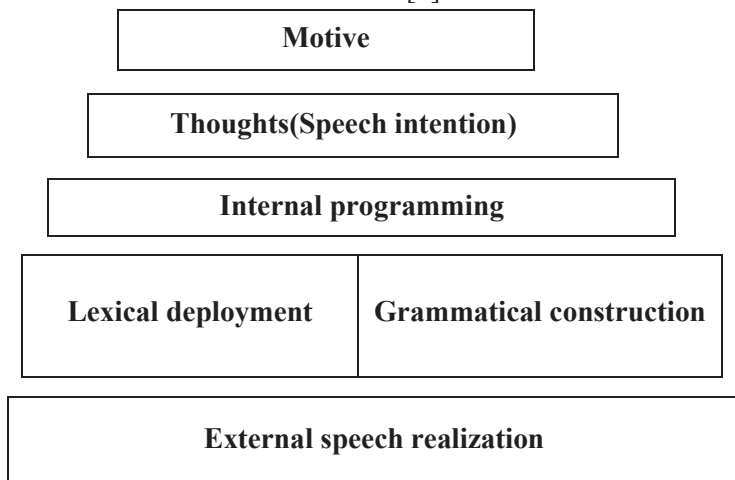
Text is a form of culture.

Text is a reflection of person's psychological life and his thinking.

The following definitions were given on the 'text':

To explain the idea in "Text cannot survive without creation and acceptance", psycholinguists worked out the following creation and acceptance models.

This is the model of T.V.Ahutina:[4]



*(Ahutina 19 psycholinguistics 5-edition. P.45.)*

Foreign scholars, Ch.E.Osgood, G.A.Miller and others worked on the psycholinguistic model of speech revival. Soviet scholars L.S.Vygotskii, N.A. Bernshtein, A.A. Leontyev, T.V. Ryabova-Ahuntingina, T.N. Naumova and A.N. Shahnarovich contributed greatly to the creation of Psycholinguistics as a science in the Soviet Union. We can notice the importance of this science in the range of symposiums organized across the Soviet countries in 1966, 1968, 1970, 1972, 1975, 1982 and 1985. The main

topics raised at symposiums were related to Psycholinguistics' primary focus of elaborate speech creation and acceptance processes.

Currently scientific researches on psycholinguistics in our Kyrgyz language is nonexistent. However we can indicate at some research made in this field. Guljamal Ryskulova defended her thesis in 2008 on the theme "Feelings and Gestures in Manas Epic (with a focus on Psycholinguistics Aspects)". Gulzat Bolotakunova explored the Kyrgyz language as related to Psycholinguistics in her thesis on "Nominative and Functional Field of the Mental State of Strangulation in the Language" in 2016. Future of the Kyrgyz language needs to be discussed by using psycholinguistic approaches. This is interesting and actual issue for Kyrgyz language scientists.

The place and meaning of every field of science are determined based on the theoretical and practical needs in the social life. Psycholinguistics was created due to the society's needs. By developing, revising and clarifying its foundations and approaches, Psycholinguistics has reached its current state. Various fields of social life such as Journalism, Criminology, Political Science and others have been using the successes achieved by Psycholinguistics. This demonstrates the very place of it in the public life and its theoretical and practical importance.

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## The Ural and Altaic mythological parallels in the epic tradition of the Kyrgyz

### Урал-алтайские мифологические параллели в эпической традиции кыргызов

#### Урал-алтай мифологиялык параллелдер кыргыздардын эпикалык салттарында

**Abstract:** the focus of this article is on the image of mythological World Tree widespread in the Eurasian epic folklore. It attempts to track the connection of this image to the traditional world picture and other well-known symbolic images denoting the elements of sacred spaces. While researching the common features of symbolic picture of sacred spaces in the epic traditions of the Turkic peoples of the Ural-Altaic cultural heritage, the article draws a parallel with images existing in the ancient Russian epic traditions and Scandinavian mythology.

**Аннотация:** в статье рассматривается распространенный в эпическом фольклоре многих народов Евразийского ареала образ мирового древа. Отмечается связь этого образа с традиционной картиной мира и другими сопутствующими образами-символами, служащими обозначениями определенных частей сакрального пространства. Выявляется общность символической картины пространства в эпических текстах тюркских народов Урало-Алтайского культурного ареала, а также наличие параллельных образов в эпической традиции древней Руси и скандинавской мифологии.

**Аннотация:** макалада Евразиялык ареалдагы көптөгөн элдердин эпикалык фольклорунда таралган дүйнөлүк тамыр образы каралган. Бул образдын дүйнөнүн салттуу картинасы жана башка аны коштоочу сокралдык ааламдын белгилүү бир бөлүктөрүн белгилеген символ-образдар менен болгон байланышы белгиленген. Урал-Алтай маданий ареалындагы түрк элдеринин эпикалык тексттериндеги мейкиндиктин символикалык картинасынын жалпылыгы, ошондой эле байыркы Рустун жана скандинавиялык мифологиясынын эпикалык салттарында параллелдик образдардын бар экендиги көрсөтүлгөн.

**Keywords:** mythological picture of the world; traditional world outlook; World Tree; the epic «Manas»; shamanistic disease; space symbolism.

**Ключевые слова:** мифологическая картина мира; традиционное мировоззрение; мировое древо; эпос «Манас»; олонхо; алтайский эпос; шаманская болезнь; символика пространства.

**Негизги сөздөр:** дүйнөнүн мифологиялык картинасы; салттуу көз караш; дүйнөлүк тамыр; «Манас» эпосу; олонхо; алтай эпосу; шаман оорусу; мейкиндик символикасы.

The Kyrgyz are known to be one of the ancient and strongest ethnic components of the Old Turkic nomadic world; therefore, it is impossible to research the archaic Kyrgyz world-view without reference to the common Old Turkic mythology. It should be noted that reconstruction of the archaic Kyrgyz world-view cannot be regarded as mechanical dismember of Old Turkic common heritage into some ethnic though original and distinctive mythological systems. The idea of unity in ethnic and culture genesis of the Ural and Altaic civilizations in the ancient and early medieval time is beyond any doubt. Moreover, recently more scholars appear to have supported this hypothesis.

A substantial part of old Turkic mythological world picture was reconstructed thanks to comparative-historical research of objects in material and spiritual culture of definite ethnos of large cultural areas. In this regard, a special attention must be paid to the recent research on the reconstruction of traditional world view of South Siberia Turkic tribes [1]. Comparative research shows that plot of mythological ideas of South Siberia Turks are in general almost similar to world picture of the Kyrgyz with few exceptions. Review of existing literature on the reconstruction of ancient Kyrgyz outlook reveals the existence of at least three main blocks of information on mythological conceptions: first, the Orkhon-Enisey written memorials; second, folklore and ethnographic materials of Turkic people of South Siberia and Central Asia; third, Kyrgyz folklore itself with extensive epic traditions.

Awareness of certain facets between the above mentioned three sources of information on ancient Kyrgyz mythology has to become an objective element, which helps to avoid generalizations as well as possible accusations of trying to present the entire ancient Turkic mythology as belonging to Kyrgyz only. In this regard, the epic «Manas»- a proper Kyrgyz heritage, became the main source for information on mythological traditions of ancient Kyrgyz society.

Research on myths, archaic cultures containing the picture of the world are emphasized, such as: using a limited set of character-images, that have the ability to have a wide meaningful load. The image of the World Tree among them undoubtedly represents the most widespread character-image in mythological and epical traditions of many peoples inhabiting the Euro-Asian area. Researchers refer to this image as to universal prototype of human culture, coherent to ancient concept of the space structure.

The image of the World Tree is found in mythological texts of Sumer-Acadians, Indo-Aryans, ancient Iranians, Turkic peoples of Ural-

Altay and Central Asia and also in the folklore of ancient Slavic people and Scandinavians. It is assumed that such a wide-spread image represents the historical typology of the archaic culture and is considered to be the result of independent comprehension of the space category by diverse ethnic groups on their own cultural background.

Works of many famous folklorists and culturologists were devoted to the research of the image in comparative aspect has been researched by numerous outstanding scholars working in the fields of Folklore and Cultural Studies. Among others are E. M. Meletinskiy, M. I. Steblin-Kamenskiy, V.V. Toporov, S.U. Nekludov and A. Sagalaev [2]. It has to be also mentioned that identification of similarity in the interpretation of the image of World Tree in totally different cultural areas was very often explained only in historical and typological dimensions. And only in cases of coincidences in chains of narrative elements, symbolical and figurative-logical structure of the context, the borrowings were considered.

The theory of borrowings and migration of plots gradually lost its' position, first under the pressure of spontaneous-generation theory and then by the school of historicallytypology. The foundations of the latter luckily coincided with modern sociological theories of society evolution and its' ideological forms. However, the ongoing research on cultural genesis based on archeological and linguistic data have identified new proofs of close connection of historical and cultural fates of nations inhabiting enormous Euro-Asian continent. Identities of some cultural elements can be traced back to the time when a myth was the only universal way of learning about the world.

The World Tree is deemed as one of the central mythological images with conceptual significance for archaic culture as well as invariant and poly-semantic features. In mythological and epic texts, the World Tree is presented as a symbol of partial tripartite space interrelating the upper, middle and lower levels. It is also associated with the visions people have about their own tribe's land, as well as the vitality and happiness of characters depicted in myths and epic poems. In some cases, the World Tree is presented as the patron of young heroes left without parental care.

Epic poems of Yakuts and Altay people demonstrate this image is in greater details. The beginning of the Yakut *Olonkho* usually contains epic introduction, which describes a sacred tree growing in the center of the hero's land. It is presented not as a space axis linking different zones of the world.



On the very top of a high cross Счепape,  
 walled by the black whirlwinds, and  
 spirits of sacrificial animals  
 Stood alone a branchy sacred tree of happiness,  
 Its eight branches sprouted up to the sky.  
 Its ninth branch sprouted,  
 Coming down from the highest heaven,  
 And on top of it  
 Mighty eagle loudly squawks [3].

It is notable that the country of the hero in Yakut *Olonkho* is portrayed as the only country on Earth. Accordingly, the hero acts as the original manto fight the monsters coming from other worlds.

The plot of the Altaic heroic epic also starts with a description of a sacred tree growing in the center of the Altai land. The poetic description of the sacred tree symbolizes the power and happiness of people living in the country of Altai. But the epic tradition in this case is a derivative of the original mythology. Invocation by the narrator of the distant sacred times necessarily calls for putting everything in order within a space, the description of the structure of the world marked by the most significant sacred objects. The image of the sacred tree in the Altai epic goes hand in hand with other sacred images that form general mythological context of the space.

There in the middle of a strong poplar that witnessed seven generations  
 Sit two identical black golden eagles  
 And do not let the moon-winged birds fly  
 Under three heavens  
 They do not let the four-legged animals go  
 Through the three parts of the Altai land [4].

It is worth noting that the text above depicts the sacred tree alongside the image of the eagle, which stands for the sky or the upper world. The Indo-Iranian mythological texts present the Garuda bird, which performs the role of a mediator capable to fly through the borders of the three worlds. This is the bird that the heroes of myths and fairy tales use to fly between their own and alien worlds. Such qualities are attributed in the Sumerian-Akkadian mythology to the Anzud bird, nesting up on the sacred tree.

When the heaven moved away from the earth, that is when,  
 The earth moved away from heaven, that is when,  
 The seed of mankind's appeared first, that is when,  
 And pulled out the sky, that is when,  
 CevtditvEnlil owned the land, that is when,  
 There was only one tree,  
 There was only one Tree ... [5]

Shumero-Akkadian mythology about the hero of Lukalband, who fed the sacred bird's chicks and gained a wonderful skill to fly across the worlds is one of the oldest records about the World Tree. The sacred tree is mentioned in the hymns of «Avesta», which constitute the fundamentals of Zoroastrianism. Researchers believe that Zarathushtra reformed the ancient beliefs belonging to the Aryan or Indo-Aryan tribes during ancient times when they shared one and the same land as one unity. They called themselves Aryans. Although the hymns of "Avesta" had not been fully decoded, there is a mention of the Gaokern Tree worshiped by prophet Zarathushtra.

I will pray diligently  
To the Gaokern tree,  
To the powerful and strong Gaokern,  
Given by Mazda  
We will pray diligently [6].

There is no doubt that the tree mentioned in «Avesta» is an analogue of the World Tree, which is the central mythological image shared by many nations of the Eurasian continent. In Turkic mythological and heroic epic texts, the image of a wolf represents, as a sacred totem, the middle world, i.e. the world of humans. For this reason, the description of a sacred space in mythological texts of Turkic peoples contains the image of a wolf as well as the images of a sacred tree and a sacred eagle. The Lower World is usually symbolized by the image of a dragon or a snake. This is basically, a symbolic picture of the world built in common Turkic mythology by drawing from diverse mythological and epic texts.

It is commonly believed that the ancient Russian folklore has no direct description of a sacred tree and images associated with it. However, the famous «The Tale of Igor's Campaign» contains an interesting reference to “a tree” as related to the specific style of «prophetic» Boyan, the teller. The author of «The Tale» attempts to depart from the “prophetic” teller's old style of «mythological» tales that feature certain conventionalities. Instead, the author speaks about the need to reflect the real events of the time.

Let us, however, begin this song  
With fairy tales of our time,  
Not according to Boyan's contemplations [7].

So, the question is, what had been «prophetic» in Boyan's style of reciting? It is likely that this style embraced a special beginning that covers the first-creation times. It is possible that the tale began with a description of the space structures similar to the epic songs of ancient Turkic people. It is no coincidence that «The Tales» describes the sacred tree along with the images of an eagle and a wolf.

«Who if not you, prophetic Boyan,  
Will create a song  
So that the ideas flow over the tree in a form of a grey wolf on Earth  
And as a blue-grey eagle in the sky» [8].

It is quite appropriate here, in our opinion, to compare the style of prophetic Boyan with Turkic mythological epic traditions. Ancient Russia had close ties with Turkic peoples living in the steppe for many centuries. Historical contacts of the Kievan Rus with great steppes were not limited to only military clashes; these contacts covered many aspects of the life of Old Russian society. It should be mentioned that the name of «prophetic» teller–«Boyan» has a Turkic origin, and in many Turkic languages it means «a narrator», «a story-teller».

In Russian, the phrase “flow over the tree like ideas” has become a synonymous to *verbosity*, *creative fantasy* without any connection to concrete events. At first glance, this interpretation matches the semantic content of the passage under analysis. However, it must be noted that this phrase acquired this meaning because of incorrect translation of lines of the text in «the Tale».

The initial mythological and poetic meaning of this phrase becomes clear only when instead of the word «thought» we use the Russian word “mouse” (*мышь* or *мышь*) that fits the entire context.

This is the hypothesis that E.L. Moroz, a Russian folklorist suggested [9]. This means that in this passage of «the Tale» we are talking about an ordinary mouse or a squirrel that runs along the trunk of a tree. Such re-interpretation of the text appears to be appropriate when we study this excerpts in the broader context of mythological comparisons.

The closest parallels to this reconstructed picture can be found in the Scandinavian mythological songs of the «Elder Edda», where the image of a sacred tree considerably overlaps with what we see in «the Tale». In Scandinavian myths, the World Tree is depicted as an ash tree, which has a squirrel running up and down its trunk. This is the squirrel, who acts as a mediator connecting the lower and the upper worlds. The picture is also complemented by images of an eagle and a dragon sitting on the tree.

Comparative analysis allows us to set other semantic variations of this image in ancient Scandinavian and Turkic mythologies that expand our understanding of historical-genetic identity of the archaic culture of these peoples.

Some South Siberian ethnic groups believe that souls of future shamans settle like birds on the branches of sacred family tree before they are born. The Yakuts, for instance, had similar visions. The *Olonkho*, Yakutian epic story describes: «Each branch of this tree has a nest and a hollow on its roots, Shamans whose souls are formed in the nests on higher branches are stronger than those having grown up in the lower nests. The family tree like this grows in all the three worlds, celestial (upper), terrestrial (middle) and subterranean (lower) worlds. Shaman’s soul would fly to heaven or

subterranean spheres or would stay in terrestrial world depending on the choice of Spirits» [10].

Thus, the mythology of Turkic peoples directly connects the birth of a human with the World Tree or Family Tree. Some mythological visions of the Family Tree have developed into folklore songs and lost their original sacred meaning. However, there remains yet a line of symbols that bring together images of a new born baby, tree and bird in oral literature of different nations in a remarkably consistent manner.

In his search for the origins of ancient Brits, Walter May, an English poet and translator, who became known for his novel translation of the epic «Manas», brings in as examples the languages and songs of people living in the Caucasus, Ukraine and Britain. He considers Ukraine as an interim geographical space in migration of the Alans to Britain. «Thousands of famous warriors, the best in Asia and Europe of those times, were recruited to join the Roman army and they fought everywhere together with the imperial forces. This is how they came to Britain in the first century AD, and this is how the second big connection was built between Britain, Caucasus and the Alans» [11].

Among various examples used by Walter May as foundations for his theory two lullabies Ukrainian and English- are worth mentioning. -The Ukrainian lullaby has the following lines:

«Sleepy, sleepy, my baby son,  
I will make a cradle for you,  
I will hook it onto the tree, to the branch,  
The sun will warm you up,  
The dew will wash you all over,  
The falling leaves will cover you,  
The wind will start to rock you,  
And birds will start humming songs».

Walter May believes that this Ukrainian song as an analogue of the English lullaby:

«Go to sleep, baby, on top of an oak tree  
When the wind blows,  
the cradle will rock  
When the branch breaks,  
the cradle will fall  
Down will come baby,  
cradle and all» [12].

The version of English lullaby perfectly corresponds to the mythological visions of South Siberian peoples of the birth of a baby on the branches of a holy tree.

The sacred Family Tree is a patron of a hero in myths and epic songs of the Turks not only at their birth but also in their early childhood. During hard times, the relatives of the hero appeal to the Family Tree to protect the hero from enemies. The Altaic epos «Maadai Kara» describes a young orphaned hero who was entrusted for care of the saint birch tree. The tree saved him from enemies, and fed him with its birch sap [13].

A similar story is mentioned in the Kyrgyz epic «Manas». When Manas died his wife Kanykei had to flee from persecution of relatives to save the young baby-herir. On their way, the exhausted fugitives meet the tree Baiterek, which feeds them with sap and gives them an opportunity to rest and regain their strength.

In mythological thought, categories of life and birth are closely related to the categories-death and rebirth. Rebirth or a new birth is a common element of rituals related with initiation and acquisition of shamanistic abilities. Shamanistic rituals of South Siberian Turkic peoples use the same set of mythological symbols as in the cases of death and birth. The soul of a newly born person (a shaman) must be returned to the Family Tree and then come down to the middle world. Such a rebirth gives an opportunity to acquire special sacred knowledge and abilities.

As it was mentioned, the sacred tree plays an important role in the rituals of gaining sacred knowledge in the shamanistic cults of Turkic peoples of South Siberia. Ethnographic literature enlists a number of examples of the so-called «shamanic diseases» which overtakes the spirits of people before they acquire special abilities. A person is tormented by various visions, quite often he or she behaves like a person losing sanity. Such people can suddenly leave home, climb a tree and stay there for a long time under a trance [14]. The meaning of these actions remained opaque for a long time. Very often researchers saw in the «shamanic disease» the signs of a real mental disease of a chosen person. It is thanks to broad comparative studies the scholars came to a conclusion that «shamanic disease» was a specific scenario of the initiation ritual. Like in the initiation process, the «disease» phase also sees there is a connection between the chosen person and the Spirits.

The chosen person is visited by the Spirits, which torment him, make them fulfill their will, and grant him special abilities and knowledge. The chosen person “dies” in his former life and «is born again» as a completely different person. He receives a new name, acquires a different status, and, most importantly, acquires the Spirits-that protect him. One of the signs of chosenness is the eloquence which, according to beliefs of

ancient Turkic peoples, was highly valued by the Spirits. But this gift of Spirits come through painful trials.

In Scandinavian mythology, we see an almost similar vision of becoming eloquent. The "Elder Edda" ("All Wise Sayings, 104-110) describes the story of Odin's kidnapping honey of eloquence from giants. It also describes a painful shamanistic initiation of Odin, pierced by a spear and hung for nine days on a World Tree [15].

A comparative analysis of the mythological images and symbols of the peoples of the Eurasian continent resulted in the following line of associative connections and symbols grouped around the images of a sacred tree: a family tree, a bird, a squirrel, a wolf, a snake (dragon).

A tree is a sacred symbol of space, the world axis that connects the three zones of the world, family protector, the source of a new birth and the acquisition of shamanic abilities. The functions of the main mythological images grouped around this central symbol prove to be identical both in the epic tales of Turkic nations as well as in the mythological epics of ancient Scandinavians and Slavs.

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## Verbs of emotional state in English and Kyrgyz

### Глаголы эмоционального состояния в английском и кыргызском языках

#### Англис жана кыргыз тилдериндеги эмоциялык абал этиштери

**Abstract:** the author proceeds from the fact that the verbs of the emotional state can be defined as lexical means for expressing experience acquired under certain events, situations, actions, and also as a result of influencing the emotional state of an individual when interacting with other people. In this article, specific verbal groups are described using the methodology of cognitive grammar. Thus, it is shown that the complementary case is highly motivated by extra-linguistic categorization of emotions, which are largely based on spatial representations.

**Аннотация:** автор исходит из того, что глаголы эмоционального состояния могут быть определены как лексические средства для выражения опыта, приобретенного при определенных событиях, ситуациях, действиях, а также в результате влияния на эмоциональное состояние индивида при взаимодействии с другими людьми. В этой статье конкретные глагольные группы описаны с использованием методологии когнитивной грамматики. Таким образом, показано, что дополняющий падеж высоко мотивирован экстралингвистической категоризацией эмоций, которые в значительной степени основываются на пространственных представлениях.

**Аннотация:** автор эмоцияны билдирген абал этиштери бир кандайдыр бир окуя, кырдаал, иш-аракеттер, ошондой эле башка адамдар менен карым катнашта пайда болгон мене тажрыйба катары аныкталышы мүмкүндүгүнө таянат. Бул макалада, белгилүү бир этиш топтору когнитивдик грамматиканын методикасын колдонуу менен берилет. Ошентип, толуктоочу сөз сезим экстра лингвистикалык категоризациялоосу аркылуу көрсөтүлөт. Ал көбүнчө мейкиндикти билдирген түшүнүктөрүнүн негизинде колдонулат.

**Keywords:** verbs of state; emotion; cognitive grammar; comparative lexicology; national peculiarity of verb groups.

**Ключевые слова:** глаголы состояния; эмоция; когнитивная грамматика; сопоставительная лексикология; национально-специфическое своеобразие глагольных групп.

**Негизги сөздөр:** абал этиштери; эмоция; когнитивдик грамматикасы; салыштырма лексикология; этиш топтордун улуттук өзгөчөлүгү.



Theory which is today known as Cognitive Grammar first appeared on the world linguistic scene under the name space Grammar [1].

Thus, it could be assumed that from its very inception Cognitive Grammar emphasized spatial foundation of human conceptualization and, as a result, largely of the grammar itself. According to R. Langacker grammar is a structured inventory of conventional linguistic units. Grammar consists of those aspects of cognitive organization on which the speaker's knowledge of linguistic conventions rests.

Comrie gives genitive complements, either without prepositions or in a prepositional phrase of genitive, with verbs such as

- Көркүү- *korkuu*

*to be afraid of / to be scared of/ to fear*

-Жек көрүү- *zheck koru*

*to hate / loathe*

-Уят болуу – *uyat boluu*

*to be ashamed of*

(Корккондон) калтырап тумурөө - (*korkkondon*) *kaltyrap-titiroo*

*to shudder*

-Тартынуу - *tartynuu*

*To hesitate*

-жыйиркенүү – *jirkenüü (konul kaluu)*

*to have an aversion to [translated by Salmorbekova A.K.]*

and so on are primarily motivated by the nature of emotion they express i.e. emotion that is characteristic of the subject. Since these are, almost without exception, extremely negatively marked emotions, most often different types of fear with smaller or larger activation potential, the motivation for the genitive coding of their complements is completely clear and logical if we have in mind the concept of ablatives [2].

Dative complements, just like genitive complements, are also determined by the nature of emotion as the primary criterion of case marking. But, on the contrary the genitive complements, which are the result of negative emotions, expressed by verbs and are therefore compatible with ablative meaning, dative complements fit the schematic meaning of the dative. The reason is that verbs with dative complements in most cases express positive emotions, which result in the subject's wish to get closer to the referent of the dative complement [3]. These verbs are:

-Чыдамсыздык менен күтүү – *chydamsyzdyk menen kutuu*

*to look forward to*

- бактылуу сезүү - *baktyлуу sezuu*

*to be happy about*

-Көз артуу- *koz artuu*

*To envy*

-Ыраазы болуу- *yraazy boluu*

*to be thankful*

-Сыймыктануу - *syimykthanuu*

*to be proud of (admire) [4].*

According to Zeno Vendler, scenarios with dative complements with given verb types are semantically genitive complements because the dative complement functions both as the effector and the target person:

- Мен анын келишин чыдамсыздык менен күтүп жатам.

*Men anyn kelishin chydamsyzdyk menen kutup zhatam.*

*I'm looking forward to his arrival.*

-Алар келгенде мен аябай кубандым.

*Alar kelgende men ayabai kubandym.*

*I was happy to see them arriving [translated by Salmorbekova A.K.].*

As genitive complements, dative landmarks are some kind of effectors of ablative-causal nature, which trigger off some kind of psychological experience in the subject and initiate its action [5].

This ablative chain of causes and consequences is even more obvious if we look at the following examples given by Zeno Vendler expressing explicit causality:

-Мен анын келишин чыдамсыздык менен күтүп жатам, анткени анын чечими көп нерселерди өзгөртүшү мүмкүн.

*Men anyn kelishin chydamsyzdyk menen kutup zhatam, antkeni anyn chechimi kop nerselerdi ozgortushu mumkun.*

*I look forward to his arrival because his decision could change a lot of things [translated by Salmorbekova A.K.].*

One of the rare verbs which govern dative complements, and which do not express positive emotions is the verb *көз артуу-koz artuu* - *to envy* [translated by Salmorbekova A.K.].

As opposed to emotion verbs with dative complements, all verbs with accusative complements refer to extremely strong positive and negative emotions such as

Жек көрүү- *zheck koru*

*to hate*

Сүйүү- *suyuu*

*to love*

Аздекмөө- *azdektoo*

*to adore*

-Ачуулануу- *achuulaniuu*

*to be angry*

-Жинди болуу- *zhindi boluu*

*to be mad* [6].

Instrumental complements, either without prepositions with emotion verbs such as

-Сыймыктануу- *syimyktauuu*

*to be proud of*

-Толкундануу- *tolkundaniuu*

*To be thrilled or in prepositional phrases such as*

-Боор ооруу- *boor ooruu*

*to sympathize with*

-Аза тартуу- *aza tartuu*

*to mourn*

-Өкүнүү- *okunuu*

*to regret*

-Бир нерсени абдан каалоо- *bir nerseni abdan kaaloo*

*to long*

-Куса болуу- *kusa boluu*

*to miss greatly (yearn)*

-Жана чегүү- *zhapa cheguu*

*to suffer*

-Акылдан адашуу- *akyldan adashuu*

*go crazy about* [7]

are motivated by the schematic concept of parallelism. With these verbs, the concept of parallelism is realized in its more abstract i.e. non-spatial sense, in relation to the nature of the emotions expressed by these verbs or the activation potential inherent in these emotions. The prototype concept of spatial parallelism so obvious in the instrumental sociative and instrument meanings:

-Иван досу менен сейилдеп жүрөт.

-Ivan dosu menen seyildep zhurot.

-Ivan is taking a walk with a friend.

-Анна авто унаа менен саякаттайт.

-Anna auto unaa menen sayakattait.

-Anna travels by a car [translated by Salmorbekova A.K.]

is also discernible in the scenario coded by the verb *жактыруу-zhaktyruu-* *to sympathize with*. The emotion which is marked by the verb includes affective identification of the experiencer with the effector.

*Мен үй бүлөөсүн жоготкон досума боорум ооруйт.*

*Men ui buloosun zhogotkon dosuma boorum ooruit.*

*I sympathize with my friend who has lost his family [translated by Salmorbekova A.K.].*

This metaphoric equidistance provides the conceptual-semantic motivation for the instrumental coding of the indicator. In the case of instrumentals without a preposition, in combination with verbs

*сыймыктануу-syimyktanuu*

*to be proud of [translated by Salmorbekova A.K.],*

we are dealing with extremely positive emotions. But, unlike verbs with dative complements, which also express positive affective states, in this case landmarks coded by the instrumental are part of the subjects themselves. To put it simply, the feeling of pride can occur only in relation to some entity which represents part of us.

Here, it is very interesting to analyse the relationship between these verbs and their antonyms *уят болуу- uyat boluu*

*to be ashamed of*

which require genitive complements:

*Ал өзүнүн баласы үчүн уят болду.*

*Al ozunun balasy uchun uyat boldi.*

*He was ashamed because of his child [translated by Salmorbekova A.K.].*

This contrast certainly has to do with the negative nature of the emotions expressed by these verbs and with the human instinct to establish ever greater distance from the entities which cause shame [8].

The concept of spatial parallelism is also very close to the scenarios marked by the verbs

*Капалануу- kapalanuu*

*to feel sad about*

*Аза тартуу- aza kutuu*

*to mourn*

*Куса болуу- kusa boluu*

*to yearn for*

*Жана чегүү- zhapa cheguu*

*To suffer [9]*

which appear in combination with prepositional instrumental expressions of the type-*за*, *-на* or “*uchun*” + instrumental

- Алар жакшы турмуш сүрүү үчүн / сүрүүгө аракеттенишүүдө.

*Alar zhakshy turmush suruu uchun / suruugo arakettenishuudo.*

*They yearn for a better life.*

- Менин досум көпкө чейин ал кыз үчүн акылынан адашып жүрдү.

*Menin dosum kopko cheyin al kyz uchun akylunan adashyp zhurdu.*

*My friend was crazy about her for a long time [translated by Salmorbekova A.K.].*

In these examples, the emotional relationship of the rout and the indicator is metaphorically conceptualized as a constant attempt to follow and eventually reach the desired, but inaccessible entity. The indicators, who are the objects of unfulfilled desire, constantly “evade” the rout. The subject is nevertheless, intent on reaching the entity, and so metaphorically follows it for some time. In this metaphorical pursuit of a desired entity, which, for some reason, is bound to fail, the distance between the subject and the indicator remains the same during the entire process.

To sum up, the verbs of emotional state are the results of different kinds of emotional experiences shown through events, situation, action, other people, our thoughts, expectations and plans. In this article, Cognitive Grammar is considered to be the means of differentiating the verbs of emotional state, to state which the given examples are used.

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## History

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## Genealogical legends - Sanjyra of Kyrgyz

## Санжыра–генеалогическое предание кыргызов

## Санжыра–кыргыздардын генеалогиялык уламышы

**Abstract:** *the article considers the historical and cultural heritage of Kyrgyz - Sanjyra (genealogical chronicles), its origin, sources and historical bases, as well as studies devoted to this problem. In addition, the genealogical links of the Kyrgyz society in Sanjyra are analyzed, and the social and cultural importance of Sanjyra, recording and collection of materials as a historical source is emphasized. Particular attention is paid to the study of the Sanjyra in the post-Soviet period.*

**Аннотация:** *в статье рассматривается историко-культурное наследие кыргызов – Санжыра (генеалогические летописи), ее происхождение, источники и исторические основы, а также исследования, посвященные этой проблеме. Кроме этого, анализируются генеалогические связи кыргызского общества в Санжыре и подчеркивается социально-культурное значение Санжыры, записи и сбора материалов как исторического источника. Особое внимание уделено исследованию Санжыры в постсоветский период.*

**Аннотация:** *макалада кыргыздардын тарыхый-маданий мурасы–Санжыранын келип чыгышы, тарыхый негиздери, булактары, изилдениши, Санжырадагы кыргыз коомунун генеалогиялык байланыштары жана Санжыранын социалдык-маданий мааниси, тарыхый булак катары аны жыйноо жана айтуучулардан жазып алуу, постсоветтик мезгилдеги изилдөө маселелерине көңүл бурулган.*

**Keywords:** *Sanjyra; sources; historiography; genealogical relations; mutual relations with neighboring peoples.*

**Ключевые слова:** *Санжыра; источники; историография; генеалогические связи; взаимоотношения с соседними народами.*

**Негизги сөздөр:** *Санжыра; булактары; тарыхнаамасы; генеалогиялык байланыштар; коңшу элдер менен алакалар.*

**The essence of Sanjyra.** The nomadic culture of the Kyrgyz has deep historical roots. It is closely connected to the historical processes and events of the past. In historical science, an important role in the study of the social and spiritual-ideological foundations of the nomadic Kyrgyz society is played by genealogical legends-Sanjyra

The term “*Sanjyra*” derives from the Arabic word “*shajarat*” that means a tree. Although this term has been adopted from the Arabic language, the Kyrgyz traditional knowledge about their ancestors goes back

to the ancient time. Good evidence is the Orkhon-Yenisei written inscriptions that recorded the genealogical tree of Kyrgyz rulers. In this regard, a natural question arises: What constitutes sanjyra as a historical-cultural source and what is the role of genealogical information in the study of history of a nomadic society?

Sanjyra occupies an important place in the Kyrgyz life in terms of nomadic life, as all information about the spiritual life has been preserved in the memory of the people and has been passed on from generation to generation. It was Sanjyra (oral annals of the people) that reflected the genealogical information of separate tribes, clans and the people as well as historical events of the passed eras.

Sanjyra contains reliable information of historical and legendary character that has been the only source of information about the past of nomadic people.

Usually a patriarchal family required knowledge of genealogy up to the seventh generation of ancestors, this was the norm. The awareness of the genealogy of own ancestors as a branch of a certain clan or tribe allowed a person to identify himself with that or another group (*uruu, uruk*).

Genealogical legends included the stories of the acts of immediate ancestors, their deeds and the events related to them as well as the information about the origin of a clan or tribe. The composition of oral historical stories about ancestors was a tradition. Each adult had a required minimum of information about his/her ancestors. *Aksakals* (the elders) used to tell about them among their relatives and fellow tribesman, a father to his sons, forming an initial idea about the historical past of a clan. There were the experts of Sanjyra-*sanjyrachy* who collected genealogical data and knew a lot. They were usually distinguished by intelligence and good memory and were called "*kuima kulak*", or memorizing am people. Such people, although without a special status, enjoyed respect of people for a deep knowledge of history, genealogy and legendary events related to the closest and farthest ancestors.

An expert orally passed on genealogical data to another person. It was required that the people reporting Sanjyra didn't distort and depart from the real clan connections and historical events. If the information accuracy prescribed by the traditional canons was not followed, the people removed such reporters and did not approve their stories. Therefore, the expert of genealogy had to follow the reliable version of Sanjyra adopted from the primary source only. The stories of separate clans and tribes were approached very carefully, since it was realized that the glorification of some



tribes and the humiliation of others would prevent the consolidation of the whole people. That was why, the objectivity and stability of the information passed as well as the preservation of the oral historical knowledge were appreciated. The most objective version of Sanjyra was accepted by the society and distributed among the people.

At the same time, sometimes Sanjyra could be also biased. Conflicts and disagreements between some clans and tribes were not always objectively interpreted. In such cases, sanjyrachy of one tribe or people could report some events related to the relations between groups distorted, so that clan interests could become more important.

Covering all the events of legendary and historical nature, Sanjyra became a sort of an ideology for a nomadic society. It was Sanjyra which kin and ethnic connections in the hierarchical structure of the society from patriarchal families to tribes relied on and oriented to. Sanjyra provided for clan and tribal solidarity; based on Sanjyra people united in times of difficulties. According to the customary law, a person considered a member of a clan was supposed to go through all hardships and carry the burden along with all other members. That is, genealogy organized the system of hierarchical co-subordination of related communities at different levels: patriarchal family "*bir atanyn baldary*" was located in the composition of a certain clan "*uruk*", and that, in its turn, inside "*uruu*", or tribe, that was included in the larger tribal unit. In this respect, the history and genealogy of separate clans and tribes were combined complementing and creating a common informational basis in accordance with the requirements of a traditional society.

**Sources and Historiography.** Some Persian sources of 15-16<sup>th</sup> centuries mention genealogical legends of the Kyrgyz, notably of Otuz-uul and Kyrgyz, Ak-uul ("*on kanat*") and Kuu-uul ("*sol kanat*") [1] [2] In the work of Seif ad-Din Ahsikenti, early genealogical data about the legendary division of the Kyrgyz into the right ("*on kanat*") and left ("*sol kanat*") wings are stated. Similar information can be found in Chinese sources of the 18<sup>th</sup> century [3].

A big importance in terms of source study is given to the works of Russian travelers. The documents of Ch.Ch. Valikhanov and I.A. Bardashev contain valuable data about the geographic location and borders of habitat of Kyrgyz clans and tribes, their structure and population as well as about the rulers, *biys* and *manaps* [4] [5]. The works of above mentioned authors are of big scientific interest for comparative study of Sanjyra and historical data.

N. Sitnyakovskiy composed a tribal chart of southern Kyrgyz based on their division into uezds and volosts as well as the territories occupied by clans and tribes [6].

S. M. Abramzon and L. P. Potapov studied the historical-cultural significance of oral genealogical legends in the study of ethnic, social and economic-cultural life of nomads based on the experience of Turkic nomads. According to their conclusion, oral genealogical data present “narodnaya etnagoniya” or people’s historical knowledge [7].

The work of Kyrgyz historian Osmonaly-moldo Sydykov published in 1913-14 in Ufa city was based on sanjyra. It has interesting information about the tribal structure of the right wing and the role of *manaps* in the beginning 20<sup>th</sup> century [8].

New historical-ethnographic data on the history of the Kyrgyz were included in the works of Belek Soltonoev [9].

S. Attokurov considers Sanjyra as annals of tribes that open the historical past of the Kyrgyz based on the genealogical table [10].

S. Zakirov studied the issues of origin and settlement of Kyrgyz tribes as well as historical events of the 17-19<sup>th</sup> centuries based on Sanjyra [11].

Ethnonyms of the Kyrgyz in the linguistic prospective became the object of research by O.K. Karataev [12].

The importance of Sanjyra as a historical source for the study of ethnosocial structure of the Kyrgyz in the 16-19<sup>th</sup> centuries and historical connections was researched by T.I. Asanov [13].

R. Joldoshev in his research on the issues of ethnic history of the Kyrgyz also relied on the materials of Sanjyra [14].

G. Salk (Germany) studied the social nature of Sanjyra and its cultural roots [15].

### **Sanjyra and genealogical links.**

Early information about the Kyrgyz Sanjyras in terms of content and chronology are of legendary character, since historical accounts do not always coincide with the historical process of the past. An example is the legend about the origin of the Kyrgyz from forty girls (“*kyrk kyz*”).

In one of the earliest handwritten versions of sanjyra, the prominent member of Sufi group of the 11<sup>th</sup> century in the Middle East Sheikh Mansur al-Khalaj (Shaa Mansur) was mentioned as one of the distant genealogical ancestors (“*tup ata*”) of the Kyrgyz [16] [17]. The image of this religious figure was closely connected to a popular legend that testifies a certain influence of Islam among the nomadic population. It seems that Sufi missionaries were well aware of an especial value of *ancestors’* genealogy among the Kyrgyz and their devotion to such a culture. It was acceptable for Sufi people spreading Islam among nomads. Despite this, the main motive in the legend on the origin of the people is closely related to forty girls, or “*kyrkkyz*”. It is this legend with different versions in Sanjyra that represents the most ancient concept in the self-consciousness of the people about its own origin. Based on this legend, the ethnonym “Kyrgyz” can be understood in terms of people’s etymology. Later under the influence of books, Sanjyra

included the information about legendary Turk-ata and Uguz-khan. Those data were initially used by Osmonaly-moldo Sydykov in his book published in 1913-14 in Ufa city.

The earlier versions of legend “*kyrkkyz*” were recorded in some written sources such as “*Yuan-shi*” (14 century), “*Shajarat al-atrak*”, “*Rauzat as-safa*”, “*Badai-I at-tavarikh*” (15-16 centuries). Comparing the data, it is possible to find out that the basis of the legend is almost similar to oral genealogical legends. This demonstrates that the genealogical tradition related to “*kyrk kyz*” has been spread among the Kyrgyz of Tien Shan long time ago.

The historical analysis shows an original successive connection of historical-genealogical data in Sanjyra. In this regard, the legend about Dolon-biy and his descendants has a stable genealogical trace. In different versions of Sanjyra, he was the forefather of the Kyrgyz right (“*on kanat*”) and the left wing (“*sol kanat*”). The legend about Dolon-biy is to some extent is historical. Thanks to it, we came to know about the existence of a dual organization that played an important role in the formation and ethno political consolidation of the Kyrgyz people.

According to the legend, Dolon-biy, waiting for his younger wife delivery, prepared nine gray mares expecting good news in advance. Then a servant came to inform him about the good news and receive a gift for them. Dolon-biy finding out about the birth of a son gives him nine gray mares. But after a while another servant came with the news about the birth of the second son. Surprised Dolon-biy said: Did she give birth to another one, or adopt somebody else’s baby (“*telitip aldy*”)?

When Dolon-biy gave names to his sons, the first was called Ak uul, or the “*true*” but the second Kuu uul, or the “*doubted*”. Gradually those names have been fixed for his sons. However, dissatisfied mother said that when the elder one was born she was relieved in the right kidney and when the younger was born, she was relieved in the left one; therefore, their names would be “*On*” (right) and “*Sol*” (left). As a result, according to the legend, the descendants of Ak uul called themselves “*on kanat*”, while the descendants of Kuu uul called themselves “*sol kanat*”.

If to pay the attention to this, the idea of people’s interpretation in sanjyra consisted in the fact that the creation of a dual ethno political structure of the Kyrgyz was a certain historical process in terms of the nomadic society.

Consequently the ideology of a nomadic society was based on it stating the idea about its common origin in the self-consciousness of the

ethnic group. In different versions of Sanjyra, the forefather of all main branches (*“on kanat”*, *“sol kanat”*, *“ichkilik”*) of the ethno political structure of the Kyrgyz is Dolon-biy.

According to another version of the legend, Dolon-biy divided his heritage among his sons (*“enchi boluu”*). When the herd, land and people were divided between them, Ak uul took the right side of the property and Kuu uul took the left side and since that time the people call them “On” (right) and “Sol” (left). The apportionment is an ancient tradition of Kyrgyz nomadic life that has an especial social-economic and cultural importance in the social-political environment. And it is possible that at the initial stage of the formation of the ethno political structure this issue could be one of the significant factors.

The ideological track of Sanjyra is well traced in the formation of the hierarchical tribal structure of the nomadic society such as *“bir atanyyn baldary”*, *“uruk”*, *“uruu”*. As Sanjyra shows, in this hierarchical stage, *“uruu”*, tribe, was a universal category. The formation of a tribe took place despite the relationships based on blood. In the composition of *uruu*, different groups by origin were included and *united* according to a genealogical-territorial principle. The genealogical principle was rather conditional inside a clan; therefore, not all groups included in the tribe were actually of the same origin. But those groups were united by a common ideology, since without it there was not social-economic, territorial-demographic expansion and political growth of the union. Included in the tribe foreign groups or ethnic components have been integrated in its genealogy; they were usually called in Sanjyra *“tonduu uul”* that means *“sons in sheepskin coat”* emphasizing their arrival in family as teenagers or adults. Calling these groups as *“tonduu uul”*, the society of nomads sanctioned their joining the tribe uniting under the same ideology. There are many examples in the genealogy of the Kyrgyz when the descendants of adopted children, or *“tonduu uul”*, gave rise to a whole tribe. Such groups by clan laws were considered full members of the society by birth. It is a feature of a tribe that gave him an opportunity to build diverse groups around itself and occupy large territories. This was testified by the genealogy of Tagai descent, one of the largest branches of the right wing. *“Sarybagysh”*, *“Bugu”*, *“Solto”*, *“Jediger”*, *“Bagysh”*, *“Sayak”*, *“Azyk”*, *“Cherik”*, *“Monoldor”* called themselves Tagais. According to the genealogical legends, *“Sayak”*, *“Azyk”*, *“Cherik”* were adopted by the legendary ancestor of the right wing Tagai-biy. Those tribes already in the 18<sup>th</sup> century were the largest tribal unions of the wing. Based on this information, it is

possible to assume that they were included in the composition of the right wing long before the formation of the ethnopolitical structure of the Kyrgyz. There are many such examples in sanjyra that proves the ideological essence of this phenomenon.

Blood proximity among the Kyrgyz in Sanjyra, first of all, is defined by genealogical characteristics. Despite this fact, the whole group not taking into account the relationships based on blood consisted the hierarchical structure of the Kyrgyz nomadic society. It is clearly traced inside “uruk” or clan following the lowest hierarchical stage of the genealogical structure. Inside a clan, the genealogy itself had an ideological meaning. In terms of contents, it was comprised of three generations of ancestors related to each other through genealogy. They were “*berki ata*” – the closest ancestor, “*arky ata*” – distant ancestor, “*tupku ata*” – the most distant ancestor, or forefather. Based on these data, it is possible to follow the genealogical chain of ancestors preserved in the people’s memory that formed the spiritual-ideological foundation of the community uniting all groups and members of the clan around itself.

In the genealogical composition, several patriarchal families were united based on blood relationship around the society calling itself “*bir atanyň baldary*” meaning the children of one father. The members of the society had actual close blood relationship and were considered the descendants of one man who for some people was the fourth or fifth close ancestor. Brought together long ago based on their genealogical proximity, they didn’t separate from each other till another branch didn’t appear or grew as a result of the patriarchal families increase.

The relationships among the members of the society depended much on genealogical criteria based on the knowledge of genealogy. Among nomads, the knowledge of seven ancestors was especially appreciated that juridically established the belonging of a person to a certain clan the moral code says: “*kim jeti atasyn bilbese, el bezeri*” (the one who doesn’t know his seven ancestors is considered to be an apostate) It is the basic cultural code of the person in the society.

In the family, honoring seven ancestors become the spiritual relic and was designated by such terms as “*ata*”, “*chon ata*”, “*baba*”, “*buba*”, “*kubaar*”, “*joto*”, “*jete*”. In the memory of the people, sayings and expressions that confirm deep roots of this custom have been preserved. For example, “*Jetegej jetchuu kek*” – the revenge till the seventh generation, “*Kudai kylsa kubaaryndyn akysy barby*” – if God decided, then can your

*kubaar* have the right, “*Kubaaryndyn kuu chokusu*”, literally the devil could take the dry tops of your ancestors”, etc.

Genealogical connections were maintained precisely in the “Uruk”, or in the tribal circle. This contributed to the centuries developed norms of marriage and kinship relations, which were strictly adhered by all members of the community. “*Al kezde jeti atasyn surap kyz bermek rasim bolgon*” (Earlier girls were given for marriage after asking about seven ancestors) *sanjyra* said. This meant that to marry inside a clan was forbidden as long as seven generations don’t pass: mutual marriages were permitted only outside of such relationship. In terms of clan isolation, in a complex natural-climatic environment, this was the only opportunity to preserve genetic cleanness of descendants to create the conditions for further growth of the population. Without such a ban, the consequences of marriages of close relatives could be unpredictable. From this point of people’s genetics, nomads banned the marriages inside a clan but the knowledge of seven ancestors remained a distinctive code of a person in the society.

The transition from the legendary to the historical part of *Sanjyra* begins with those events when the division of the Kyrgyz into the right (on *kanat*) and the left wing (*sol kanat*) from the descendants of the sons *Dolon-biy Ak-uul* and *Kuu-uul* occurs.

The historical part of genealogical legends of the right wing also contains the names of legendary rulers. According to historical legends, *Tagai-biy* among other personalities was probably a real historical figure. Such a version was expressed for the first time by historian *Belek Soltonoev* [18]. Relaying on some similar moments in the biography of two figures, he identified *Tagai-biy* with the ruler of *Mogolistan Kyrgyz Muhammed-Kyrgyz*.

All the genealogical names of the right wing following *Tagay biy* belong to the active historical figures of the 17th-18th centuries. *Sanjyra* tells their names in the connection to the events of the mentioned times when Kyrgyz defended their independence. The names of the same individuals are mentioned in the events of the Kyrgyz-Kazakh relations of this period. The cycle of historical legends about the resistance of the Kyrgyz to the invasion of the *Dzungars* covers a whole historical period. The comparative study demonstrated that the events of those times mentioned in *Sanjyra* very much coincided with the written sources. In the cycle of people’s legends, *Sanjyra* includes a complete historical chronicle of those events.

The information of *Sanjyra* of a historical-legendary nature is of big importance in the study of the issue of the Kyrgyz people ethnogenesis.



Based on these data, it is possible to trace the creation of an ethnopolitical dual organization and the formation of the ethnic composition of the Kyrgyz.

Based on the materials of Sanjyra, all ethnic groups and tribes played a certain role in the formation of the modern Kyrgyz people.

All these materials were carefully studied by S. M. Abramzon based on which the scholar proved an exceptional importance of ethnic data. Relying on the information from Sanjyra [19], he made an important conclusion dividing the Kyrgyz ethnic names into three layers. He dated the first layer as 6-11<sup>th</sup> centuries and included ancient Turkic and early medieval tribes there "Teeles", "Munduz", "Kypchak", "Kandy", "Kushchu", "Aryk", "Uighur", "Bugu", "Azyk" as well as "Solto", "Sayak", "Bagysh", "Sarybagysh", "Chon bagysh", "Karabagysh", "Djediger" and others. The second layer was dated by 12-14<sup>th</sup> centuries and he attributed there the tribes of "Noigut", "Bargy", "Konurat", "Katagan", "Baaryn", "Naiman", "Kereyit", "Merkit", "Kytai". The third layer covers 15-18<sup>th</sup> centuries and in the view of the scholar, it contained such tribes and clans as "Jetigen", "Alakchyn", "Kolpoch", "Monoldor", "Cherik", "Sarttar", "Mangyt", "Sarai", "Chertike", "Kalcha" and others. In this regard, the studies are still not complete. It is worthy of note that the ethnic picture of the modern Kyrgyz people is clearly reflected in Sanjyra but not any other source. It proves that Sanjyra as a spiritual-ideological foundation covers all aspects of nomadic Kyrgyz people life.

### **Relationships with neighboring peoples by Sanjyra materials**

Sanjyra also represents reliable historical data about the relationships of the Kyrgyz with neighboring peoples in the 16-19<sup>th</sup> centuries. Of particular interest are historical legends about the resistance of Kyrgyz to the invasion of Jungar-Kalmaks that include the whole period of the heroic struggle of the Kyrgyz people. A comparative study of these materials shows that the events of those times recorded in Sanjyra almost coincide with written sources.

The materials of Sanjyra also reflect the activities of Kudayan-Khan [20]. Some Sanchy-synchy (predictor Sanchy) predicting the future said that his path would bring misfortune to the people. His prediction came true and the difficult path of the Kyrgyz from the north to the south began. The analysis of legends from the chronicle of genealogical data with reliable historical track shows that the basic part of the population in northern Kyrgyzstan in the late 18<sup>th</sup> century under the pressure of Kalmaks moved deeply to the Fergana Valley. Moreover, in Sanjyra, there are materials about the relations of the Kyrgyz with local rulers and their resettlement in



Fergana, the struggle of people's heroes against Kalmaks and their return to their territories.

Genealogical legends contain the data on ethnic contacts of Kyrgyz with other peoples during Jungar period. Under different conditions, some groups of Kyrgyz found themselves in Kalmak environment or vice versa. These events did not significantly affect the ethnic picture of the Kyrgyz. Nevertheless, genealogical legends are of big interest for the study of history of some ethnic groups among Kyrgyz, or the destiny of common nomadic population in those unstable times. For instance, Kalmaks somewhat forced to move some families from Jantay clan of Sarybagysh tribe. Later, they escaped and returned to their relatives. Despite the long period of absence (two or three generations passed), they were not forgotten and were able to prove their origin according to the genealogy of their ancestors based on material evidence. They were later called "kalmaaky" or "besh kalmaaky" which means five brothers who stayed among the Kalmaks. Another example when the Kyrgyz moved deep into the Fergana Valley, Bugu raided the Khiva Khanate and captured several boys. Later, they returned them except one. That one gave rise to the descendants who called themselves "Kalcha" or "Kalchins". This group did not differ from the Kyrgyz in terms of lifestyle and culture, although their appearance was similar to Tajiks [21]. Probably the ancestors of this group were the natives of mountainous Tajik territory, so-called Galchins. Such examples are many and in this respect Sanjyra is an unquestionable source from which the detailed information about the late ethnic processes taking place in the nomadic environment of the Kyrgyz can be received.

On the bases of Sanjyra, it is possible to trace the relations of the Kyrgyz with Kazakh tribes in the period of Ablai-Khan rule (second half of the 18 century). By legends, the Kyrgyz and Kazakh fought together against the Kalmaks. However, after they were destroyed, the conflict broke out between the neighbors because of pastures and border territories. There are important moments in the legends which speak about the Kyrgyz and Kazakh separating their territories of roaming during the negotiations and coming to an agreement by the decision of the Council of *biys* ("biylerdin tobu") and rulers. Such data could not be found in any source of that time. As Sanjyra shows, the neighbors found a common language and in accordance with the ancient custom of nomads cut the twig ("chybyk kyrkyp") promising each other to "be cut as twigs if they violate the oath" ("chbyktay kyrkylp kalaly"). Besides, the Kyrgyz sent their representative Tyuleberdi-biy for "akuiluu" [22] («Ak uiluu» literally means "with white

house”, that is one of the institutes of nomadic diplomacy. K. K. Yudakhin in his dictionary gave the following reliable meaningful translation of the term: “akuiluu” is “a hostage from the members of nobility at the court of a ruler from the opposite side”) [23] to Ablay-khan.

**Collection and record of genealogical legends.** In the mid 19<sup>th</sup> century with the help of some influential Kyrgyz rulers (Manaps) Sanjyra was recorded. However, this Sanjyra was in fact the genealogy of a certain ruler, or in some cases, that of another clan. According to Soltonoev, Ormon-khan entrusted Namangan mullah to write Sanjyra of the Kyrgyz on the right and the left wings. Till nowadays some genealogies of Manap Baygazy-baatyr and Koqand rulers have been preserved [24].

Since the second half of the 1920s, a purposeful collection of folklore and ethnographic materials took place. With the creation of the Academy of Sciences in the republic, a mass-scale work was conducted and a lot of materials on Sanjyra were collected. These materials, provide an opportunity to study the ethnic history of the Kyrgyz people in more detail, as well as the relationship of Kyrgyz with neighboring peoples.

**The study of Sanjyra in the post-Soviet time.** In the mid 1980s with the changes in the political course of the country researchers got an opportunity to study the historical-cultural heritage. The materials of Sanjyra began to be published in periodicals. Since the late 1990s, the monographs on Sanjyra based on the oral stories appeared. The genealogy and history of certain clans and tribes, their contemporary distribution, the list of historical-cultural objects in the places of their geographically concentrated living as well as the biographies of famous tribesmen were recorded in the published works.

During this same period, many representatives of the local elite increased their interest in their ancestors, as well as with specific known personalities of the past. An intensive work on Ichikilik group has been taking place, since there were no any social studies on the problem before [25; 26].

Today, there is a loss of tradition in the dissemination of the Sanjyra traditions in oral form. Most of the modern scholars of Sanjyra began to describe the events of the past and the genealogy of their ancestors, based on historical sources.

Summarizing the above, it can be concluded that Sanjyra is an important historical-cultural monument of the Kyrgyz people that requires to be preserved and studied further as a scientific source. In this aspect, it is important not only to popularize Sanjyra in the cultural aspect but to carry out a more fundamental study in this field.

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## Pedagogy

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*Lailieva E. D.**KNU n.a. J. Balasagyn, Bishkek**Лайлиева Э. Д.**КНУ им. Ж. Баласагына, Бишкек***Development of network consortiums as the overcoming of the elitism of Master's programs at the international level****Развитие сетевых консорциумов как преодоление элитарности магистерских программ международного уровня****Тармактык консорциумдардын эл аралык деңгээлдеги магистрдик программалардын элитардуулугун жеңүү катарында өнүгүүсү**

**Abstract:** the article refers to network consortia, where Jusup Balasagyn Kyrgyz National University is a member. Network universities present a progressive tendency toward integration and approbation of the best practices of higher educational institutions. The author recognizes the need for internationalization of higher education, a combination of national academic traditions and modern methods of the educational process. In addition, the article explores the benefits from joint educational programs.

**Аннотация:** в статье говорится о сетевых консорциумах, участником которых является КНУ им. Ж.Баласагына. Сетевые университеты рассматриваются как прогрессивная тенденция интеграции и апробации лучших практик высшей школы. Автором признается необходимость интернационализации высшего образования, сочетания национальных академических традиций и современных методик образовательного процесса. Кроме этого, совместные образовательные программы приносят выгоду отдельным индивидуумам.

**Аннотация:** макалада Ж.Баласагын атындагы КУУ катышуучусу болгон тармактык консорциумдар жөнүндө баяндалган. Тармактык университеттер жогорку мектептин мыкты практикасынын интеграциясы менен апробациясынын прогрессивдүү тенденциялары катары каралат. Автор тарабынан жогорку билим берүүнү интеграцияландыруу, улуттук академиялык салттарды жана билим берүү процессинин заманбап методикаларын айкалыштыруу зарылчылыгы таанылган. Мындан тышкары биргелешкен билим берүү программалары айрым индивидуумдарга пайда алып келет.

**Keywords:** network consortia; academic mobility; higher education.

**Ключевые слова:** сетевые консорциумы; академическая мобильность; высшее образование.

**Негизги сөздөр:** тармактык консорциумдар; академиялык мобилдүүлүк; жогорку билим.

Jusup Balasagyn Kyrgyz National University is a member of many consortia. Our students can participate in various educational programs

through academic mobility.

Here I would like to dwell in more detail on network consortiums that are operating in the Commonwealth of Independent States (CIS) and the Shanghai Cooperation Organizations (SCO). The Russian Federation with the support of the Interstate Humanitarian Cooperation Fund started a project called "Creation of Network University of the CIS» in 2008, in the framework of the Development of humanitarian cooperation among the participating States of the Commonwealth. This university network gives an opportunity to receive Master's degrees of international level in such universities as Russian University of People's Friendship (RUPF), Moscow State Institute of International Relations (MSIIR), Moscow State Linguistic University (MSLU), Novosibirsk State University (NSU) and others.

Objectives of the project are:

- Creation of a common educational space of CIS through the implementation of joint education programs, the organization of "inclusive education", new forms of inter-university cooperation;
- Formation of mechanisms for the development of student and teacher mobility within the framework of the Commonwealth;
- The expansion of academic mobility, contributing to qualitative training of highly qualified specialists in humanitarian, socio-economic, technical and scientific areas that are of need in the CIS;
- The promotion of the intercultural dialogue in the student environment; the development, and mutual enrichment of cultures, languages, historical and national traditions of the people of the Commonwealth states.

The project provides students of different countries with the right to independently choose time and place of training, allowing them to get two Master's degree diplomas, which in turn ensures their competitiveness in the Commonwealth labor market. Currently there are 28 leading universities from 9 CIS participating in the Consortium. In addition, our university is a member to the University of Shanghai Cooperation Organizations (SCO).

**The University of Shanghai Cooperation Organization** is a network university and an international educational program in Asia. At the meeting of education ministers of the CIS member states (Astana, October 28, 2008) documents were signed to establish the University of SCO, as well as confirming the general concept of the SCO University training boards: Regional Studies, Power Engineering, Nanotechnologies, IT, Ecology, Pedagogy, Economics. The University of Shanghai Cooperation Organization is an Asian analogue of the common European educational space, created within the framework of the "Bologna Transformation of the Educational System".

SCO Charter was signed in November 2011, within the "Education without borders" program in Moscow, at RUPF.

The main mission of the University of SCO is to implement joint

training of highly qualified specialists based on innovative education programs in the fields of priority interest for the economic and social development of Member States of Shanghai Cooperation Organization.

The university functions as a network of existing universities in the SCO member states, and in the future - in the observer countries (Mongolia, India, Iran, Pakistan). Special training of the highest qualification in the framework of the University of SCO is done on priority areas of cultural, scientific, educational and economic cooperation of the member countries of the Organization (Power Engineering, Ecology, Machine Building, Metallurgy, Material Science, Construction, Transport, Fuel and Energy Complex, History, Linguistics, IT).

Currently there are 79 universities from 5 countries the consortium.

The goals of the SCO University creation are:

- strengthen mutual trust and good neighborly relations between the member countries of the SCO;
- integrate development processes in the fields of education and technologies;
- give a new impetus to the expansion of multilateral scientific and cultural cooperation;
- empower young people to receive qualified modern education; for teachers and scientists - to develop scientific contacts;
- promote effective cooperation among the member countries of the Organization in the political, trade-economic, scientific-technical and cultural fields.

Network University of the CIS and the University the SCO provide opportunities to socially less protected members of society to participate in the high quality educational process. In the unique project such as Network University of the CIS, the overcoming the elitism in training of highly qualified specialists is evident. We have examples of the “social elevator”, through training in a joint master program in a Russian university and our university.

A young man from the village, who graduated from a rural school and received a bachelor's degree at our university, successfully graduated with Master's degree from RUPF and KNU, had received two diplomas and, presently works in one of the leading Russian banks in Moscow.

Within the framework of the Network University of the CIS, the international fund for humanitarian cooperation gives grants for training, which helps overcome the elitism of the international academic mobility. By Grant of the IFESCCO (the Intergovernmental Foundation for Educational, Scientific and Cultural Cooperation) a student is sufficiently socially protected: the fund buys a round-trip air ticket for him/her, pays a year tuition at a Russian university, buys a medical insurance and provides a good hostel. That is how good conditions for studying are created and the student is not forced to work illegally to ensure daily bread.

Education expenditures are one of the key indicators of social development. In this case, when parents are not able to provide such expenses, the help in obtaining a quality education is provided by the States members of the consortium and IFESCCO. For Kyrgyzstan it is good practice, wherein we can democratize the master's degree education and make acceptable for our country to participate.

Traditionally, our youth strive for education and have equal rights and access to education as guaranteed by the Constitution. In this regard, we must fully develop and strengthen our participation in the projects of academic mobility of two-diploma programs to educate specialist of the international level.

Development of joint curricula, other teaching methods and joint state certification, gives us an opportunity to learn from the experience of colleagues from leading universities of CIS countries. The joint education activities within the Network University of the CIS resulted in a remarkable cooperation in the field of research and obtaining academic degrees. Professors from our university defended Doctoral theses at the academic council in the RUPF.

The preparation of Master's programs in the Network University of the CIS and the University of SCO is important for further professional development of our university faculty members. At present, two professors who graduated from the Network University of the CIS work in our university.

**Table 1. CIS statistics of the CIS**

Fields of study	Years	Type of Funding	of participants
Jurisprudence (International Law); International Relations (World Economy); Economy (International Trade); Management (International Management, International Project Management); Philology (Russian language and literature); Tourism (Planning and development of tourism at the state level).	2010-2011	Budget of the Russian Federation Grant IFESCCO Total	9 6 15
	2011-2012	Budget of the Russian Federation Grant IFESCCO Total	10 6 16
	2012-2013	The budget of the Russian Federation Grant IFESCCO Total	10 11 22
	2013-2014	The budget of the Russian Federation	7
	2014-2015	Budget of the Russian Federation Grant IFESCCO Total	8 7 15
	2015-2016	Budget of the Russian Federation Grant IFESCCO Total	8 7 15
	<b>Total:</b>		<b>90</b>



The statistics show that the number of students in the Master's programs in the Russian universities of the Network University of the CIS increased in 2012-2013 and reached 22 people a year. Unfortunately, now the annual number of students dropped to 15 people. It should be noted that the number of students enrolled in the Master's program as funded from the Russian Federation budget and IFESCCO grants is sufficiently large (within the framework of one university). Belarus, Kazakhstan, Tajikistan and Kyrgyzstan allocate quotas for studying in the network university at the expense of the public budgets, but they practically exist only on paper. Only due to the Russian Federation, our students have real possibilities. If we fully implement bilateral agreements, this would multiply the number of students in joint programs and further increase the academic mobility within CIS.

Student mobility of is the main aspect of internationalized higher education. During the Soviet period, our university attracted students from states with a similar ideology. According to experts, in 2025, the number of students studying abroad will reach five million people. The most famous European programs are "Erasmus" and "Socrates". Student exchange is a powerful tool for development of the European specialist market and qualified workers. Within the framework of "Erasmus", there is a special project "Erasmus Mundus", which works with students from third countries that are not members of the European Union.

The international education services market becomes a rapidly developing sector of economics, where the main elements are active international marketing, the search and recruitment of international students. This practice is productive from the economic point of view.

One of the aspects of the academic mobility programs development is the need for the internationalization of curricula, the changes in curricula that are in line with the spirit of the time. Undoubtedly such work is likely to improve the level and quality of the national programs. Curricula and national educational should not be limited to internal problems. If we want recognition of our diplomas and the growth of competitiveness of our specialists, then we must meet certain international standards and organize our activities at the international level, guaranteeing minimum standard requirements, quality of education and professionalism, accreditation and other things.

At last, the joint work on methodological documents leads to an increase in qualifications of our university faculty and staff, solution of complex global challenges of harmonization and international integration of national system of higher education, creation of the unitary educational

space, at least, within the framework of the Eurasian Economic Community (EAEC).

The dissemination of best practices in the university environment, in our point of view, stimulates the quality of educational programs. Currently many national universities are trying to form and join Consortia, which bring the maximum benefit to higher education institutions in various directions. For example, there are new Network associations, including Russian-Kyrgyz Consortium of Technical Universities and the Network Institute in the field of countering the legalization of crime profits and terrorism financing. These are narrowly specialized consortia that have specific missions.

National universities will be able to fit the requirements for internationalization of [higher education, including both mobility and coordination of curricula, compliance with international systems of quality control and accreditation], only through integration with representatives of higher education, combining national academies of traditions and modern methods of the educational process.

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## Experience and problems for implementation of profile teaching at schools of Kyrgyzstan

### Опыт и проблемы внедрения профильного обучения в школах Кыргызстана

### Кыргызстандын мектептерине профильдик окутуу тажрыйба маселесин киргизүүнү жүзөгө ашыруу

**Annotation:** the article explores the introduction of subject-matter instruction to improve the quality of education at schools across Kyrgyzstan. It shows piloting of subject-matter instruction, i.e. in-depth study of biology, chemistry, anatomy, and Latin for senior students of school-gymnasium No. 12. While reviewing the main problems faced by Kyrgyzstan's schools in introducing subject-matter instruction for senior students, the article discusses the solutions that can result from the integrated efforts of all educational institutions of the country. The authors emphasize that helping students make the right choice of school subjects will build the foundations for their further studies at universities and colleges.

**Аннотация:** статья посвящена проблеме внедрения профильного направления для реализации повышения качества образования в школах Кыргызстана. В ней показан опыт внедрения организации профильного обучения на старшей ступени средней школы с углубленным изучением биологии, химии, анатомии, латинского языка на примере ШГ № 12. Отмечены основные проблемы, с которыми сейчас сталкиваются школы Кыргызстана при организации профильного обучения в старших классах, решение которых может быть найдено объединенными усилиями всех образовательных учреждений страны. Автором подчеркивается главная задача профилизации - помочь сделать правильный выбор профильного предмета в старших классах школ для дальнейшего обучения в высших учебных заведениях.

**Аннотация:** макалада Кыргызстандын мектептерине окуу сапатын жакшыртууну профильдик билим берүүнүнү киргизүү менен маселени ишке ашыруунун негизги багыттары берилген. № 12-мектеп гимназиясынын тажыйырбасы боюнча профильдик окутууну ишке ашырууда: биология, химия, анатомия, латын тилин терең окутуунун улгүсү багытталды. Жогорку классстардын профильдик багытты тандап окуунун негизги маселесин чечүүдө, азыркы Кыргызстандын мектептеринин алдында турган көйөйү, аны өлкөнүн жогорку окуу жайларынын иш-аракети менен ишке ашуусу белгиленди. Кесиптик тандоо багытынын негизги максаты –

*профильдик сабыктарды туура тандап окууга жардам кылуу менен жогорку окуу жайыны туура багытто.*

**Keywords:** *advanced placement (AP); modernization; profile training; vocational guidance; school-gymnasium; general education schools; electives.*

**Ключевые слова:** *профилизация; модернизация; профильное обучение; профориентация; школа-гимназия; общеобразовательные школы; факультативы.*

**Негизги сөздөр:** *бөлүштүрүү; жакишыртуу; атайын билим берүү; кесиптик-нускаочу көрсөтмө; гимназия мектеби; орто мектептер; сабактар.*

The main task of modernizing the secondary schools in Kyrgyzstan nowadays is the introduction of a specialized subject-matter training for senior students in order to create conditions for them to obtain quality of subject-matter knowledge. As it was noted by President Atambaev, education reforms should be implemented for the sake of improving the quality of education in the country [1].

There is a tendency among young people to choose future careers as related in connection to the way of life and youth culture, which sees education only as a possibility to gain material benefits. Today, choice of a university on the principles of prestige and conformism to mainstream values regardless of one's own and state interests has become a critical challenge.

Schools today face a problem related to creating conditions for high school students in accordance with their interests and choice of subject-matters, cognitive abilities, and intentions by providing a minimum (basic) level of mastering state standards of general education.

The purpose of this article is to summarize and share the experience of the Kyrgyz-Russian Slavic University (KRSU) and some gymnasiums on the introduction of the principles of specialized subject-matter instruction at schools across the country.

Specialized subject-matter instruction presents a special form of differentiated and individualized education. This is a learning process for senior students that takes full account of their interests, aptitude and abilities, creates an environment conducive to maximizing their development according to their cognitive and professional intentions.

For the first time, specialized subject-matter instruction for senior school students was piloted at the #12 gymnasium, following the # 266, 2002 Order of the Education Department under Bishkek Mayor's Office on "The Opening of Specialized Medical Class in Gymnasium # 12".

Since 2005, specialized subject-matter classes have been opened in schools # 4, 24, 29, 62, 67. The introduction of a specialized subject-matter

training at schools does not conflict with general secondary education standards, as schools continue teaching core disciplines mandated by State Education Standards to their full extent. This makes it possible to maintain consistency throughout the educational process without causing difficulties for students when transitioning from class to class or school to school. Also, specialized subject-matter education is implemented within sanitary and hygienic parameters approved in the Kyrgyz Republic and complies the requirements of the Republic-wide Test.

Since 2005 up to date, Bishkek schools # 4 and 12 continue practicing specialized subject-matter education by diving senior classes on the principle of in-depth instruction of particular subjects. Students are trained at KRSU by teachers of medical and other departments in academic disciplines required not only required for entrance exams, but also in academic subjects of the chosen profession. For example, these are Anatomy and Latin in medical classes. The main task of career guidance is to help students make the right choice of career-track subjects in senior classes to further continue their education in higher educational institutions. When choosing academic disciplines, senior students receive assistance ranging from tracking their subject-matter achievements in each quarter to interviews, tests and surveys. Also, schools determine each student's level and aptitudes for college-track subjects, and explore their personalities, their aptitudes and interests in Humanities and Technical sciences.

School # 12 has more than 10 years of experience and a system of dividing students according to specialized academic disciplines that match specialties offered in medical, international, economic, architectural and technical departments of KRSU. KRSU's medical school's professors teaching Biology and Chemistry in grades 10-11 highlight the system of specialized subject-matter instruction established in School 12.

For several years now, School # 12 has been implementing a specialized subject-matter education by including these academic disciplines into the foundational curriculum and implementing them throughout the academic year. This work concerns the following areas:

- curriculum development that contributes to the development of students' learning capacities and professional interests;
- creation of conditions for students' learning and educational motivation through providing them with opportunities to choose extra-curricular courses by taking into account their individual educational interests;
- creation of conditions for teachers to master new methods and technologies that promote the development of professional self-






realization of students (using smartboards, multimedia presentations);

- determining forms and methods for monitoring the achievements of the program implementation;
- introduction of new methods and technologies into educational process with a view to help students to successfully select their further education and the professional self-determination.

School #12 has set the following mode of work with students: from Grade 8 - one month of summer training on the selected subject; from Grade 9 - twice a week trainings with a transition exam to Grade 10 with a focus on the selected subject; from Grade 10 – dividing into specialized classes according to selected profession; in Grade 11 - completion of the specialization selection and formation of competencies (for the successful pass of Republic-wide General Test and entrance examinations to KRSU and other universities of Kyrgyzstan and Russia) in selected subjects necessary for continuing education in the relevant field of professional education.

KRSU and School #12 have found identification and selection of specialized subjects for entrance to KRSU's departments as the main direction of professional guidance for further education in higher education institutions. See Table 1.

**Table 1.** Basic structure of career-track education at School # 12 in Bishkek under KRSU

				
Economics	Science and Technology	Medicine	International Relations	Architecture and Design
AP classes at 10-11 grade				
Mathematics	Mathematics	Biology	English	Drawing
Geography	Physics	Chemistry	Geography	World Art Studies
	Computer Science	Latin		
		Anatomy		

All students take, apart from selected academic disciplines, foundational subjects, including Kyrgyz, the Kyrgyz Literature, History, Mathematics, Literature, Russian, Foreign Language, Physical training, Social Sciences, Chemistry, Physics, Geography.

This mode of organizing specialized subject-matter education in senior grades has not been widely followed in the schools across our country. But schools are keenly aware that all Bishkek schools must introduce a learner-centered learning into the educational process. The Ministry of Education of the Kyrgyz Republic has defined this direction as one of the most significant directions in reforming the modern education

system in the country, which can give, if properly implemented, hope for full compliance with the target of modern school education.

Every year more and more students from Schools #12, 29 and 67 enter universities to further study within their selected professions. A steady number of students from these schools enter the Kyrgyz State Medical Academy (KSMA) and the medical department of KRSU. For example, most of 2010, 2011, 2012 graduates of specialized classes from these schools have earned state-funded places in the medical department of KRSU and KSMA in specialties "curative care", "pediatrics" and "dentistry". Today, having graduated from these two leading medical schools of the country, they are engaged as clinical staff, clinical residents, postgraduate students, assistants, and are entitled to practice general medicine.

Unfortunately, it is regrettable that for some reasons some schools (#24, 29, 62, 67) have suspended specialized subject-matter education. But in other schools, including School # 66, they work in different modes. They offer extra-curricular activities on such specialized disciplines such as Chemistry, Biology, Mathematics, Russian, Foreign Languages (Chinese, Arabic, Korean), History. The schools engage experienced teachers, and high-level specialists from universities are actively involved as well. Schools that do not yet have specialized career-track classes can be advised to focus on the study of academic disciplines in the form of group work, electives by engaging specialists, and seek opportunities for introducing additional extracurricular education.

At Schools #4 and 12, KRSU professors introduced programs for in-depth study of "Biology" and "Chemistry", and prepared examination and test questions. They also prepared a training manual for subject-matter teachers and students of specialized classes under a specialized education program on Medical Biology. The manual was written by professor Kobzar V.N. in co-authorship with associate professor Niyazalieva A. D. The title of the manual is "Biology Tutor (for specialized medical classes)". The manual is written for senior students of specialized schools as well as students entering medical colleges and universities. The manual's structure includes theoretical foundations of modern Biology. Each section of the training manual is followed by basic material on the main sections of the course, test questions, tasks, questions for the refresher resources. The task of the Biology course is to help students develop analytical thinking in the study of course materials. The manual contains the medical specialization program, and provides illustrations, diagrams and comparative tables that allow to improve the knowledge of School Biology course in a comprehensible, easy-to-understand and vivid manner, and independently prepare for examinations [2].

Presently in Bishkek schools, the main amount of teaching workload in specialized classes could be conducted by their current teaching staff. In this regard, teachers who desire to work with specialized career-track classes



need to have special training or refreshment courses in special educational institutions to acquire necessary level of professional training needed for transition to a specialized academic program. As with any other specialty programs, refreshment courses for teachers in their own specialty depend on the content of the topics of a particular program. The forms of such work can be as follows:

- training on the application of the interactive whiteboard for quizzes, assessment analysis;
- a training on the use of modern electronic multimedia presentations in the implementation of educational programs;
- providing opportunities for teacher self-education in computer literacy;
- refreshment courses of varying duration conducted in departments and institutions;
- lectures, seminars, master classes, group trainings conducted in special departments of universities;
- substantive training programs for in-depth study of concrete disciplines (followed by exams, a test or defence of topic papers, and granting certificates to those who successfully complete trainings).

It must be noted that today specialized career-track education in our schools is hindered by insufficient theoretical and practical training of teachers, unwillingness of teachers and school leaders to engage in this work, weak infrastructure, and lack of access to Internet. Below are main problems that presently schools in Kyrgyzstan face when choosing specialized career-track education in senior classes:

- there are still few or no schools, especially in the regions of Kyrgyzstan with specialized classes. There is no effective division between the mandatory and optional subjects, poor extra-curricular activities in selected subjects;
- the lack of qualified personnel able to implement the specialized subject-matter education programs. Most students at the age of 15-17 are not ready to choose subject for specialization. Senior students have no desire for self-knowledge. Most parents do not guide their children in their choice of profession. School teachers are focused only on assessments of overall performance. These are problems occur at the primary stage of vocational guidance, and make it difficult to work with school graduates when choosing future profession and higher or special education specialty.

These shortcomings indicate that the problems of specialized subject-matter education must be solved by joint efforts of higher, secondary and secondary special educational institutions of the country. It is the task of schools and universities to provide senior students with insight on professions, on where

they can learn professions, help them choose the most "suitable" profession, and give them special knowledge as related to their future profession. It is important for universities to develop a system of sponsored schools to proceed to preparing future cadres for the country from the middle school stage.

At present, the solution of this problem is left in the hands of schools and departments of public education of cities, regions, and districts. According to educational standards, each school can choose their own specialized academic disciplines due to their own possibilities and teacher potential. At present, Kyrgyzstan is developing a project which will provide for teaching a certain subject to students completing Grade 9 by using the potential available at school. As a result, students will receive a guidance on a certain specialty [3].

Thus, the interaction of schools and universities to introduce specialized career-track educational standards will solve the main task - preparation of school graduates to social and economic realities of modern society. Specialized career-track education will undertake compensatory function to remediate the content of secondary education to match the requirements and rational professional choice of young people. It will retain some academic conditionality reflected in teaching programs that include a standardized set of subjects [4]. The experience that KRSU had in specialized schools for several years has proved itself well, as school graduates started receiving vocational guidance on a new theoretical level. Thanks to such training, they often make informed decisions to apply for universities and gain state-sponsored placements as they are better prepared for entrance examinations than their peers [5].

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## Children's poems in the first textbook by I. Arabaev

### Детские песни в первом учебнике И. Арабаева

#### И.Арабаевдин алгачкы окуу китебинде балдар ырларынын берилиши

**Annotation:** the article deals with the first Kyrgyz alphabet book and the children's poems presented in it. The author is focused on the creativity and activities of I. Arabaev, the author, who reveals the value of his book "Kyrgyz Alippe (Kyrgyz alphabet book)" and analyzes the poem "Toru Tai (Chestnut Colt)", included in the book.

**Аннотация:** в данной статье речь идет о первом кыргызском букваре и детских песнях, которые в него вошли. Автор описывает творчество и деятельность И. Арабаева, раскрывает ценность его книги «Кыргызалиппеси», анализирует песню «Тору тай», которая вошла в эту книгу.

**Аннотация:** макалада кыргыздын алгачкы алиппе китеби, андагы балдар ырларынын берилиши тууралуу сөз болот. Автор И.Арабай чыгармачылыгына жана ишмердигине токтолуп, ал жазган «Кыргыз алиппеси» деген китептин баалуулугун ачып берет, китепке кирген «Тору тай» деген ырды талдоого алат.

**Keywords:** textbook; alphabet; educator; Cyrillic; children's poems; worldview; valuable heritage; alphabet book.

**Ключевые слова:** учебник; распознавание символов; навыки чтения; воспитатель; кириллица; араби; детские песни; страноведение; драгоценное наследие; букварь.

**Негизги сөздөр:** окуу китеби; тамга таануу; агартуучу; кириллица; араби; балдар ырлары; дүйнө таануу; асыл мурастар; алиппе.

One of the earliest textbooks by Ishenaly Arabai uulu called "Kyrgyz Alippe (Kyrgyzalphabet book) was published in 1924 in Tashkent. A large analysis of this textbook was conducted in the works and in the doctoral dissertation of A.Osmonkulov "The history of teaching the Kyrgyz language in secondary general education schools", "Scientists - methodologists and experienced teachers of the Kyrgyz language" in the books of K. Sartbaev "The 90<sup>th</sup> anniversary of Ishenaaly Arabaev Alphabet book ", "Ishenaaly Arabaev is the first educator, scientist of the Kyrgyz people", in K. Sartbaev and A. Murataliev's book "The valuable heritage in the educational field of Ishenaaly Arabaev and his students continuing his work", in monographs on the history of Kyrgyz literature and in the doctoral

dissertations of N. Ishekeev "The history of teaching the Kyrgyz literature at schools" and "The content and problems of the curricula of the Kyrgyz literature", "The textbooks in the Kyrgyz literature: the past, the present, the future", in the Candidate dissertation of Esengulova M.M. and in the works of S. Baigaziev.

The book "Kyrgyz Alippe" by I. Arabaiuulu was first published in Cyrillic in 2007 and in the foreword, which is called "The First" in the Holy Book", S. Rysbaev writes the following: "... even when the book is taken from the internal content, along with reflecting and showing Kyrgyz children our land, people, and their character, life, destiny, the value of language, the entire spiritual and material world, it is also valuable because it intends to equip the Kyrgyz children with knowledge. With this content, this book has become a national unique paragon for all subsequent Kyrgyz books, and will remain as such" [1,3]. And in this first textbook, I. Arabaev allocated a lot of space for children's songs and poems. These are such poetic works as "False Poems", "True Poems", "Riddles" in the form of poems, "Instructive poems", "The Riddle of a Blind Girl and an Orphan Girl", "Toru Tai (Chestnut Colt)". For example, at the end of the school year, there is a poem of "Toru Tai":

A chestnut colt on a leash  
If you were as swift as the Wind.  
If I like a pigeon hawk in the nest  
I would grow up until the Time.  
Decorating your foretop with silver bridle  
I would put on a bright color outfit!  
Racing with the wind  
We would win the grand prize.  
Competing at the peak with its myriad of troops  
We would support the people's efforts.  
Not forgetting the dues to our people  
We would handle the matter well.  
Remember, Toru Tai,  
We are responsible for the future. [2, 32-33].

It was the song in its time that gave joy to the adults who were eliminating their illiteracy, and to the children, because this poem was the final theme of the book reporting the complete elimination of their written illiteracy. There is no information about whether "Toru Tai (Chestnut colt)" is the author's poem, or it is a folk piece. The most important thing is that it

has properly given ethno-psychology of the Kyrgyz children, because a colt was of a special importance for the Kyrgyz.

There is such a memory from the childhood of Chingyz Aitmatov, associated with riding a colt: “Once I joined roaming from place to place along with my grandmother. My grandmother Ayimkan put me on a colt back. I will never forget this horse. After all, it is interesting that a five-six-year-old child is riding alone on a horse... Probably, so that I wouldn’t fall, they put wooden supports on both sides of the saddle. In comparison with adult saddles, specially designed for children such saddles were called “Airymach” (baby saddle), and resembled the seats of urban children. I was overwhelmed with pride, that I had my own horse and my own saddle. Together with the nomadic settlement roaming from place to place I beside myself with pride was dashing, hurriedly bridled and guided my horse forward. On my luck, however, my horse was very mellow. I accompanied the resettlement on horseback along with my grandmother and relatives. We drove herds of horses and huge flocks of sheep. The load on the camel's back swayed from side to side, and we moved towards much desired beautiful jailoo (mountain pastures)” [3, 407-408].

I.Arabaev introduced the Kyrgyz children to this miracle in the 1920s. “Toru Tai” was the first poem, learned by the children through textbooks and reading, as oppose to oral learning. Thus, children's poems and songs were included in the first textbooks for children.

In the 30-ies of the XX<sup>th</sup> century were published the following primers.

**Table 1.1.1. - Primers published in the 20-30-ies of the XX<sup>th</sup> century**

No.	Author	Title	Year of publication	Place of publication
1	I.Arabaev	Kyrgyz Alippe (Kyrgyz alphabet book)	1924	Tashkent
2	Esenaly, Sultan, Satybaldy	Bizdinmektep (Our school)	1930	Frunze
3	S.Namatov	Little farmer	1931	Frunze
4	S.Namatov	Alippe (Alphabet book)	1933	Frunze
5	B.Junushaliev	Alippe (Alphabet book)	1936	Frunze
6	K. Karimov, T. Aktanov, A. Koshoev	Alippe (Alphabet book)	1958	Frunze

**Table 1.1.2. – Primers for adults (elimination of illiteracy) published in the 20-30-ies of the XX<sup>th</sup> century**

No	Author	Title	Year of publication	Place of publication
1	I. Arabaev	Alippe (Alphabet book)	1925	Pishpek
2	K. Tynystanov	Alphabet book for adults	1926	Moscow
3	I. Arabayev, K. Karasayev	Janylyk (Novelty)	1927	Frunze
4	M. Baktybayev	KyzylJyldyz (Red Star)	1930	Frunze
5	S. Namatov	Literate farmer	1932	Frunze
6	T. Samanchin	Alippe (Alphabet book)	1937	Frunze

M.I. Bogdanova wrote that in Kochkor Moldo Kylych opened a school of a new type “usulijaded”, despite the fact that he did not study there, according to contemporaries, the Tatar teachers at that school made the students rewrite and memorize the songs of Moldo Kylych, then I. Arabaev, who wrote the first Kyrgyz Alphabet book worked in Kanat Khan school, [4, 52]. After, in 1911, I. Arabaev published ghazels of Moldo Kylych in the publishing house “Shark” in Ufa as a separate book called “Kyssa Zilzala (Earthquake)”. His book on the history of Shabdan was also published there.

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## Activation of independent work of students through «cloud» services

### Активизация самостоятельной работы студентов посредством «облачных» сервисов

#### «Булут» кызматтары аркылуу студенттердин өз алдынча иштерин жандандыруу

**Abstract:** This article explores activation of students' independent work in extracurricular work through separate individual tasks, term papers and research projects. For independent work activation authors are offering to use "cloud" services. These services include data storage drives, various software, systems and even computers. Access to Internet and Web-browser is needed to use these services. This article explores some of these services and general principles of their application in an academic process. It is useful for faculty members, Computer Science teachers, as well as for others interested in up-to-date information technologies.

**Аннотация:** в статье рассматривается вопрос активизации самостоятельной работы студентов во внеаудиторной работе: индивидуальное задание, курсовая работа, исследование. Авторы предлагают использовать для активизации самостоятельной работы «облачные» сервисы. Эти сервисы включают диски для хранения данных, различные программы, системы и даже компьютеры. Для полноценной работы с этими сервисами достаточно иметь доступ к Интернет и браузер. В статье рассмотрены некоторые из этих сервисов и очерчены общие принципы их использования в учебном процессе. Статья адресована преподавателям, учителям информатики, а также всем, кто проявляет интерес к новым информационным технологиям.

**Аннотация:** макала тышкаркы иш окуучулардын өз алдынча иштөөнү жандандыруу жөнүндө маселени карайт: өз алдынча иш, курстук иш, изилдөө. Жазуучулар өз алдынча ишти жандандыруу учун «булут» кызматтарын пайдаланууну сунуш кылат. Бул кызматтардын сактоо учун кууптар, ар кандай программалар, системалар жана компьютерлер кирет. Бул кызмат менен ишти аягына чыгаруу учун Интернетке кирүүгө жана серепчи болсо эле жетиштүү. Макалада ушул кызматтардын кее бироосуу каралган ошондой эле аларды пайдалануу боюнча жалпы негиздер белгиленген. Макала мугалимдер, маалыматтык – окутуучулар, ошондой эле, жаңы маалыматтык технологияларды кызыкдар бардык адамдарга багытталган.

**Keywords:** activation of students' independent work (SIW); information technology; cloud services; cloud computing; educational experiment.

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**Ключевые слова:** активизация CPC; информационные технологии; облачные сервисы; облачные вычисления; педагогический эксперимент.

**Негизги сөздөр:** студенттердин өз алдынча иштерин жандандыруу; маалыматтык технологиялар; «булут» кызматтар; «булут» эсептөө; педагогикалык эксперимент.

Curriculum of J. Balasagyn Kyrgyz National University includes implementation of two extracurricular students' independent work (hereinafter-SIW) in each semester. Scope of each SIW project is determined by the faculty member and is related to academic discipline. A grade earned for SIP will impact final assessment for the discipline (examination).

Student independent projects have shared features: they are extracurricular, exploratory and oriented at researching a problem. Often this work is more complex compared to courses taken or work related to additional resources. SIW is implemented without teacher involvement, but under supervision.

R.A. Nizamov [4] defines the activation of educational activity as "the purposeful activity of the teacher, aimed at improving the content, forms, methods, methods and means of teaching to arouse interest, increase activity, creativity, students' independence in mastering knowledge, forming skills, applying them in practice" [5]. The authors agree with this definition and consider that new and modern forms of organization of inderandant work based on the use of new information technologies increase the interest and effectiveness of independent cognitive activity of students

But it is the purposeful activity of the teacher, aimed at the organization of students' independent work that allows to obtain the greatest effect leading to the improvement of academic performance [1,3] and firm consolidation of the professional skills.

Since 2013, Computer Technologies and Internet Department (CTID) has been using in the educational process the so-called "cloud" services, mainly for the organization of students' independent projects. The use of services allowed to activate students in the implementation of SIW and to increase their academic performance by about 15%, which was confirmed during the pedagogical experiment. The surveys showed that, in comparison with traditional learning forms, this kind of work increases students' interest in the implementation of the SIW.

"Cloud" services belong to the type of SaaS (software as a service). Simplistically, these are numerous applications and information services that are available on a modern personal computer, and transferred to Internet. Therefore, there is no need to install these programs and services on the

computer, changing their versions, and ensuring copyright procedures. All you need to have on the device (computer, smartphone, tablet, laptop, etc.) is an access to Internet and browser (Opera, Google Chrome, Explorer, etc.) [9,10,11].

Below are examples of "cloud" services:

- disks (Google drive, Yandex disk, OneDrive, etc.);
- Office programs (Word, Excel, PowerPoint, etc.);
- Programming systems (Idione, Unity, WordPress, AppInventor, etc.);
- Application systems (1C Enterprise);
- system programs and databases (Windows Azure, Unity, Oracle, MySQL, etc.);
- educational services (Google for Education, Microsoft Live @Edu, etc.);
- Communication services (Bitrix24, Google apps for Work, etc.).

Within the framework of pedagogical theory, SIW includes four components [1,4,6,8]:

- motivational;
- volitional;
- substantial;
- control and evaluation.

This article explores the application of "cloud" services individually for each component.

### **Motivational component of independent work of students.**

The teacher provides students in advance with information necessary for students to work with "cloud" services. This information includes the following:

- instructions for working with services;
- reminder that "cloud" technologies are new and promising technologies that are rapidly developing, and with the development of speed and reliability of Internet they will gradually displace local resources and services. It is advisable to provide some statistics. For example, Gartner estimates that by 2015 the volume of the cloud services market for US users will be over \$180billion. The total cost of equipment, which will be deployed by 2018 in the cloud infrastructure, is estimated at \$79.1 billion. In 2014, American businesses spent more than \$13 billion on the development of cloud services and hosting. The development of cloud computing,

according to Citrix, created about 14 million jobs within two years (by the end of 2015);

- the main specialties related to «cloud» computing are network administrators, network and information communications analysts, IT security specialists, system analysts, application developers, Web developers, database administrators;
- the use of "cloud" services makes it possible to perform independent work in any place and at any scheduled time;
- "cloud" services can be used not only on a personal computer or laptop, but also on a tablet or even a smartphone (a mobile phone that has Android, iOS, Windows operating systems). For young people, this fact alone is already a strong motive [7];

Also, teachers must determine regular motivational components that are not associated with "cloud" services. For example, this might be related to a subject of study, the level of student preparation, etc.

#### **Volitional component of independent work of students.**

Each teacher knows that a motivation alone is not enough to carry out independent work. There must be a will. Students must organize their work independently within the time allotted for academic work. For this, they need a will. But teachers must teach and provide the organizational support in students' performance.

Usually a work plan includes intermediate tasks and deadlines. Final deadline must be set. For students, it is a part of ongoing monitoring of the module. Teachers can also schedule consultations during the implementation of the work.

"Cloud" services also encompass services that can be used to plan and monitor the work performance. Students are recommended to create plans by themselves in accordance with the number of academic hours allocated for the implementation of the SIW. At the initial stage, it is advisable to do this through interaction with teachers. These services include the following:

- **Calendars** from "Google apps for Education" [2];
- **Calendars** from "Bitrix24";
- **Objectives** from "Bitrix24";
- **Groups** from "Google apps for Education";
- **Groups** from "WhatsApp".

Note. The reason why the authors attributed the WhatsApp service to "cloud" is that all data involved in the service is stored in the "cloud".

Teachers and students can use any of the services listed. They are all available and free of charge for educational institutions (upon registration).

**Calendars** allow to mark an event (work stage) for any date. Usually, the calendar has a reminder for the event.

**Tasks** - except for the date and the event, services have an application informing the degree of work completion and can specify the performer. Teachers can always see the degree of completion of the work by stages, and even in the form of a diagram.

**Groups** - are designed for prompt interaction of students with each other and with teachers.

All listed services are available on smartphones, and thus, increase the efficiency. In addition, teachers can always be aware of the current work performance, which contributes to students' sense of responsibility.

### **Subject-matter component of SIW.**

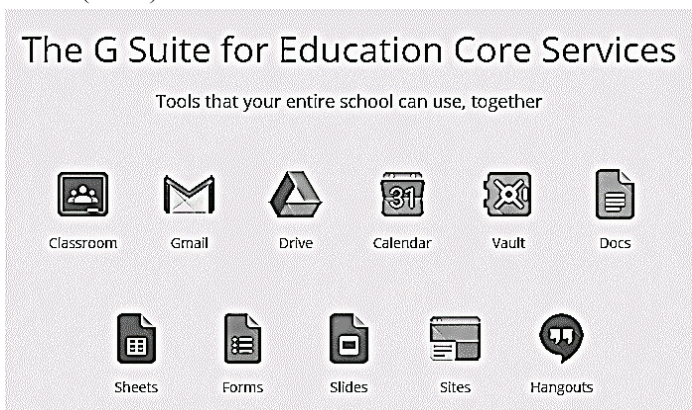
"Cloud" services enable teachers to upload assignments, methodological materials, instructions and links, and necessary electronic resources. Services enable students to publish the results of their work in an accessible location. Moreover, it can be done at any time, in any place where there is an Internet and an access device.

Teachers can use various "cloud" services to upload and use resources depending on subject-matter and the forms of organization of independent work. The following services were applied at CTID:

- *Google for Education* (disk) - for posting assignments, methodological materials and instructions, results of work, without any limits;
- *Google for Education* (office programs) - for design of work results and publication of presentations;
- *Google Apps Education* (groups) - for interaction of teachers and students regarding publication of ads;
- *Google Apps Education* (classroom) - for publication of courses;
- *Google Apps Education* (sites) - for prompt development and placement of student sites;
- *Bitrix24* – to upload tasks, methodological materials and instructions, results of work, without limits, and to hold online communication of students through built-in chat;
- *edu.lcfresh* (1C Enterprise) - ready-made "cloud" solutions 1C, which are used in "Programming Systems" and "Accounting" courses;

- *ideone* - a programming system for 77 algorithmic languages;
- *WordPress* - the designer for development of sites;
- *MIT App Inventor* - for development of mobile applications under OS Android.

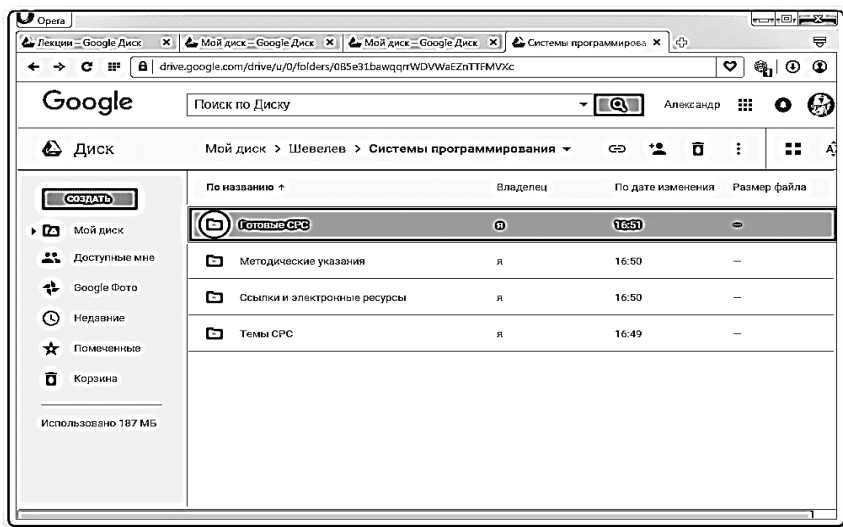
Brief content of *Google for Education* (drive) service is provided on screenshot below (Pic.1):



**Pic. 1. Screenshot of Google for Education “cloud” service content**

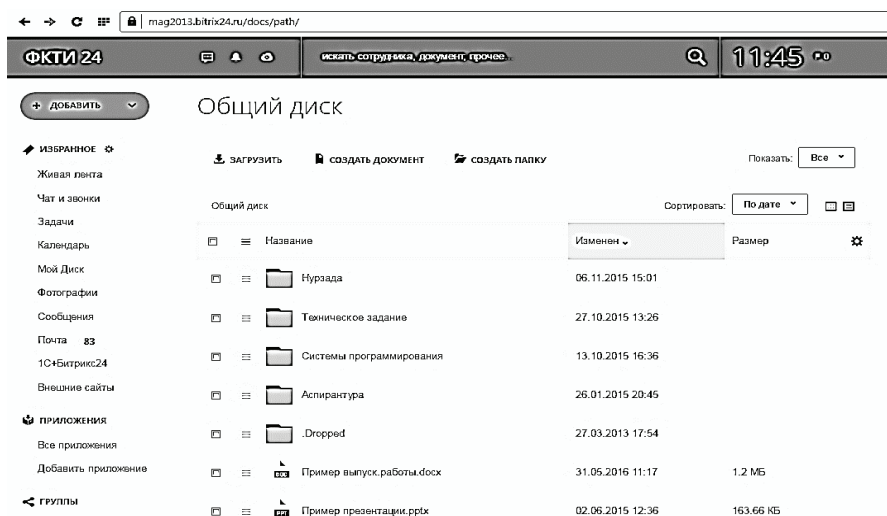
Note: Presently, (in 2017) *Google for Education* service is not available in Russian. In 2015 Russian language was active. Cause is unknown.

Example of *Google for Education* (drive) service is shown on a screenshot (Pic.2) below:



**Pic. 2. Google for Education (drive) “cloud” service page screenshot**

Example of Bitrix24 service is provided on a screenshot (Pic.3) below:



### Control and evaluation component of SIW.

Thus, the article examines the final control of students' independent work only. Entry and intermediate controls were not used.

For CTID, textual description of the work and its presentation present SIW result. In Programming or Information Systems courses, apart from textual description and presentation, students must present program or system they have developed. For other departments, this can be done in a different way.

The textual part is prepared by each student through the "cloud" Google document. The presentation is made by a student alone, if s/he worked individually, or a team leader, if it was a team effort. The presentation is prepared through a "cloud" Google presentation. The presentation is then defended by a student or team leader.

Presentations are evaluated by the students anonymously, and by teachers. The final assessment is made by a teacher due to account taken by anonymous opinions.

For anonymous students voting, a "cloud" service form is used from *Google for Education*. For this, teachers prepare a survey and evaluation criteria. Students receive evaluation forms to their smartphones, and they must score presentations on a 10-point system (Fig. 4):

**Pic.4. Screenshot of the evaluation form on smartphone display.**

The results are transferred to the "cloud" disk, into one file, in the form of an Excel Table. The results can be corrected by manually adding the formula for recalculation to another system other than the 10-point system, for example, to a 20-point system (Fig. 5):

форма для БИ-2 (Ответы) ☆ ■					
Файл Правка Вид Вставка Формат Данные Инструменты Дополнения Справка В Комментари					
fx					
	A	B	C	D	E
1	Отметка времени	Реальность	Оригинальность	Функциональная полнота	
2	09.02.2016 9:13:33	8	7	6	14,0
3	09.02.2016 9:37:16	9	7	6	14,7
4	09.02.2016 9:39:16	7	9	9	16,7
5	09.02.2016 9:40:28	9	6	5	13,3
6	09.02.2016 20:09:46	9	6	8	15,3

**Pic.3. Screenshot of the table with polling results and recalculation of points.**

The teachers also evaluate presentations. The final score is equal to the average value and is also posted on a cloud disk that is publicly available to this group, but not available to others.



Thus, in all four components of students' independent work, "cloud" services were used. It must be noted that availability of services on smartphones has added attractiveness for students.

Unfortunately, there are some limitations to widespread use of the methodology in Kyrgyzstan today. These limitations include slow Internet, fairly high prices for smartphones (tablets), as well as expensive mobile communications. But given rapid development of mobile and Internet technologies, these restrictions will soon stop being an obstacle to the introduction of this methodology.

The experience of using this method to activate students' independent work through "cloud" services really gives positive results, which lead to higher estimates (about 15%), in contrast to the standard approach. This was shown by the pedagogical experiment conducted in 2014-2016.

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### **The content and technology of forming the professional competence of the university teacher**

### **Содержание и технологии формирования профессиональной компетенции педагога в ВУЗе**

### **ЖОЖдо мугалимдердин кесиптик компетенттүүлүктөрдүн калыптандыруунун мазмуну жана технологиялары**

*Annotation:* the article reveals the contents of the concepts of competence, establishes the links and relationship between the basic and the professional competencies of teachers.

*Аннотация:* в статье раскрывается содержание понятий «компетенция» и «компетентность», установлены связи и отношения между базовыми и профессиональными компетентностями педагога.

*Аннотация:* макалада компетенция жана компетенттүүлүк түшүнүктөрүнүн мазмуну, педагогдун негизги компетенттүүлүгү менен кесиптик компетенттүүлүгүнүн ортосундагы байланыштар ачылып көрсөтүлгөн.

*Keywords:* competence; competency building approach; special professional competence; training of the teacher of physics

*Ключевые слова:* компетенция; компетентностный подход; специальная и профессиональная компетентность; подготовка учителя физики.

*Негизги сөздөр:* компетенция; компетенттүү мамиле; атайын жана кесиптик компетенттүүлүк; физика мугалимин даярдоо.

The changes in the world of education, which are related in particular to the global goal of ensuring the entry of a person into the social world, and its productive adaptation in this world, necessitates the formulation of the issue of providing a more fully personal and socially

integrated result of education. As the general definition of such an integral social-personality-behavioral phenomenon as the result of education taken together of motivational-value, cognitive and operational components, the concepts "competence" and "competency" were made.

Competent approach in this case, acts as a tool for advanced education. Its implementation will allow overcoming the narrow subject-oriented training, to enter the metasubject education level: identify the elements of timing during training to various academic disciplines, strengthen the fundamental knowledge in the course of development disciplines with metasubject character (social science, ecology, world culture, science, valueology etc.).

The course on implementing a competence approach to education is reflected in the "Strategy for the Development of Education in the Kyrgyz Republic for 2012-2020", the state educational standards for a new generation of secondary general and higher education in the Kyrgyz Republic.

The analysis of literary sources, dissertational research and normative documents shows that in general scientific terms the key competences are common for all specialties: personal, social, intercultural, communicative, informative, cognitive, etc. [1]

1) Social competence - the ability to assume responsibility, participate in the adoption of group decisions, non-violently resolve conflicts, participate in the maintenance and improvement of democratic institutions;

2) Intercultural competence - acceptance of differences, the ability to respect people of other cultures, languages and religions, live with them in peace and harmony;

3) Communicative competence - oral and written speech, more than one language;

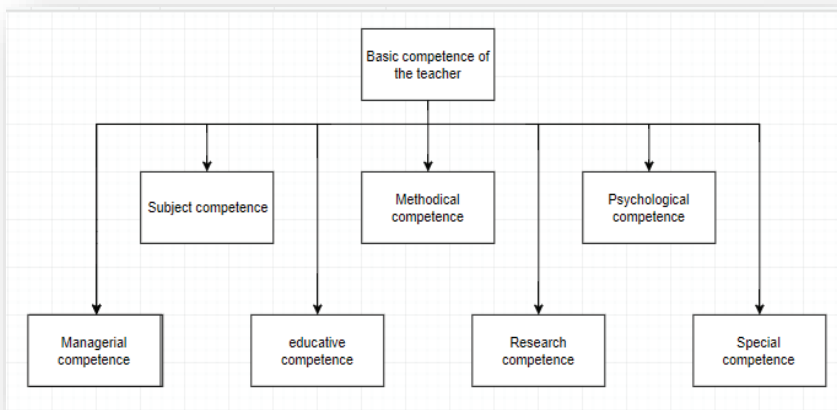
4) Information competence - mastery of modern information technologies, understanding of their strengths and weaknesses and ways of critical judgments regarding information disseminated by mass media and advertising;

5) Cognitive competence - the ability to learn throughout life continuously, in the context of personal, professional, social improvement.

It is necessary to add more: personal competence.

In our opinion, for pedagogical specialties, it is necessary to differentiate key competences, which includes personal, social and activity competences [2].

Based on key competencies, we identified the basic professional competencies of the teacher (see Fig. 1) - secondary school teachers and teachers of primary, secondary and higher vocational schools in accordance with their functions.



**Fig. 1. Basic professional competencies of the teacher**

**Subject competence.** Achievements, ways to comprehend the prospects, methods of science and the sectors of the economy and social sphere served by it. Educating and developing the potential of the subject (science and field of activity).

**Methodical competence** - approaches, methods of constructing the learning process and monitoring its results.

**Psychological competence** - understanding of internal mechanisms of information transformation into knowledge, attitudes, beliefs, age and individual patterns of personality development, possession of ways of their formation and regulation, ways of productive communication, work in a team.

**Managerial competence** is the ability to anticipate and design the process of education and upbringing, to achieve mutual understanding and interaction between the participants in the educational process.

**Educative competence** includes socio-communicative, value-world-view, personality-valueological competence.

**Research competence** is compulsory for a university teacher, but increasingly entering the orbit of the activity of a creative teacher involved in the processes of updating preschool, school and higher education. It includes knowledge of methodological culture and methods of research.

**Special competencies:** teachers of physics, mathematics, chemistry, biology, educator, social teacher, etc.

As a result of many years of research work on preparing a physics teacher at the university, we came to the conclusion that the core competencies can be divided into four groups: social and humanitarian, specifically scientific, psychological, pedagogical, and vocational [3].

Competent approach implies the transition from subject teaching and learning to integrative learning, a holistic educational process and

continuous self-education; from the subject to a comprehensive diagnosis of the educational and practical success of students; from fixing "residual" knowledge to determining the level of qualifications, readiness for further continuous education, the level of professionalism, readiness for action (value-orientation, psycho-logical, practical), self-realization, competitiveness in the labor market, and the degree of social and professional mobility.

Mastering the competence approach is designed for the future, but already today, especially in connection with the development of the third generation of higher education standards, it is possible and necessary to gradually implement it, which is already being implemented to some extent in the KNU named after Jusup Balasagyn and KSU named after I. Arabaeva.

We indicate the priority areas of this work as follows:

1. Develop a list and content of special and professional competences of the teacher of physics.
2. Organic connection of traditional approaches of communicating education and methods of developmental learning (educational dialogue and polylog, method of incidents, research works, problem training, contextual training, methods of synergetics, etc.).
3. Strengthening, within the framework of subject teaching, the elements of integration, the formation of a social, natural-science, and then general scientific picture of the world.
4. Development of methodological complexes for self-study of topics or sections of program courses using computer programs, Internet resources, satellite communications, so that lecture classes, seminars, interviews would become the basis and continuation in systematic independent work of students.
5. Expansion of training (real and virtual) and production practices, context-situational training, design and gaming techniques, internships on the basis of institutions and enterprises mastering advanced technologies.
6. The transition to a comprehensive diagnosis of the readiness of applicants to study at a university and to a system of comprehensive monitoring of the success of university training at the undergraduate and graduate stages with a differentiated account of all components of the necessary competencies of graduates.

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## Psychology

УДК:159,9

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## Cultural values of Kyrgyz family

## Культурные ценности кыргызской семьи

## Кыргыз үй-бүлөөлөрүнүн маданий баалуулуктары

**Abstract:** *this article explores cultural values of the Kyrgyz family and the role of continuity of traditions and customs in educating new generations.*

**Аннотация:** *в статье раскрываются культурные ценности кыргызской семьи, роль преемственности традиций и обычаев в воспитании подрастающего поколения.*

**Аннотация:** *макалада кыргыз үй-бүлөөсүнүн маданий баалуулуктары, үрп-адаттардын жана салттардын өсүп келе жаткан муундарга өткөрүп берүүсүнүн ролу чагылдырылган.*

**Keywords:** *Cultural values; Kyrgyz family; value rebirth; age-old traditions and customs.*

**Ключевые слова:** *культурные ценности; кыргызская семья; возрождение ценностей; вековые традиции и обычаи*

**Негизги сөздөр:** *маданий баалуулуктары; үй – бүлөө; баалуулуктарды кайра жаратуу; салт; үрп-адат.*

Today the Kyrgyz society is actively rethinking the role and significance of culture, and traditions and customs of people as an integral part of culture. This is first and foremost associated with the development of national self-awareness, and the desire to revive the best aspects of cultural heritage. Mainstreaming of the native language, customs and traditions played a positive role.

The Year of 2017 was announced by the President of the Kyrgyz Republic Atambaev A.Sh. as "The Year of Morality, Education and Culture".

The Kyrgyz folk psychology vividly exposes the essence of every word. For example: the word "morality" reflects many concepts: love of the Motherland and people, friendship and fellowship, humanism, responsiveness and decency, diligence, conscience, honesty, feelings of duty, respect for seniority, devotion, tolerance and many other positive qualities of a person.

In general, the moral education of the Kyrgyz people has a democratically humanistic orientation. The most deeply rooted traditions of humanism contain a great moral potential, and encompasses such notions as hospitality, respect for elders, caring for the younger, mutual assistance, caring for the surrounding people, and much more.

Let us look into some customs of the Kyrgyz, which, in our opinion, are of utmost importance in the education of the youth. First of all, these are notions that contribute to building respect and respect for the elders, and especially parents. This is for good reason, since the older generation is the source of life wisdom, experience, and transfer their knowledge, labor skills to the younger generation.

In Kyrgyz families, which tend to have many children, there is a kind of cult of senior members of the family, including parents, grandparents, brothers or sisters or just relatives. Seniors and juniors follow moral and ethical behavior patterns in the presence of elders. Advice given by elders is implicitly accepted and implemented. "*Karynin sozun kapka sal*" - "*Listen and follow the word of the elder.*" At the same time, the Kyrgyz families care their youngsters: "*Uluunu-syyla, kichini-urmatta*" - "*Honor the elder, and respect the younger*". This is the meaning of one of the widespread popular edifications.

All this suggests that the cultural values of mutual respect and care are dominant in the relations between the senior and junior. Respectful and reverential attitude towards elders facilitates the work and life of elderly people, prevent them from feeling lonely and ensures a calm old age. Many family and household traditions and rituals are revitalized everywhere.

In preserving rational identity and the search for their own place in the global community, Kyrgyz people have always attached great importance to the family and community life.

A whole complex of traditions, customs and rituals that were developed for centuries regulate the relationship between different social groups, peoples. These are relations between a husband and a wife, a mother-in-law and a daughter-in-law, parents and children and etc. inside a family. These rules were passed on from generation to generation.

The meaning of what has been said can be found in the tradition of the "terge". According to this tradition, a married woman should not call any of her husband's relatives by name. She should not call by names even the younger brothers and sisters of her husband. Instead she must use other words. For example, "kichine bala [younger brother]", "kichine kyz [younger sister]", etc., seniors - "ezhe [sister]", "baike [brother]", parents - "apa", "ata" [Dad, Mom].

Interesting in this context is that some words are homonyms of personal names. For example, the word "bolot" (meaning - *will be*) and the male name "Bolot". In this case, a woman replaces this word by another one if her husband happens to have a male relative with the name Bolot. This tradition still exists, especially in the villages and remote regions of the country, but not in such a strict parameters as it existed many years ago. Besides, not long ago, wives had no right to call their husbands by name. Today this tradition is outdated. The reason for this is in the very conditions of marriage. If previously marriages between young people were arranged by



their parents, today they are the result of long, friendly relations based on mutual love.

Another tradition is "jugunuu", which is preserved mainly in the Issyk-Kul region. This tradition contains elements of education of respect for the elders, but mainly of the daughter-in-law to the husband's parents. "Jugunu" means to bowing with arms crossed. This is a kind of greeting expressed by the daughter-in-law every day, when she meets parents. The positive in this tradition is the fact that after "jugunu" action, the person to whom it was intended responds back with good wishes. For example, "tilegin bersin" (let your dreams come true), "өмүрлүү бол" (long years of life). This tradition plays an important role in establishing warm friendly relations between the daughter-in-law and her husband's parents.

However, today attention is often given only to the external form by disregarding their basic deep essence. This could be seen in overcrowded retirement homes and children's shelters, abandoned old people and street children.

Kyrgyz people have always treated girls, women and especially mothers with respect and admiration. They would listen to their advices and seek their opinions. As noted in many historical sources, Kyrgyz women were free, never diminished. Such respectful attitude to the girl in the past Kyrgyz people associated with the short stay of girls in parental homes, with early marriage and leaving the family. Kyrgyz people treat girls as "*Kyz ubaktiluu konok*" (*A girl is a temporary guest*), and therefore girls must enjoy the respect that is supposed to be rendered to the guest. But at the same time, Kyrgyz society would make strict demands on the moral upbringing of girls. This was the motive for a particularly respectful attitude towards a girl in the past. Today, it is disappointing to note that the traditional attitude towards a girl and a young woman among the modern youth has changed for the worse.

Today, it is rare to see reverential attitude to a woman, characteristic of the recent past.

This kind of attitude is reinforced by the "historical" debate in the Jogorku Kenesh (Kyrgyz Parliament) about the possibility of adopting a law on polygamy. According to the statements made in the mass media of the country, many Kyrgyz parliamentarians really contemplate such a possibility. In their view, the law should not prohibit men from marrying twice. The main reason why this is possible is the difficult material situation of women in the country ... Thus, at the state level, the parliament revived not the best traditions, paying attention to the form, and not their content. Such an ill-considered step can lead to undesirable consequences.

In the Kyrgyz family, the name-giving was of great importance. This tradition is associated with the future well-being of a person as people put a certain content into the name, which should have affected the the destiny of a baby.

With the consolidation of Muslim ideology, a name was given immediately after the birth of a child by religious person (*Moldo*), or religious clerk (*azanchy*) or often by the father of a child. Among the Kyrgyz there were many names of Arab origin, but still most of them were of national origin. Names would be associated with good wishes. The names associated with animals and birds were given most often in families where children would often die. These same families would try to give children names that meant long life.

A new-born baby would be put into the cradle on the fifth or seventh, or the second or third day, if there was a ready-made old cradle. On this day a special treat (*beshtik toi*) would be organized, and guests were invited. Putting the child in a cradle was accompanied by a special ritual. On the fortieth day after the birth of a child, the guests gathered again, and a treat was arranged. A "dog shirt" (*it koinok*) that was put on a baby would be removed and the baby was given a new shirt - *kyrk koinok*. The latter had to be sewn from forty pieces of various materials that the mother of the child would collect from neighbors.

Often, on the day of cutting a newborn's hair, his mother's brother (*tayake*) would bring all the clothes for the baby and give him a cattle.

In a family in which boys did not survive, a new-born boy would have a bracelet on his legs, an earring in one ear, hair braided in pigtail, and would be dressed like a girl before circumcision.

Mothers' love for children was emotionally expressed in tender and affectionate lullabies (*beshtik yr*). Such songs contain persuasion not to cry, various wishes to the child, biographical moments from the life of a mother and relatives, personal experiences of a mother, and tales.

All these customs and family rituals exist in Kyrgyz families today. They are somewhat simplified, and used most often in villages.

Cultural values of the Kyrgyz family inherited from previous generations encompass customs associated with traditional hospitality, the desire to help each other, support in trouble. Sharing the single piece of bread with a guest or a person in trouble was a sacred duty. The Kazakh scientist Valikhanov, visiting Kyrgyz, wrote: "The venerable manap Borombai offered me a horse and a piece of silk cloth as a gift, saying that it's not a good thing to let a guest leave without a commemoration. I assured him that I had already been awarded a gift and that I would never forget his hospitality - I will keep it in my heart. "

"The Kyrgyz are an unusually hospitable people - V.V. Radlov, a Russian anthropologist wrote - ... this hospitality of the elders was passed onto children as "a model of respect for people". Juniors in the family were assigned ritual duties, such as helping a guest to get off the horse, holding a house, taking overcoats, pouring water to wash their hands, etc. By doing this the youngsters would try to get guests' blessings they believed to have had supernatural protection from evil beginnings.

This way of life is reflected in the mentality of the Kyrgyz people, who value openness and tolerance, a friendly attitude to other peoples, ethnic groups, a commitment to cooperation and compassion. All these qualities have developed over the centuries and reflect the wisdom of many generations, and therefore need to be integrated into the modern life of Kyrgyz society. The presence of various ethnic groups enriches the spiritual and economic potential of Kyrgyzstan. Therefore, it is important that the collective life of representatives of different peoples is based on the best traditions of interethnic relations and norms of universal morality.

At all times and among all people, education was based on folk customs, traditions, rich experience of oral folk art. Kyrgyz folk psychology was also formed step by step, stage by stage, integrating all the most valuable and important elements in the life of the Kyrgyz family.

Many progressive national traditions and customs have survived and continue to exist in the modern Kyrgyz society, and will exist as long as they meet the interests of the people. Therefore, our task is not to discard traditions and customs as obsolete phenomena, but try to study our past deeply and comprehensively, and absorb the most valuable and positive. The revival of feelings of national dignity and patriotism is impossible without qualitative comprehension of the traditions and customs of ancestors, which serve as the spiritual foundation that generates a healthy national ambition for intellectual and educational take-off, the desire to make one's life better.

In the upbringing of children, modern Kyrgyz families should fully use the whole spectrum of national traditions, customs, all the wisdom accumulated by millennia and transfer them to future generations.

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**Social sciences****Economy****УДК: 339.1(575.2) (04)****Lu Chunxia***KNU n.a. J. Balasagyn, Bishkek***Лу Чунься***КНУ им. Ж. Баласагына, Бишкек***The history of development of trade and economic relations between Kyrgyzstan and China on the Great Silk Road****История развития торгово-экономических отношений между Кыргызстаном и Китаем на Великом Шелковом пути****Улуу Жибек Жолунун Кыргызстан жана Кытай соода-экономикалык мамилелеринин өнүгүү тарыхы**

**Annotation:** the article explores historical stages of the development of the Great Silk Road and the involvement of Kyrgyzstan and the peoples historically living on its territory in the trade and economic exchange with China. The modern interest in the Great Silk Road, the possibility of its revival in a new mode, determine the urgency of studying its history, the stages of its development, the historical trade and market experience of countries and peoples entering the system of its ancient routes.

**Аннотация:** в статье исследуются исторические этапы развития Великого шелкового пути и включенность Кыргызстана и народов, исторически проживающих на его территории, в торгово-экономический обмен с Китаем. Современный интерес к Великому Шелковому Пути, возможность его возрождения в новом формате определяют актуальность изучения его истории, этапов его развития, исторического торгово-рыночного опыта стран и народов, входящих в систему его древних маршрутов.

**Аннотация:** макалада Улуу Жибек Жолунун жана анын аймагында Кыргызстандын, ошондой эле эзелтеден бери жашаган башка элдердин, Кытай менен болгон соода-экономикалык алмашуу тажрыйбасына катышуусунун тарыхый этаптары изилденет. Азыркы Жибек Жолуна болгон кызыгуусу, анын кайра жаралуу мүмкүнчүлүгүнүн жаңы форматы Жибек Жолунун тарыхынын, өнүгүү этаптарынын жана ал системага кирген элдердин тарыхый соода-рыноктук тажрыйбасынын актуалдуулугун айкындайт.

**Keywords:** the Great Silk Road; the history of the Great Silk Road; the revival of the Great Silk Road; globalization; trans-Eurasian phenomenon; caravan trade; caravan routes; trade and economic relations; Economic belt of the silk road.

**Ключевые слова:** Великий шелковый путь; история Великого шелкового пути; возрождение Великого шелкового пути; глобализация;

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*трансевразийский феномен; караванная торговля; караванные пути; торгово-экономические отношения; Экономический пояс шелкового пути.*

**Негизги сөздөр:** Улуу Жибек жолу; Жибек жолунун тарыхы; Жибек Жолун калыбына келтирүү; глобалдашуу; кербен соода; кербен; соода-сатык жана экономикалык карым-катнаштар; экономикалык зона.

Globalization as one of the leading trends of world development at the turn of the 20th and 21st centuries has an increasingly profound impact on the world economy, trade and economic relations between countries, regions and entire continents. As an engine of globalization processes, world trade is rapidly becoming an integral part of a unified system of capital, technology, transport communications and information. The international Silk Road revitalization project, which provides for the prospective development of trade and economic relations between Asia and Europe, China and the countries of Central Asia is consistent with the trends towards globalization.

Current public interest in the Great Silk Road (hereinafter GSR), the possibility of its revival in new formats determine the urgency of studying its history, the stages of its development, the historical trade and market experience of countries and peoples entering the system of its ancient routes. The Great Silk Road Doctrine is now acquiring a new significance and relevance for Kyrgyzstan. The intercontinental deadlock position of the Great Silk Road is transforming into one of the linkages that connect West and East. This was the role that Kyrgyzstan played in the era of the Great Silk Road. And the task of modern economists is to use such favorable changes and historical experience with maximum efficiency. The Kyrgyz-Chinese relations have deep historical roots and play a special role in the economic policy of Kyrgyzstan.

This article explores the historical stages of the development of the great Silk Road and the involvement of Kyrgyzstan and the peoples historically living on its territory, in trade and economic exchange with China.

As a system of caravan trade routes, the Great Silk Road, which connected Eurasian countries starting from Western Europe to China between the 2<sup>nd</sup> century BC and the 15<sup>th</sup> century BC is an outstanding phenomenon in the history of mankind. It was the longest (more than 7 thousand km) in the pre-capitalist era, and connected different civilizations and socio-economic structures. GSR is a realized aspiration of different peoples to exchange cultural values, conquest living space and markets for goods, and a powerful tool to develop trade and the economy.

The term "Great Silk Road" was first used in the historical and economic sciences after the K. Richthofen, a German historian published his book "China" in 1877. Although a unified system of caravan communications developed only by the end of the 2<sup>nd</sup> century BC, some routes existed much earlier. The route of "lapis lazuli" that served as a

channel to transport semiprecious stone lapis lazuli from the Pamirs to the countries of the Middle Mesopotamia and India was active in the 3<sup>rd</sup> millennium BC. The "jade path" began to be used by end of the 2<sup>nd</sup> millennium BC to transport gems from Central Asia along the eastern path in exchange for silk from China. In the middle of the 1<sup>st</sup> millennium BC these two caravan routes began to merge, but because the trade went through numerous intermediaries, Chinese and the people of the Mediterranean had no idea of the possibility of direct trade with each other.

Zhang Qian, a Chinese official played an important role in the formation of the single Trans-Eurasian Great Silk Road. In 138 BC. he went on a diplomatic mission to the nomadic *Yuezhen people* to persuade them to ally Chinese Han Empire to fight against the *Huns nomads* who were attacking the empire from the North. Zhang Qian became the first Chinese who visited Central Asia. There he saw the huge demand for Chinese goods, and learned many things that the Chinese were unaware of. Upon his return to China, Zhang Qian presented to the emperor a report on the goods he saw during the trip, and about the benefits of China's direct trade with the states of Central Asia.

In 123-119 BC. Chinese troops defeated the *Huns*, and the way from China to the west became safe. Thus, the history of the Great Silk Road as a cross-cutting route connecting China, India, the Middle East and Europe begins in the end of the 2<sup>nd</sup> century BC.

Geographically, the Great Silk Road originates in the city of Chang'an (modern Xian) located in Shaanxi Province. Further, the route continues along the northern foothills of Tibet, northern branch of the Tarim basin, around the Takla-Makan desert and crossing the Tien-Shans, goes to the Ferghana valley, to the Dunhuang city.

This is the area where the culture and civilization of ancient China collided with those of Central Asian countries. The trade route here in Dunhuang city began to branch into two directions and routes: toward the North and the South. Southern route stretched from the north of China through Central Asia to the Middle East and North India. The northern route - from the north of China through the Pamirs and the Aral Sea to the Lower Volga and the Black Sea basin.

The territory of the Tien-Shan and modern Kyrgyzstan was crossed by three branches of the Great Silk Road:

Caravans used the Pamir-Altai route from the Mediterranean Sea through Iran to get to Merv city. From Merv city the road split into two. One route continued to the city of Termez, through the Amu Darya, then along its tributary Kyzyl-Su went up to the Altai Highlands. Further caravans moved the Irkeshtam, and along the Kuk-Su river reached Eastern Turkestan.

The Fergana route from Merv led through Bukhara and Samarkand to Khujand and then to the Ferghana valley. Further, towards East, the caravans visited the cities of Osh and Uzgen. Then they continued on a difficult road



up the river Iasi to the Central Tien Shans, to the town of Atbashi. From Atbashi, caravans moved south to the limits of East Turkestan, and others - to the Issyk-Kul lake, to the town of Barskhan.

The Chui route was the busiest one in the early Middle Ages. Caravans from Samarkand would come to Tashkent, then on the foothills of the Kyrgyz range reach the Chui valley. Here the caravan route went through a number of trading cities, where merchants stopped for trade and exchange of their goods. The largest of these cities were Novaket and Suyab. From Suyab through the Boom gorge, the caravans headed to the Issyk-Kul lake. Along its southern coast, through the towns of Yar, Hod and Ton, caravans reached Barskhan (modern Kaisary district). There were two active routes from Barskhan. One led north through the San-Tash Pass to the Mongolian steppes and the Kyrgyz in southern Siberia. The other continued through the Djuuk Pass to the Central Tien Shan and through the Bedel Pass to East Turkestan. From East Turkestan, all the roads led to China.

The development of the Great Silk Road depended on a whole range of trade, economic and geopolitical factors. The exchange of commodities at the initial stages of GSR development was directed mainly from east to west. In the Roman Empire during its greatest periods Chinese silk and other Oriental goods were in great demand. With the decline of the ancient society and the naturalization of the economy in Western Europe, the demand for eastern goods decreased, and trade on GSR suffered a decline. Only from the 11th century, with the development of feudal trade relations, the Western European countries once again began to actively buy eastern goods.

The development of the Great Silk Road also heavily depended on the geopolitical confrontation between different countries for control over caravan routes. The collection of duties from trade caravans gave a high income to the rulers of Asian states located along the caravan routes. Therefore, they sought both to provide merchants with security, and gain control over as much of the routes as possible. There are three short periods when the GSR was controlled by one state: the Turkic Khaganate in the last third of the 6<sup>th</sup> century, the Genghis Khan empire in the 2<sup>nd</sup> quarter of the 13<sup>th</sup> century, and the empire of Timur (Tamerlane) in the last third of the 14<sup>th</sup> century.

Up to 3<sup>rd</sup> century AD, Eurasia was controlled by four empires - the Roman (Mediterranean), Parthian (Middle East), Kushan (India, Afghanistan, Central Asia) and Han (China). These strong empires ensured the stability of caravan routes. It was followed by the period of deterioration of the Great Silk Road, which lasted til 6<sup>th</sup> century. Various nomadic tribes (*Huns, Avars, Oguzes*, etc.) controlled different parts of the Silk Road for



several centuries. In the second half of the 6<sup>th</sup> century, a strong tribe of Turks tried to capture the entire Silk Road. In 570-600, the Turkic Khanate united the territory of Central Asia and all the Eurasian steppes from the Black Sea to northern China. However, this period of centralization was short. A number of nomadic states (the *Khazar Kaganate*, the *West Turkic Kaganate*, the *East Turkic Khaganate*, the *Uighur Kaganate*, etc.) formed on the wreckage of the disintegrated Turkic Kaganate controlled only local segments of the route. Over the next century and a half, the Chinese Tang empire played the leading role in controlling the Central Asian routes of the Great Silk Road. While warring with nomadic tribes, the Chinese placed under their control all Central Asia, from Samarkand to Bukhara. This period (7<sup>th</sup> century - first half of the 8<sup>th</sup> century) is often referred to as the period of the highest prosperity of the Trans-Eurasian trade.

From the first half of the 8<sup>th</sup> century, the western routes of the Great Silk Road were under the control of the Arab Caliphate. China attempted to establish control over the Central Asian section of the GSR, but failed: during Talas battle in 751 the Arabs defeated the Chinese army. From this time till the 15<sup>th</sup> century, caravan trade was completely controlled by Muslim merchants. China was unable to retain control even over the eastern section of the road, which was controlled by the Tibetans in the 8<sup>th</sup> century, and the Khitan nomads in the 9<sup>th</sup> century.

The last rise of trade on the GSR was recorded in the 13<sup>th</sup>-14<sup>th</sup> centuries. Having conquered the territory stretching from China to Iran in the 1210s-1250s, the Mongols established a single control throughout the trade route for a century and a half. After the collapse of the Chinggisid Empire, control over the Silk Road was divided between four empires - the Yuan in China, Jagatai ulus in Central Asia, Khulagid Empire in Iran, the Golden Horde in the Caspian Sea and the Black Sea. The Great Silk Road was divided into separate sections, and became an object of constant struggle and dispute between these states.

The rulers wanted to ensure the safety of merchants while they conducted trade or passed through their territories. They received income from customs duties levied along caravan routes. To secure these revenues, the rulers of Asian countries adopted strict laws that protected merchants. But, despite all the measures to protect the merchants' lives and properties, caravan trade was associated with a high risk. In the pursuit of profits, many merchants perished on the road from diseases, attacks of robbers and nomadic tribes, arbitrariness of rulers. If a merchant died at some point in the long journey, his goods were often taken away by a local ruler. Merchants sought to minimize the dangers of doing business not individually, but along

confessional and ethnic lines. To protect themselves from robbers, merchants set out on a dangerous road from city to city with large caravans consisting of hundreds and thousands of armed men. Caravans from China often consisted of 800 loaded cattle.

The decline of the Great Silk Road began in the second half of the 14<sup>th</sup> century. The decline was caused by Timur (Tamerlane), who tried to reunite the main Eurasian trade routes on the territory of his state. During in the 1370-1380s, merchants following the southern road through the Empire of Timur once again received reliable protection. However, during the campaigns against the Golden Horde in the 1389-1395s Timur ravaged the commercial cities of the Caspian Sea and the Black Sea region, which led to the abandonment of the route. Timur's descendants could not retain the powerful Central Asian state that he created. The empire disintegrated, and so did the southern routes.

The final sunset of the Great Silk Road came with the development of merchant shipping. In the 14-15<sup>th</sup> centuries, maritime trade became more attractive than dangerous land caravan routes: the sea route reduced the delivery time twice, one ship carried as much cargo as a very large caravan of 1,000 pack animals.

As a result of these geopolitical and geo-economic factors, the Great Silk Road had finally ceased to exist by the 16<sup>th</sup> century. However, some routes of the Silk Road continued to function. For example, the caravan trade between Central Asia, in particular the Kyrgyz territories and China, did not stop until the 18<sup>th</sup> century.

The destroyed Great Silk Road once again played a crucial role in the history of China in the 20th century, during the civil war in China. In 1939, after the seizure of all Chinese seaports by the Japanese, the Kuomintang government asked the USSR to build an automobile road approximately along the route of the northern direction of the Silk Road. The road ran from the railway station Sary-Ozek to Turksib, through Khorgos, Kulju, Hami, to Lanzhou, for about 3 thousand km. In 1940, the United Kingdom, at the request of Japan, closed the Burmese road, and the Soviet-made Silk Road became the only road through which China could receive help from outside. In the 1937-1941s, intensive military deliveries were carried out along this road, including the new arms. These supplies allowed the Chinese government to hold out in the fight against the Japanese.

The positive outcomes of the long-term operation of the Great Silk Road for all countries and all territories were: development of commodity and money relations, trade and economic relations, various market economy institutions, creation of an international division of labor, boost of export production, and development of transport infrastructure.

The main goods on the GSR in the East-West direction were silk fabrics and raw silk. They were convenient and profitable for transportation for long distances, since silk is very light and was valued in Europe more than gold. China maintained a monopoly on silk until the 5<sup>th</sup>-6<sup>th</sup> centuries, and afterwards it remained as one of the centers of silk production and export along with Central Asia. In the Middle Ages China also exported porcelain, tea, spices, paper, musk, precious stones.

Central Asia exported to other countries Fergana horses, valuable goods such as wild animal furs, grape wines, pomegranates, nuts, horse saddles, leather quivers. Middle Eastern and Central Asian countries were specialized in the production of woolen and cotton fabrics that traveled along the Silk Road to the east, to China. Central Asia supplied to China a variety of woolen products-carpets, veils, bedspreads, carpets, Kyrgyz felt products, horse blankets and sweaters. These products highly impressed the Chinese unfamiliar with the techniques of processing wool, flax, carpet production and palas weaving. The "West - East" route was called "woolen way".

The merchants brought from South and South-East Asia to Europe spices (pepper, nutmeg, cinnamon, cloves, etc.), which were used by Europeans for preserving products and making medicine. The sample artworks of Safavid Iran - carpets, ceramics, bronze, lacquer, cold steel, etc. still excite everyone. Ceramic masters in Kerman, Ijez, Kashan and Tehran knew how to make counterfeits for Chinese porcelain for export. Iranian masters achieved great successes in the processing of metal. They manufactured cold weapons, musket trunks, astronomical instruments, metal utensils, etc. Products of Iranian gunsmiths were exported to Russia and Western Europe. Members of other tribes captured and imprisoned by nomads during their attacks were also sold as slaves.

Central Asia exported camels, highly valued in China, military equipment, gold and silver, semi-precious stones and glassware. Samarkand glass was especially valued for its high quality. It was seen as a luxury item. Exotic items - watermelons, melons and peaches, fat-tail sheep and hunting dogs – were also exported.

Chinese trade trips to Central Asia were stimulated by the desire to obtain famous hourses (argamak) - a highly valued breed of horses. Indeed, the Massagets, Akhal-Teke, or, as they were also called, the Argamaks - were valuable not only in China, but in the entire Eastern world. Nomads, however, constantly needed many goods of sedentary farmers, but could not offer them equivalent goods, and were forced to procure the necessary goods by force, in dangerous predatory raids. The Great Silk Road gave them the

opportunity to find a place in the peaceful division of labor. They began to act as conductors of merchant caravans through deserts and steppes, charging fees for help and security. The Silk Road has become a unique manifestation of the long-term mutually beneficial cooperation of sedentary and nomadic peoples.

The organization of trade for long distances required creation of special conditions for caravan trade, including transit points, specialized bazaars, stable cash payments and protection of property rights of foreign merchants. This market infrastructure was maintained along the Eurasian routes for more than 1,500 years. Its operation was tested for centuries and is fully projected today, under the conditions of revitalizing GSR in the 21<sup>st</sup> century.

The Great Silk Road stimulated the development of commercial cities in medieval Central Asia, which played the role of transit points on caravan routes. In Kyrgyzstan, these are such localities as Djul, Suyab, Navoket, Nuzket, Balasagyn, Barskoon, Tash-Rabat, Osh, Uzgen. Local markets of the most popular goods were organized for foreign merchants. A variety of people worked for the maintenance of trade caravans: translators, money changers, camel drivers, caravan guards, tax collectors. Caravan trade required complex maintenance. Therefore, caravan-sarais were built in towns and villages located along the whole route. The caravan-sarai had hotels for merchants and maintenance personnel, facilities for horses and camels, mules and donkeys, forage and provisions. In the caravan-sarai, one could sell or buy wholesale goods, learn commercial news and prices. There were special merchants or even companies that were contracted to deliver goods. The nomadic cattle breeder Kyrgyz often accompanied caravans, provided cattle for food and transportation. Whole families and villages were involved in caravan trade. The vitality of Central Asian trade cities depended on servicing of caravan trade, the destruction of the Silk Road led to the decline of these cities as well.

Large trade transactions between merchants from different countries required the use of universally recognized currencies. Gold Byzantine and silver Arabic coins were used in transaction throughout the Great Silk Road, including China. But the Silk Road merchants did not have enough cash for transactions, and moreover having cash in making long journeys was fraught with dangers. Therefore, merchants widely practiced barter transactions (goods for goods), using cash only to cover the difference in the cost of goods. Trade was mainly barter, and money served only as a unit of account. Merchants evaluated their goods in a certain amount and exchanged it to

another product with an equivalent price. The merchants of the Silk Road created an exceptional precedent - they began using checks ("check" from the Persian means "receipt"). Going on a trade trip, merchants would give their cash to a currency exchanger and take a receipt. These merchants could present the receipt in those Silk Road cities where currency exchanger had his trusted people, and receive again cash less fee for services.

Due to the operation of the Great Silk Road various peoples learnt about new consumer goods. Western Europe won the most from the spread of new products. Western European countries received through the Silk Road mostly expensive luxury items (silk fabrics, spices, carpets, porcelain ware, etc.) for the greater good of upper classes. Silk fabrics improved personal hygiene of Europeans, spices promoted the development of pharmaceuticals, long-term storage of products, paper made in China and Central Asia began to displace parchment and papyrus, thus reducing the cost of replicating hand-written books.

The Silk Road promoted the spread of not only goods, but also technologies of their production. During cultural contacts along the Silk Road, the West borrowed mainly industrial "novelties", whereas the East borrowed agricultural. Sericulture was introduced in East Turkestan in the 1-2<sup>nd</sup> centuries AD, Iran - in the 5<sup>th</sup> century, and Greece in the 6<sup>th</sup> century. Having bought the paper from eastern merchants, the Europeans learned how to make it in the 13<sup>th</sup> century. Thus, gunpowder was discovered in China in the 9<sup>th</sup> century, and first guns shoots with gunpowder were invented in the 14<sup>th</sup> century. The place and time of the gun invention are unknown. Specialists indicate China, Arab countries, and Western Europe. Europeans were never able to gain some technical secrets of Oriental artisans (damask weapons, porcelain ware) to in the era of the Silk Road.

China itself learnt about many new products due to the Great Silk Road. When the Chinese traveler Zhang Qian returned from Central Asia, he brought information not only about the Fergana horses, but also the fodder of seeds, which had long been cultivated in Central Asia, grapes (previously, China did not know anything about grapes or grape wine). Later, the Chinese have mastered a few more agricultural crops - beans, onions, cucumbers, carrots, etc. - due to caravan trade.

The history of trade and economic relations between China and Kyrgyzstan is closely connected with the history of the Great Silk Road. Currently, GSR is being revitalized in a new format. China has become the initiator of one of the large-scale intercontinental projects. The Chinese initiative "One belt - one way", put forward in 2013 by Xi Jinping, is a set of

various economic projects. The "Economic Belt of the Silk Road" is a long-term geopolitical initiative, which is especially relevant and significant in connection with the need to expand trade and economic cooperation, search by all countries of new markets for products and direct investments for large-scale projects. The main essence and idea is to link China with Europe through Central Asia and Russia. Major accent in this superproject is made on the global economic and political partnership, the construction of a transit-transport system and the elimination of various trade and investment barriers. Unification of all Chinese initiatives into one concept "One belt - one way" talks about a serious geopolitical component of these projects.

Kyrgyzstan occupies an important place in this project. During the years of independence, Kyrgyzstan has concluded with China more than 10 state investment agreements worth over \$ 1.812 billion (excluding grants). In the early 1990s, these were large commodity loans, as well as loans for the construction of a Kyrgyz-Chinese paper mill, rehabilitation of road infrastructure, in particular, the Osh-Sary-Tash-Irkeshtam highway, and in the last 10 years - the Bishkek-Naryn- Torugart highway. New Kyrgyz-Chinese agreements have been signed for the coming years to restore two road sections in the regions. The volume of investment exceeds \$129 million. Modernization of the Bishkek Centralized Heating Plant (BCHP) is one of the most significant projects in the energy sector. The Chinese partners are committed to allocate \$386 million for this project. The investment has been made, and currently large-scale renovation works are underway at BCHP. The construction of the 500 kV Datka-Kemin power line and the Kemin substation (\$ 389 million) were completed. Currently the construction of high-mountain lines in the south of the country is underway.

The first phase of construction of an alternative highway "North-South" with a length of 154km is in progress (worth \$ 400 million).

It should be noted that China allocates loans to Kyrgyzstan on preferential terms. Agreements stipulate a grant component of at least 35%, and repayment terms of six to twenty years.

Chinese investors find as most attractive the manufacturing industry (27.74% of total incoming FDI); trade, car repair, household goods and personal items (7,95); financial injections into transport and communications (3,16), other sectors (3,76%). During these years, 57% of the total investments to Kyrgyzstan constituted real estate transactions, leasing and provision of services to consumers. In addition, China's interest in investing in professional, scientific and technical sectors is growing. Currently, the most promising areas of bilateral cooperation have been identified. The are:

construction of the China-Kyrgyzstan railway, the construction of a ring road around the Issyk-Kul lake and the transfer of some production facilities from China to Kyrgyzstan. According to the suggestion of President Almazbek Atambayev, the "One belt - one way" project covers the building through Kyrgyzstan of a technical network designed for the construction of a "digital" silk road.

Thus, China today is gradually involving Central Asia and Kyrgyzstan in the "Economic Belt of the Silk Road", which has a huge range of projects covering almost all economic sectors. Therefore, the attractiveness of this economic belt for Kyrgyzstan increases due to the long-term goals of this project and the large scale of trade, economic and investment cooperation.

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## Trade Finance Mechanisms in the Kyrgyz Republic

### Механизмы торгового финансирования в Кыргызской Республике

#### Кыргыз Республикасында сооданы каржылоо механизмдери

**Abstract:** the article explores the term 'Trade Financing', and a range of financial instruments of trade financing by dividing them into three categories. The scale of trade financing in the world is discussed. The article presents the analysis of trade financing by the banks of Kyrgyzstan as well as the need of export credit across regions of the Kyrgyz Republic.

**Аннотация:** в статье исследуется термин «торговое финансирование». Приводится перечень финансовых инструментов торгового финансирования, которые распределены на три категории. Указаны масштабы торгового финансирования в мире. Проведен анализ торгового финансирования банками Кыргызстана, а также потребность в кредитовании экспорта по регионам Кыргызской Республики.

**Аннотация:** макалада «соода каржылоо» термини изилденди. Соода каржылоо куралдарынын тизмеси көрсөтүлдү жана алар үч топко бөлүштүрүлдү. Дүйнөдөгү соода каржылоо масштабы аныкталды. Кыргызстандагы банктардын соода каржылоосу, ошондой эле Кыргыз Республикасынын аймактарынын экспорттук кредиттерге муктаждыгы изилденди.

**Keywords:** Trade financing; financial instruments; letters of credit; banks; export operations; regions; export credit.

**Ключевые слова:** торговое финансирование; финансовые инструменты; аккредитивы; банки; экспортные операции; регионы; экспортное кредитование.

**Негизги сөздөр:** соода; каржылоо; каржы куралдары; аккредитивдер; банктар; экспорттук операциялар; региондор; экспорттук кредиттер.

'Trade finance' is a selected term for financial instruments that allow trade transaction of goods and services between sellers and buyers. The term relates to the process of financing of certain activities to commerce and international trade. However, it does not have a single unified definition in Economic literature and in practice.

There are three basic definitions of "trade finance" [2]:

1. Trade Finance is a set of economic relations established to maintain trade and investment relations with industrial economies (organization), as well as access international markets.

2. Trade finance refers to domestic and international trade transactions. When a buyer purchases goods or services from a seller, such financial activities are called 'trade finance'.

3. Trade finance includes a range of different financial services and procedures that facilitate payments and transactions.

The third definition accurately reflects the essence of the term 'trade finance' and in a broad scale, including the financial agreements of commercial and corporate transactions. [1]. This understanding suggests that trade finance is related to the process of financing certain activities covering commerce and international trade, but as well as domestic financing. This definition also reflects main differences in trade which have been reviewed within global trade and export finance

As it is known, trade finance includes the following list of financial instruments:

- Letters of Credit;
- Standby Letter of Credit (SLOC);
- Encashment;
- Guarantees;
- Factoring;
- Forfeiting;
- Leasing;
- Bill of Exchange (BOE);
- Target Loans Direct provided by foreign financial organizations;
- Contract Financing
- Pre-Export Financing and Post-Export Financing;
- Trade Credit;
- Invoice Discounting;
- Asset-Based Lending;
- Supply Chain Finance;
- The Bank Payment Obligation (BPO)
- Tolling.

These financial instruments of trade financing for export operations can be structured into three categories:

1. tools for making payments;
2. tools for risk reduction;
3. tools for mobilizing capital.

This structure is made from the needs of exporting companies.

In one form, it is managing the capital required for international trade to flow. Yet there is a wide range of tools at the financiers' disposal, all of which determine how cash, credit, investments and other assets can be utilized for trade.

While a seller (or exporter) can require the purchaser (an importer) to prepay for goods shipped. Banks may assist by providing various forms of

support. In this regard, the role and importance of financial instruments proves the importance of local capital markets for financing development. Popular types of financial instruments of trade finance include:

- Letters of Credit;
- Encashment; or collection;
- Guarantees;
- Invoice Discounting;
- Trade Credit;
- Bill of Exchange (BOE);
- Target Loans Direct provided by foreign financial organizations;

Most complex types of financial instruments provide for trade finance include:

- Assets Based Lending
- Contract Financing;
- Leasing;
- Pre-Export Financing and Post-Export Financing;
- Supply Chain Finance;
- Tolling;
- Factoring;
- Forfeiting;
- The Bank Payment Obligation (BPO)

The complexity of the use of the above financial instruments related to hedging of risks, the payment of money claims, account receivable, protecting from insolvency of debtors, payment deferral and other factors, therefore they are rarely used in practice.

World Trade Organization (WTO) is in the report of “Trade Finance and SMEs: Bridging the Gaps in Provision” (2016) marks that the scales of the world trade financing in 2014 are estimated from 12 to 18 trillion of dollars of the USA [3]. Thus, near one third of the world trade financing supported by the number of financial instruments.

One of the main financial instruments in the world also letters of credit, which are financed by trade operations worth about \$2.8 trillion. Backlog of the demand of the trade financing in 2014 was more than \$1.4 trillion in the whole world [3]. The report ‘Trade Finance and SMEs: Bridging the Gaps in Provision’ also indicates that:

- 80 percent of world trade financed due to credits or insurance of credits, but a scope is uneven. A lack of the trade financing is a substantial barrier for the development of trade, especially in developing countries.
- small and middle-size enterprises run into the most obstacles in the receipt of access to financing. In some large developed countries to one third of small and middle enterprises have such problems. There

are 20 percent of export of the USA, and 40 percent of export small and middle enterprises from EC.

- In the whole world, more than 50% requests of small and middle enterprises for trade financing and 7% of multinational corporations get a negative answer.
- small and middle enterprises in developing countries meet great difficulties in the receipt of access to the trade financing. The evaluation cost of backlog of demand on the trade financing in Africa makes \$120 milliards and \$700 milliards in the developing countries of Asia. Overcoming of these blanks in providing would open trade potentials of many thousand small and middle enterprises all over the world.
- Defects in the grant of the trade financing are the highest in the borderline zones of countries, where trade possibilities increase.

In connection, with this, since 2016, WTO has accepted the following measures:

- ✓ Strengthening the existing programs of development of the trade financing for shortening of the deficit of financing on \$50 milliards of dollars of the USA;
- ✓ Reduction of break in knowledge in a local bank sector for expansion of instruments for the trade financing by educating, at least, 5000 specialists during next five years;
- ✓ Perfection of monitoring of the trade financing grant for an exposure and reacting on blanks, especially concerning possible future financial crises.

In addition to addressing gaps in the provision of trade finance certain action are used in three areas:

- 1) Promoting global financial institutions and participation in the expansion trade finance
- 2) Increasing the capacity of local financial institutions
- 3) Providing support measures to increase the availability of trade finance via multilateral development banks.

What is the current situation in the use of mechanisms of trade financing for export operations in Kyrgyzstan?

The main services provided by the Kyrgyz Banking System for trade finance are the traditional types of financial instruments, such as:

- Trade Credit,
- Letters of Credit,
- Collection,
- Bank guarantee,
- Bill of exchange and Promissory Note.

**Table 1** presents the types of financial instruments of banks on trade financing data obtained from the sites of banks of Kyrgyzstan

Table 1.

*Financial instruments of trade finance used by banks of Kyrgyzstan*

OJSC Aiyl Bank	OJSC "Commercial bank Kyrgyzstan"	CJSC "Demir Kyrgyz International Bank"	OJSC "RSK Bank"	CJSC "Kyrgyz Investment and Credit Bank" (KICB)	OJSC "Optima Bank"
Trade Credit	Trade Credit	Trade Credit	Trade Credit	Trade Credit	Trade Credit
Export and Import Letter of Credit	Export and Import Letter of Credit	Export and Import Letter of Credit	Export and Import Letter of Credit	Export and Import Letter of Credit	Export and Import Letter of Credit
Bank Guarantee	Bank Guarantee	Bank Guarantee	Bank Guarantee	Bank Guarantee	Bank Guarantee
		Simple and Bills of Exchange	Simple and Bills of Exchange	Simple and Bills of Exchange	Encashment

Below are the reasons for these limited trade financing services:

- Small volume of export operations, therefore, a small number of loans and types of financial instruments that do not require the introduction of new financial tools;
- The small size of bank lending, which is only 22% of GDP (2015), which does not encourage banks to introduce new financial tools;
- Challenging trade finance banks are not applied due to the fact, that as deposit is not taken as contracts, working capital, accounts receivable, and according to the regulations of the National Bank of the Kyrgyz Republic (NBKR) on the formation of a reserve for potential losses from lending activities (for bad debts), banks are required to form the high debts. It is not profitable to banks.

With such a small amount of loans to the economy, entrepreneurs in any case, take the loans with current financial instruments.

Innovation in the provision of financial instruments in the banking system of the Kyrgyz Republic is implemented very slowly.

In 2013 although with great difficulty complex types of financial instruments of the export operations of the «loan contracts» were introduced which were implemented under the contract, the Ministry of Defense to supply goods to Afghanistan. The Ministry of Defense signed a contract with the entrepreneurs of Kyrgyzstan, the Bank of the Ministry of Defense opened a letter of credit, and local banks were under contract and letters of credit, loans in local banks. There were six contracts for CJSC "Demir Kyrgyz International Bank", OJSC "Bakai Bank".

In addition, NBKR brought the provision on the formation of the RPPU and equated the RRPP as a pledge of real estate on a financial instrument "loans secured by contracts".

In order to determine exporters' need for credit resources, calculations were made, according to Asian Development Bank's (ADB) methodology [4], which is used to calculate the demand for credit resources of women entrepreneurs in the Kyrgyz Republic. The need for credit resources estimated as 25% of the average revenue of entrepreneurs.

Meetings with the heads of the companies producing products, both to the domestic market and to the external market, confirm that the need for credit resources to produce goods is on average 25% of the sales amount. In general, credit resources need to purchase raw materials, pay administrative costs, transport, logistics and other expenses. These funds expected to be provided with trade finance instruments.

This amount of financing together with the means of enterprises allows maintaining the achieved volume of exports and increasing the volume of output by 10-30%.

When applying this methodology to determine the necessary need for exporters in credit resources, it is necessary to take the volume of export earnings and 25% of this is the need of exporters with lending.

Table 2 shows the calculation of exporters' need for credit resources, which can be provided with Trade finance instruments.

The exporters need an average of 400-450 million US dollars, in the regional context the greatest need is needed for entrepreneurs in Bishkek, then for entrepreneurs in Chui, Jalal-Abad and Osh regions.

**Table 2**

*Export and requirement in crediting of export operations on the areas of Kyrgyz Republic*  
*Million USD*

Region	2012		2013		2014	
	Export need for loans	Need for loans	Export	Need for loans	Export	Need for loans
Batken	34,7	8,7	41,3	10,3	15,9	4,0
Jalal-Abad	137,7	34,4	88,2	22,1	106,2	26,6
Issyk-Kul	12,6	3,2	15,1	3,8	26,9	6,7
Naryn	0,4	0,1	0,4	0,1	0,7	0,2
Osh	41,3	10,3	19,3	4,8	23,9	6,0
Talas	33,2	8,3	56,0	14,0	46,2	11,6
Chui	125,5	31,4	117,8	29,5	159,7	39,9
Bishkek	1 163,1	290,8	1 294,6	323,7	1 161,6	290,4
Oshcity	32,5	8,1	56,0	14,0	43,1	10,8
<b>Total</b>	<b>1 581,0</b>	<b>395,3</b>	<b>1 688,7</b>	<b>422,2</b>	<b>1 584,2</b>	<b>396,1</b>

Requirement in credits and the low share of the credit briefcase of the banking system, sent to the export operations show that in part of access to finances for export operations there are many problems, without solving of that development of export will be problematic. These problems include high requirements for collateral security, interest rates, and limited financial instruments of banks.

To solve these problems one can offer to initiate the introduction of proposed changes and additions:

1) The Regulation of the National Bank of the Kyrgyz Republic "On Classification of Assets and Corresponding Withholdings in Reserve on Coverage of Potential Losses";

2) The decision of the Committee on Monetary Regulation of the NBKR requirements for a pledge on credit auctions of the NBKR for commercial banks.

Introduction of the indicated recommendations allows bringing down the requirements of banks to the mortgage providing, gradually to bring down interest rates on credits, to improve potential of export enterprises and increase their profit yield at implementation of requirements on quality parameters.

The financing of export transactions, banks can carry out at the expense of own funds raised with the credit auction of the National Bank of the Kyrgyz Republic, funds of the Russian-Kyrgyz Development Fund, and funds raised on international markets.

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## Political science

УДК: 32:330

*Asankanova A. A.**Institute of history, NAS KR, Bishkek**Асанканова А. А.**Институт истории НАН КР, Бишкек*[abyla@mail.ru](mailto:abyla@mail.ru)**From systematic crisis in the economy towards the revolution****От системного кризиса в экономике – к революции****Экономикадагы системдик кризистен – революцияга карай**

**Abstract:** *the focus of the article is on the data published in Mass Media during 2005-2010, particularly, anti-national economic policy of former President of Kyrgyzstan Kurmanbek Bakiev. The policy pursued by him led the country to systematic crisis in economy and governance becoming basis for national revolution in April 2010.*

**Аннотация:** *в статье приводятся данные, опубликованные в СМИ КР в 2005-2010 годах и свидетельствующие о коррупционной и антинародной экономической политике К. Бакиева и его семейного клана. Такая политика привела к системному кризису в экономике страны и стала одной из важнейших причин народной революции в апреле 2010 г.*

**Аннотация:** *макалада 2005-2010 жылдарда маалымат булактарында жарык көргөн экс-Президент Курманбек Бакиевдин экономика жана башкаруудагы кыргыз улутуна каршы коррупциялык саясатын ачык баяндайт. Ошондой эле мындай саясаттын 2010-жылдагы революциянын негизи болгонун аныктайт.*

**Keywords:** *anti-national economic policy; systematic crisis; national revolution; stealing people's property; inflation; illegal privatization; energy crisis.*

**Ключевые слова:** *хищение народной собственности; рост цен; незаконная массовая приватизация; рейдерство; энергетический кризис.*

**Негизги сөздөр:** *улутка каршы экономикалык саясат; системалык кризис; элдик революция; мамлекеттик мүлктү массалык түрдө менчиктештирүү; мыйзамсыз менчиктештирүү; баалардын көтөрүлүшү; энергиялык кризис.*

On the seventh of April 2010 historical revolution took place in Kyrgyzstan which put an end to anti-national power of Kurmanbek Bakiev and his family who had come to power in 2005 after historical overturning result. But Kurmanbek Bakiev and his family easily forgot about his pre-

election promises and started to establish criminally corrupted power in the country and anti-national politics in all the spheres of social life.

The President Kurmanbek Bakiev and his family started to control almost all significant economical enterprises. Among them there were important national enterprises in Kyrgyzstan such as: "Kyrgyz Telecom", "National Electro Heating Station", "Mining Plant in Kara Balta", "Kyrgyz Gold", "Kyrgyz Gas Oil", "Uchkun", joint-stock company "Sever Electro", "Vostok Electro", "Osh Electro", "Djalal - Abad Electro", state enterprise "Distillery Kara-Kol", national airline company "Kyrgyz Air Lines", International Airport "Manas" etc. All the activities in above mentioned enterprises witnessed that Kurmanbek Bakiev and his family almost owned the government functions of power.

Newspapers wrote that most of properties of former President A. Akaev gradually became the ownership of president Bakiev's son. Another private enterprise, the Bishkek Champagne - Wine factory was sold for 800\$, the estimated cost price of which was more than 20 million US dollars. It is quite easy to assume who was the purchaser.

Seven out of nine members voted against the chairman of the Council of Directors of "Electro Heating station" S. Balkibekov for corruption and squandering funds of the enterprise in August 2005. Despite of being corrupted Balkibekov kept his position for many years. Another fact, the open criminal case against the General Prosecutor, A. Beknazarov was closed. At the same time the professional Osmon Bakiev, the director of Hydro Electro Station was dismissed from the office for no reason.

In the near future construction of Hydro Electro Stations "Kambarata -1" and "Kambarata - 2" were planned to be built for big amount of Russian facilities. Primarily for completing "Kambarata - 2" there was to be provided about 250 million US dollars. But before building Hydro Electro Station "Kambarata -1" there was preliminary payment provided about 1,5 million US dollars. The "Naryn Hydro Electro Kurulush" company, that earlier belonged to Aidar Akaev, was identified to construct these hydro electro stations. In order to give his son, M. Bakiev, the construction of two hydro electro stations many professional constructors were fired.

In May 2006 the Appeal to President of the Kyrgyz Republic Kurmanbek Bakiev was published in the newspaper "Alas" which

revealed inconceivable rise of price for cement at the Kant cement-slate plant. Previously, in March the cost of one sack of cement was 70 soms, one ton was 1400 soms and list of slate cost 70 soms. It turned out that within several months, at least by May 2006, the cost of one sack of cement rose up to 155 soms, one tone - up to 3100 soms. That time about 14% of the plan's block of shares belonged to Government and about one of three shareholders were citizens of the Republic of Kazakhstan. But later all 14% of state shares were sold out to private owners. And again the appellars considered that those 14% of state shares passed over to M. Bakiev. Appellars were sure that private ownership of Maxim Bakiev "Billon" which supplied natural gas to KSSP for 32 million soms tax free, and when his partner Sergei Kerich ran away, the criminal case was also closed. Realization of losses of gas in low price enterprises were under controle of Maxim Bakiev. "In such a way the son of president K. Bakiev, M. Bakiev, brought the biggest financial loss for the state" – was said in the Appeal.

Irina Zabneva wrote that in 2007 M. Bakiev forced businessman from Italy Giorgio Fiakkoni, the owner of SDS in Bishkek city, to sell "Kyrgyz Credit Bank". This case also directly pointed to the son of President Kyrgyz Republic and his connection with Latvian businessman Valeri Belokon, the owner of the bank "Iberus". Finally, Maxim Bakiev controled six large banks with amount of 80% of all national budget. For example, "Asia Universal Bank" was controled by M. Bakiev, it served 60 billion soms of country budget. Social Security Fund was served for 12 billion soms through this bank, too. The largest state income-earning enterprises such as: International Airport "Manas", "Temir Jol" and many others were served in this bank. According to businessman, founder of "Dordoi Bazary", A. Salymbekov, M. Bakiev forced him to sell the bank's share-package for the lowest price in the country.

"Kyrgyz Gas", "Kyrgyz Telecom", airport "Manas" almost all energizes, the largest branch of oil refueling "Bishkek Motors", gold mining field "Djeruyi", sugar- plants "Koshoi" and "Kaindi Kant", "Champaign -Wine Factory", electric bulb factory "Mailuu- Suu", TV channels "Pyaty Kanal" and "NTC" were also controlled by M. Bakiev. According to A. Salymbekov, the next three years M. Bakiev demanded 50% of the market Dordoi Motors' share-package to be sold him. The largest share-package from 8% up to 13% and 13 leading enterprises in

Kyrgyzstan such as: International Airport "Manas", "Kyrgyz Telecom", "Sever Electro", "Kyrgyz Gas" were managed by the Kyrgyz Holding MGN Group, whose co-partners were M. Bakiev, Evgeni Gureevich, the latter a citizen of the USA, and a Russian business man M. Nadel. Thanks to the support of M. Bakiev, the Latvian businessman Valeri Belokon mastered the best business places in Kyrgyzstan. Aleksi Eliseev, a friend of M. Bakiev, deputy chief of Central Agency for Development, Investment and Innovation, had a leading position in this group.

In fact, corruption scheme of K. Bakiev and his close friends made money on legalization of illegal income, illegal privatization, illegal raiding grab of people's property, state property, which totally made up about 23 criminal cases against him. Total loss on all these cases, approximately made the amount more than 2 billion soms. Except, M. Bakiev who had practiced the so-called rollback money, «otkat», from all investors, including foreign, for decision making in the country, was about 30% - 50% from total amount of the project.

The audit of the Chamber of Accounts had checked the activities of Financial Ministry of the Kyrgyz Republic on budget realization for republican and local governments in 2007 and came to a conclusion that the work was't correctly done. Finally, the audit of the Chamber of Accounts' analyzed and concluded that the Financial Minister of the Kyrgyz Republic didn't control the admission of dividends from International Airport "Manas" (B.U. Sydykov) and Join-Stock Company "Kyrgyz Gas"(I. Chudinov). The audit showed that in all these cases the Government lost quite a lot of money.

It is known that huge water resources and hydro electrical equipment were produced in the Soviet time in Kyrgyzstan. At present hydro electrical equipment as well as hydro engineering constructions need to be renovated. The main reason of such a situation is the corruption in the field of water resources.

As it was said by A. Jekshenkulov, a well-known politician and E.K. Omuraliev, former Vice-Prime-Minister, the Minister of Industry and Foreign Trade (1998-2000) that Kyrgyzstan in the years of low-water level didn't show such a level of water as it was in those autumn-winter seasons in the Toktogul Hydro Electro Station in 2008. E.K. Omuraliev

said it would take 2 more years to collect enough water for vegetative period and for the whole process of recovery.

In order to overcome the energy crisis in the country Government of the Kyrgyz Republic has made a decision to sell the energy company "Sever Electro", "Bishkek Teplo Set" and other enterprises to private owners. Almost all specialists in power engineering and economy, including ex-Prime-Ministers, (A. Muraliev (1999-2000), E. Omuraliev (1998-2000) opposed the government decision considering that those power engineering complexes had potential to be able to work in the conditions of self-repayment and self-financing. Akbaraly Kabaev, experienced power installer, considered that the main energy losses happened because of absence of control and over exportation of water.

The Government announced, the main reason was not only in the low- water level in the Hydro Electro Station but in the rising process of droughts. Despite the authoritarian regime and political repressions, many representatives of national intelligentsia opposed objectively and stood up against the policy of Kurmanbek Bakiyev on water resources.

Another case, the Electric bulb factory "Mailuu Suu" was sold private company "BABC" in tender, almost unknown company, for only 18 million US dollars, while there were other private enterprises offering substantially more money, f. e. industrial company "Avrora Lighting" offering 23.3 million US dollars, the Kazakh "Temir Bank" offering 26.5 million US dollars, "Allyans Bank" offering 23.2 million US dollars. Most of them offered more than 5-8 million US dollars as compared to winning company. This gives another example how the tender processes were conducted during Bakiyev regime.

The following nine months revealed financial violations that made amount of more than 210 million soms in 2008. All these cases revealed existing schemes and sources of systematic corruption in all the fields of economy and governance.

The coordinator of the "Akiykatchi" movement (For Reforms) Alikbek Djekshenkulov noted that, the state power in the country with its incompetent, illiterate and unclear politics brought down the government into systematic crisis.

A well-known entrepreneur Bazarbai Mambetov in his article "Monstrous Robbery of the Country in the XXist century" expressed his concern on the parliament decision to ratify the agreement between the

Government and Joint-Stock Company "Kyrgyz Altyn" on the one hand and on the other corporation "Kameko" on the new conditions in the gold mining project "Kumtor" as of April 30, 2009. The main point of the agreement was the renting of the valley Kumtor in the size of 270 square kilometers by Canadian company until the end of the 21st century (hypothetically for such a "kind" payment of Canadians in the form of tenth part of gross income from Kumtor), which meant that Kurmanbek Bakiev took the same way as his predecessor A. Akaev.

According to famous economist B. Talgarbekov in 2005 the negative balance of Kyrgyzstan was 225 million US dollars, and in 2009 it constituted 1,5 billion US dollars which was covered by the annual money transfer from Kyrgyz migrants abroad (1,5-2 billion US dollars).

In this condition Kyrgyzstan was to become a country depending on foreign transfers and grants. The external debt increased twice as much compared to the period of 2005-2010. The budget deficit (13, 5 billion soms in 2010) systematically was covered by credits and grants, and funds from privatized state property, for example budget deficits was partially covered by Russian grant 450 million US dollars. Talgarbekov B. concluded if things went on like that the state would no longer exist. The Kyrgyz ex-finance minister Marat Sultanov stated that Kyrgyzstan's foreign debt was 2 billion and 300 million US dollars for 2010 which already meant 54% of GDP. According to Statistic Committee of the Kyrgyz Republic the amount of inflation was 20, 1% which brought the increase in the price for food in the country.

Finally, such a weak and corrupted economic policy of Kurmanbek Bakiev and his clan caused the increase in the price for food and consumer goods in the country, while the amount of salary, pension and different social payments were left on the same level. This social-economic frustration brought poor people from different regions of Kyrgyzstan to Bishkek streets to strike against the government and as a result - formed a strong public political consciousness which turned into the revolutionary movement by April 2010.

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## **Migration and demography in Central Asia: causes, patterns and perspectives**

### **Миграция и демография в Центральной Азии: причины, модели и перспективы**

#### **Орто Азияда миграция жана демография маселелери: себептери, модельдери жана келечеги**

**Abstract:** *the article deals with causes, patterns and perspectives of migration and its influence on the demography of Central Asia based on Kyrgyz perspectives. It reveals positive and negative aspects of migration. It also discusses activities of international organizations on issues of migration.*

**Аннотация:** *статья исследует причины, модели и перспективы развития миграции и ее влияние на демографические процессы в Центральной Азии, в частности, основанные на данных по Кыргызстану. В ней раскрываются позитивные и негативные стороны миграции, а также деятельность международных организаций в этой области.*

**Аннотация:** *макалада Орто Азияда, анын ичинде Кыргызстанда, миграциянын себептери, моделдери, клечеги жана анын демографияга тийгизген таасири изилденген. Миграциянын терс, оң жактары, ошондой эле эл аралык уюмдардын миграция жаатындагы чыгармачылыгы да каралган.*

**Keywords:** *labor migration; illegal migration; migratory rules; inflow outflow of capitals; state policy on migration; migratory streams; receiving country; sending country.*

**Ключевые слова:** *трудовая миграция; нелегальная миграция; миграционные правила; приток и отток капитала; государственная политика в области миграции; миграционные потоки; принимающая страна; страна, которую покидают; социально-экономические условия;*

**Негизги сөздөр:** *эмгек миграциясы; мыйзамсыз миграция; миграция агымдары; миграция эрежелери; капиталдын агып келиши жана чыгып кетиши; мамлекеттин миграция боюнча саясаты; мигранттарды кабыл алуу өлкөсү; мигранттардын чыгуу өлкөсү; социалдык. жана экономикалык шарттар.*

Migration as a socio-economic phenomenon was not typical to countries of the Soviet Union. But after it collapsed huge army of professionals began to move from one country to another in search of better

paid jobs. And Kyrgyzstan was not an exception. Most of them were young and able-bodied. Among them were Russians, professionals, technically qualified people. Except better paid jobs, Russian speaking community was looking for historical homeland because the new coming era was not promising a better life for them. Besides, existing economic ties between the countries were broken and unemployment brought into life socio-economic crisis in all post-soviet countries. In these conditions the countries of Central Asia had to face two major subsequent shocks: the food and fuel price increase, and consequently the economic and financial crisis that spread across the CIS. Households, both poor and rich, were directly and adversely affected by the crisis. Kyrgyzstan was especially hard hit. This resulted in intensive internal migration, mainly from villages to urban areas. The majority of migrants were, as a rule, young and able-bodied people. Apart from this, out-migration of people from rural areas abroad also partially contributed to the decrease of rural population. Out-migration occurred mainly to Russia and Kazakhstan constituting 52% out of all migrants including those who left to earn more money to keep their families.

With intention to contribute to preventing unwanted migration of people, which was catastrophically accelerating in our country, to reduce internal social tension that gave rise to negative phenomena and enabled extreme growth of various political, religious and criminal forces, and to protect integrity and unity of country which was very important for Kyrgyzstan it started to take urgent measures including setting up a special structure Ministry of migration and youth politics. International organizations and civic foundations started to deal with various aspects and manners of migration, including causes and patterns of migration, the migrants' characteristics, and impact of migration on communities, origin and destination, economic and psychological impacts of migration on demography and so on.

Today migratory movements have acquired an unprecedented character. According to the data of UNO, IOM and IOL migrants at present constitute about 65 million people. According to these data, most of migrants leave their homes and their countries due to conflicts, political persecutions and poverty. Migratory processes in Central Asia started after the dissolution of the Soviet Union in 1991. The post-Soviet period witnessed globalization, open and free communication, transportation, which facilitated both internal and external migration.

Patterns of migration in Central Asia as reflected in the present period is unpredictable partially because of migratory rules and

transboundary issues in Central Asia, threatening regional stability and security. However, any migration process has positive and negative aspects, such as: cultural exchange, knowledge exchange, gaining experience, improved relations between the countries, cheap labor, inflow of skilled labor, inflow of capital (for receiving country). Negative factors form loss of control over migration streams: brain drain, drug trafficking corridors, spread of infectious diseases, outflow of capital (for sending country), and potential ethnic conflicts [1].

*As for the causes of migration*, people migrated and had to continue to migrate today for a complex set of reasons that rooted in the internal socioeconomic dynamics of their societies, which changed over time, generation, and space. People from Kyrgyzstan seem to immigrate for various reasons. These reasons are categorized under "Push" and "Pull" model. The information indicates that push factors are responsible for migration from Kyrgyzstan. Push factors exert pressure on people to leave the homeland in search of better opportunities. The pull factors that attract the migrants are also responsible for movements of people. The majority of the people from Central Asia choose Russia and Kazakhstan as their destination as well as some other foreign countries. Causes and patterns of migration in Kyrgyzstan as well as Central Asia are explained below.

*Ethnic migration* - outflow of people representing about 70% of a certain ethnic group (for instance, Crimean Tatars), out-migration according to ethnic or religious belonging. *Forced migration* is a movement of people because of political, economic or any other reasons, unemployment, instability in the country or religious factor. Throughout the world, there are multiple cases when people flee from natural calamities, wars, diseases, human-rights abuses such as forced labor or political persecution and/or the total loss of livelihood options, etc. *Labor migration* - voluntary movement of people in search of jobs beyond one's country as well as inflow of foreign citizens for waged labor. We identify unemployment as the main reason of migration in Central Asia, Kyrgyzstan. Unemployment is a strong force, which urges young able-bodied and educated people to leave their home. Many of those leaving the country say that they cannot find jobs in the country [1]. They are virtually forced to leave the country to find a job for various expenditures like daily needs and goods, education, health etc.

Drug business, human trafficking are the levels of criminal structures that use migratory processes for their benefits. The main reason of drug and human trafficking is instability in the region, unsolved economic reasons, low level of education and culture. Very often, mountainous regions

become drug trafficking corridors. Migration, drug business and human trafficking are the direct consequences of political instability, lack of strict customs control and effective economic reforms. Much depends on organizations that deal with migration issues like OSCE, IOM and other international organizations. We need to more effectively organize the study, control and regulation of migratory processes in Kyrgyzstan as well as in Central Asia [2].

Increased drug business and human trafficking also result from a weak border policy in the country. More than 15% immigrants in Kyrgyzstan deal with drug selling. Human trafficking in Kyrgyzstan involves transportation of women as small traders and for sex business, and other purposes [1].

*Illegal migration* is a direct consequence of weak border control. Because a lack of strict passport control at the border one can easily pass the borders of Kyrgyzstan by counterfeiting documents. This is the way how the country becomes a home for various negative elements such as religious and criminal groups that aggravate the unstable situation in the country.

Illegal migration leads to increased international terrorism, religious extremism, and transnational crime that threaten international stability and security. It also results in worsening of overall international situation. There are currently 65.3 million people worldwide are forcibly displaced- roughly the population of France, out of which 21.3 million refugees, 40.8 million internally displaced people and 3.2 Asylum- seekers (UNO data for 2016), [3], compare 45 thousand refugees and immigrants (UNO data for 2002). In the conditions of Kyrgyzstan lack of national ideology can also cause migration. We cannot shield our distant provinces from the ideological influence of criminal structures such as religious extremism and international terrorism that recruit more people into their organizations by providing financial means.

*Globalization* is one of the main reasons of a migration situation in the world as well as in Kyrgyzstan. It has resulted in labor movement between labor markets. Migration from one country to another country has become a common phenomenon. Migration can be seen as a significant feature of livelihoods in developing countries is pursuit of better living standards. It is through migration that people become a part of a globalized world. Globalization has 2 aspects: *political aspect* - freedom of movement, international differentiation of labor, exchange of experience and skills, etc. *The economic aspect* involves the fact that people want to move where they can earn more money. Developing countries also get involved in the

globalization process, but they often lose because they are economically less developed as compared to developed countries. Often, large-scale in- and outflow of people endanger social and economic stability, particularly in countries already suffering from economic underdevelopment, political instability and ethnic tensions. Globalization is an objective and inevitable process, where migration is seen as a closely associated factor. It is important to improve procedures of citizenship acquisition and registration of migrants. It is also important to use Internet resources in order to explore the issues of migration and employment.

Despite the fact that the migration policy of the Kyrgyz Republic has been developed, in fact, it is still a lot to be done to meet the demands of time and its strategic implementation. Such legislative documents on migration issues as the Geneva Convention on refugees, the 2000 law of the Kyrgyz Republic on external migration and other legislative and normative documents often fail to work in the interests of migrants. It is necessary to improve the legislation on free trade zones and foreign investments in Kyrgyzstan.

The state migration policy in Kyrgyzstan has been shaped right after independence, which marked the peak of migratory processes across the former Soviet Union. In May 1993, Kyrgyzstan joined IOM as an observer and adopted the law on refugees in 1996.

Migratory processes are regulated according to bilateral agreements with Russia and Kyrgyzstan, Tajikistan, the CIS Customs Union and Eurasian Economic Union. Primerilly, in 1997, an agreement was signed with UNHCR on the formation of a Migration Control Centre, which contributed to the development of migration policy of the Kyrgyz Republic. Later the Kyrgyz Ministry of Foreign Affairs succeeded in arranging the signing of an agreement between Kazakhstan and Kyrgyzstan on labor activities of migrants (particularly in agriculture). Kyrgyzstan and Turkey also established a visa-free regime, which allowed to start controlling the migratory processes in the early 1990s.

Migration policy of the Kyrgyz Republic is an open-door policy that aims at keeping other ethnic groups in their own countries. However, given intensifying globalization processes, increasing drug trafficking, organized crime it is important to thoroughly define and specify the national policy in the field of migration.

*Internal and external factors conditioning migratory processes in Central Asia.* In the last two decades Kyrgyzstan as well as other Central Asian republics has experienced a dramatic growth in internal and

international migration, especially from rural areas to urban centers.

Economic factors include lack of radical reforms, ecological threats (landslides, earthquakes, environmental pollution, etc.), political instability and conflicts (local, regional such as Tajik civil war), which, one way or another, affect not only Kyrgyzstan, but the whole Central Asian region as well.

Internal factors involve economic instability, weak operation of existing industrial enterprises, regional instability, unemployment, unsolved social problems, and discrimination. External factors include cultural and economic attractiveness of other developed countries, high salaries, better living standards and stable human security. The data for this demonstrate that 740 people from Kazakhstan came back to Kyrgyzstan compared to more than 3000 people who left Kyrgyzstan for Kazakhstan. These facts unmask the real picture of migration though they tend to change every year.

As it was mentioned, the main factor of migration is economic. For instance, no Russian-speaking person intends to leave the Baltic countries despite open infringement on their legitimate rights, because these countries are more developed economically as compared to Russia.

Internal problems include economic issues (migration of people from rural to urban areas that causes population misbalance), ethnic issues (outflow of Russians, Ukrainians and Germans from Kyrgyzstan). Central Asia is a transit zone between eastern countries and Europe. South-eastern countries are interested in economic development of Central Asia but we are not always able to use the opportunities that could lead us to economic prosperity. Japanese experience is often neglected, and things are done inadequately if this experience is used.

*Impacts of migration in Central Asia.* When interviewed (1) it was revealed that people made adjustments in their personal and sociocultural lives when they moved from one place to another. It is difficult to ascertain the true social or economic benefits of migration as there are many factors that affect analysis of benefits and costs involved in such movements. Secondly, the advantages and disadvantages of moving along are not symmetrical. Questions on the impact of migration were as follows:

- Does migration have demographic effects?
- How does migration affect social values?
- Does migration have favorable or unfavorable effect on people's lives?
- Does migration have economic advantages or not?

*Demographic impact.* It is known that migration has various demographic impacts in Kyrgyzstan. It changes sex ratio and the dependency

of labor force. Migration reduces male portion of population. Obviously the absence of young adult males increases the proportion of other population group, such as: women, children and old. But today young females are also group moving to urban areas as well as abroad leaving old parents and children behind. This lack of economically active population restricts the progress of economic and social development in the country.

Overall, migration from rural to urban areas is a problem that concerns all Central Asian republics. Disputed territories create additional conditions of conflict for migration. It is important to develop provinces as border lands abandoned by residents might be quickly occupied by communities of a foreign state, which might result in seizure of given territories by another state and thus lead to conflicts.

*Economic impact.* Migration of people certainly has an effect on the economy of the country. Migration affects supply of labor force. Majority of the able-bodied male population seems to be outside the country. The participants reported that majority of active male population, particularly from the south of the country was engaged in different economic sectors of Russia as migrant workers.

Also, migration is considered as an important source of income. In 2017 total amount of money transfer to Kyrgyzstan was 1,740 billion USD- compared to last 2016- 259.7 million USD (5). People think that migration is a significant source of income for migrants' families staying back in Kyrgyzstan. According to them, migrants usually bring back a larger part of their income. Families use money in Kyrgyzstan to buy food, clothes, pay for school and health and maintain other household expenses. Some families try to save money to buy a house or plot of land for building a new house. Remittances contribute to economic development of the country.

*Social impact.* The social status of people in the country has changed. Poor families have improved their economic status by purchasing houses or lands. Participants also talked about negative health effects of migration. They referred to media reports about increased cases of venereal diseases in the country. According to media reports, migrants picked diseases outside Kyrgyzstan and passed them to their wives and girlfriends in their home cities and villages.

Also, migration reveals unsolved gender issues. Some family heads and members do not return home at all. The absence of migrants for a long time creates social psychological anxiety and often results in rupture of families.

Relationship among family members has changed as well. Most



young, able-bodied males and females who migrated have chosen to live permanently in recipient countries by changing their citizenship and buying houses. Old parents, women and children stay back alone.

Any policy is nothing if anything substantial is done to meet the demand of time with the goal to work out the strategy for solving migration issues in Central Asia which include political, legal, socio-cultural, informational, educational, health, ecological-economic and security aspects that are connected with migration.

Identifying military-technical perspectives it should be noted that all problems of Central Asia started in the early years of Soviet dissolution, when the security system of the Soviet Union collapsed. Kyrgyzstan chose a peace-loving strategy. All military facilities were sold out, which made Kyrgyzstan extremely vulnerable militarily. The situation is now aggravated by lack of a military doctrine, economic strategy and heightened interethnic tension.

Proposed solution-Regional military security (Shanghai Cooperation Organization (ShCO), Organization of Treaty on Collective Security (OTCS), Customs Union and Eurasian Economic Union that Kyrgyzstan became a member of. Not all Central Asian countries are aware that only together with neighboring countries we can prevent various negative phenomena associated with migratory processes.

In the past, the Kyrgyz Republic used to be a home, not as elsewhere, for 2 military airbases that represented 2 counterbalancing military forces. Russians and Americans never ever have been as close distance-wise to each other as in Kyrgyzstan. But what benefits did we have from this, except family business of high officials and intense outflow of migration. There were some employment opportunities, though limited. Nevertheless, it gave only a relative political stability in the country and in the whole region.

Meanwhile Uzbekistan has found a solution to a frontier control problem by having all borders mined (2000). As for Kyrgyzstan, it was seeking for a different solution of the problem. For that, we needed to undertake the following measures:

- it was necessary to strengthen customs control and service observation at the borders;
- qualified cadres had to be trained to work at borders with knowledge of local geographic conditions;
- border troops and army had to be equipped with relatively modern facilities.

Nowadays, from political and legal perspectives we should mention opportunities taken: the states in the region demonstrated their political will in the solution of the problem. All states became concerned with the problem. This problem was also a matter of concern for international organizations (IOM, OSCE) and NGOs that were interested in regulating migration problems. There were also normative-legislative documents, bilateral, multilateral agreements signed on a regional level). These documents brought certainly visible strengths in the solution of migration problems: most obvious is the fact of effective cooperation in the area of migration issues to protect migrants' rights. Migrants must be informed about their rights in time. At the same time there are certain cases of weaknesses such as: security threat (visa-free regime); declarative nature of normative-legislative documents; overpopulation of cities; lack of effective migration management levers; increased tension in border areas; lack of coordination and agreement between Central Asian states in relation to migration policy; there is no common legal space to implement migration policy; low awareness of migrants about existing legal documents. Solving migration issues are always accompanied by old type threats that tend to acquire new forms of expression such as: drug trafficking; arms trade; human trafficking; radicalized religious and violent extremism and fanaticism mixed with terrorism.

From socio-cultural, educational and health perspectives, certain things can be mentioned, as timely financing by states of healthcare institutions located in border areas; provision of health insurance for labor migrants; establishment of extreme healthcare service; state support to NGOs dealing with migration and employment; recruitment of young specialists into healthcare system in regions; organization and reform of military-healthcare service at the borders; organization of first-aid training; elimination of information shortage particularly in frontier areas; upgrading the education level in regions by attracting young specialists (teachers, doctors and others); organization of meaningful leisure activities for youth by conducting various cultural and educational activities and building cultural facilities; support to youth initiatives; popularization of a non-violence concept by introducing non-violent methods of conflict resolution and peaceful resolution of conflicts; correct provision of information to people about migration issues. The government also has to think about creating ethno-cultural associations of our citizens abroad and other measures to preserve cultural values of Kyrgyz migrants.

From security perspective, we can mention migration policy of the

Kyrgyz Republic which has been developed with less account for national security threats. The policy was excessively transparent and liberal, which was inadmissible at times under current frontier circumstances. It should be specified to give account for national interests of Kyrgyzstan in the field of security, such as preserving genetic fund, support for demography etc. Otherwise, the consequences are marginalization and criminalization of communities in the country that lay on the surface of migratory picture. Corruption in frontiers and customs control services also makes it difficult to ensure control over migratory processes in the country as well as in the region. The proposed solutions of the unsolved issues certainly include toughening of customs control at the borders; revision of agreements and treaties with bordering countries in order to maintain national interests of Kyrgyzstan; formation of an actually efficient control system in border areas; updating of a database on migrants; work with representatives of religions and control of their activities within a legal framework; control of the operation of mosques and medresehs to prevent distribution of anti-state, anti-national literature and separatist mood; increase level of education and culture in rural areas often paid less attention by the government.

As for ecological and economic perspective, they indicate the direct result of unsolved economic issues in Kyrgyzstan. The main reasons of migration from an economic perspective are unemployment and low living standards. This is why solution of migration problems depends primarily on the solution of economic and social problems. As Kyrgyzstan is an agrarian country and therefore the main focus should be on agricultural production and stimulation of domestic producers as it was practiced before, i.e. state purchase of agricultural products at market prices; widening of micro financing (external and state) system; introduce tax remissions and tax-free periods for farmers; abolition (reduction) of state duty on exported goods and reduction of customs duties on imported equipment for the agrarian sector of the republic; monitoring of market opportunities for agricultural products; formation and development of business competitions in the country to export competitive agricultural products. In this context certain ecological measures are preferable to be taken such as: development of an ecologically safe agrarian sector; use of modern technologies in agricultural production; building waste processing plants; use of biogas facilities (like in China) to process waste in order to produce fertilizers and energy.

Another big and disputable issue could be taxation guarantees to migrants. It is also the demand of time to provide migrants with an access to information through websites to keep them informed with local events while

they are abroad.

In conclusion we see the necessity of developing and updating existing state migration policy for short-, mid- and long-term measures, including political and legal regulations of migratory processes as well as interstate fence-mending and development of cooperation on mutually advantageous terms.

As it is seen in practice people migrate from Kyrgyzstan for various socio-economic reasons, the co-called «push-pull factors». The major reasons for migration can be attributed to the unemployment, lack of food, poverty, and interest in economic well-being. Such factors cause the desire of people to leave their own places for other ones. The pull factors are inwardly associated with push factors. Despite being unskilled and patriots of their homeland, people prefer job availability, more cash and other social benefits.

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## **Language and identity in post-soviet nations of Central Asia**

### **Язык и идентичность в постсоветских странах Центральной Азии**

#### **Борбордук Азиядагы пост-советтик өлкөлөрүндөгү тил жана иденттүүлүк масалелери**

**Abstract:** *this paper explores the role of language in identity formation. Language is a part of culture, and therefore, an inseparable element of identity. This understanding of the relationship between language and identity will be used to explore language and identity issues in post-Soviet Central Asian countries. Literature on identity formation will be reviewed with a close focus on socially constructed aspect of identity formation.*

**Аннотация:** *в статье рассматривается роль языка в формировании идентичности. Язык является частью культуры и, следовательно, неотделимым элементом идентичности. Такое понимание взаимосвязи между языком и самобытностью было использовано для изучения вопросов языка и идентичности в постсоветских странах Центральной Азии. Изучение литературы по формированию идентичности проводилось с особым вниманием к социально-конструктивистскому аспекту формирования идентичности.*

**Аннотация:** *бул макалада тилдин иденттүүлүктү түзүүдөгү ролу каралат. Тил маданияттын бир бөлүгү жана ошондуктан иденттүүлүктүн ажырагыс элементи болуп саналат. Тил менен иденттүүлүктүн ортосундагы байланыштын ушундай нукта түшүнүү бул макалада Борбордук Азия өлкөлөрүндө тили жана иденттүүлүк маселелерин изилдөө үчүн колдонулду. Иденттүүлүктү түзүү боюнча адабияттарды изилдөөдө иденттүүлүк түзүүнүн социалдык-конструктивисттик өнүгүнө өзгөчө көңүл бөлүндү.*

**Keywords:** *identity; language; culture; education.*

**Ключевые слова:** *идентичность; язык; культура; образование.*

**Негизги сөздөр:** *иденттүүлүк; тил; маданият; билим.*

## **Introduction**

What is identity? Although I recognize the essentialist approach to identity which contends that certain features of one's self remain fixed across time and space (Hoffman, 1998, p. 329), my focus is on socially constructed identity which views self as an evolving concept dependent upon social forces and experiences. I use identity as defined by one's membership in a group, one's notions about how others perceive him or her and one's place in society.

Diane Hoffman, professor from the University of Virginia (USA) defines self as a “culturally patterned way of relating to others” whereas, identity is defined as the “self’s situatedness in social roles” or a person’s perception of his place in the social structure. This form of identity is based on race, culture, language, ethnic and class differentiations and how an individual relates oneself to others in a particular social structure. Hoffman maintains that identity construction is a common phenomenon that occurs during schooling as a response to social pressures. Identity can be defined by group membership, which can be also be used as a boundary marker. For an individual, identity is culturally defined by values and norms which are also subject to change depending upon the daily experiences.

What is language and what role does it play in identity formation? Language has, for centuries, been used as a tool of communication that ties people together into a close-knit community of the speakers. Language, along with factors such as race, religion, history and territory forms major symbols of identity of ethnic groups. As Sarup states, “it is through the acquisition of language that we become human and social beings... Through language, we come to ‘know’ who we are” (1996, p. 46). Participation in the linguistic environment helps people learn the values and beliefs of the group to which they belong. On the one hand, language serves as a symbol of unity and understanding among members belonging to socio-cultural groups; on the other, it acts a boundary marker, keeping non-speakers from understanding the communication of the in-group, and thus, keeping them from becoming a part of the group. For both reasons, language has commonly been used by ethnic and state leaders to instigate a form of collective identity for political as well as developmental reasons. The dawn of the era of post-colonialism brought with it the need for independent states to gather a new sense of identity, distinct from that of the colonizers; language, along with history, culture and religion were some of the major tools used to bring people of certain similarities together as well as demarcate their identity from the rest of the world.

In this paper, I will be exploring the role of language in identity formation. Language is a part of culture, and therefore, an inseparable element of identity. I will be using this notion as my hypothesis which will be tested in the post-Soviet nations of Central Asia. “The choice of language and the use to which language is put is central to a people’s definition of themselves in relation to their natural and social environment, indeed in relation to the entire universe” (Ngugi, 1997, p. 5). According to Ngugi, African scholar, language has two main functions: it is a means of communication and a carrier of culture. Language carries culture of those for whom it is the mother tongue. Ngugi argues that as a carrier of culture, language is inseparable from identity. He identifies three roles of language as a carrier of culture. First, language is used to create history, a “collective memory bank (15)” of a group of people. Culture in turn is a product of

history. Second, language is a means by which we create images of the world surrounding us. The way we define ourselves, individually and collectively, depends on how we paint the picture of the world that surrounds us, the struggles between man and nature, and how we relate to that world. Third, written language is used to portray how a culture views the world, its values, and history. Language is also used as a tool to differentiate one culture from another each with their own unique history.

Ngugi asserts that when colonizers impose their languages upon the populations, not only are they affecting the means of communication, but they are also imparting through language, their culture, values and the way they view the world. Because the colonizers bring with them the belief that of the colonized as being backward, and because the colonized are forced to look at themselves from the cultural lens of the colonizers, their own place in the world appears to be inferior to that of the colonizers. Language has been a tool used to suppress the identity (culture, values and history) of the colonized and elevate that of the colonizers. In Africa, Ngugi argues, “English was made to look like the language spoken by God (Moving the Centre, 33)” whereas, African languages were associated with humiliation.

Ngugi’s analysis of the use of language as a tool of identity formation allows for comparison between the colonial and the Central Asian experiences. The post-Soviet context appears to share some similarities with post-colonial Africa, and at the same time, some of their experiences were more unique to Central Asia. One of the commonalities between the two regions was that both experienced several phases of linguistic transformations that affected their sense of identity in relation to the world in one way or another.

*Language in the Pre-Soviet era:*

The major transformation in language followed the introduction of Islam in the 17<sup>th</sup> century and the incorporation of Central Asia into the Arab-Persian influence. Languages and cultures of Central Asia were heavily influenced by the Arab and Persian traditions. Arabic vocabulary, grammatical structures and literary forms were in common usage. Chagatay Turkish, which descended from the Uyghur dialect, was the most commonly used dialect in Turkic literary from the eleventh century until the arrival of the Russians in the 19<sup>th</sup> century, even though it was not the common indigenous dialect. However, Chagatay had been contaminated with Arabic and Persian grammar, vocabulary and literary forms.

The Tsarist advent to Central Asia was mostly determined by economic motives and therefore, Tsarist strategy in Central Asia was mainly that of non-interference. However, Russians viewed themselves as representing a civilization and Central Asia as being historically backward and barbarian. Russian schools and a printing press were opened to ‘enlighten’ indigenous people. Secular education programs were introduced, more extensively in southern Central Asia such as the Kazak Steppe



(Haugen, 51). Reforms in Central Asia during the late 19<sup>th</sup> and the early 20<sup>th</sup> century were mainly the result of a spillover of reforms advocated by Tatar Jadids in the Russian Empire. Language in Central Asia had evolved through assimilation of the nomadic peoples as well as the sedentary populations with different cultures and languages and had not been a unifying force for people of different groups until the Jadids recognized it to bring Turkic people together. Jadids used secular education to replace the religious education as a process of modernization. Education was seen being necessary to get out of the Central Asian backwardness or societal decay.

*Language in the Soviet era:*

After the arrival of the Soviets, language was once again determined as a key to ingrain shared consciousness of socialism. National or indigenous languages were highly promoted by Lenin, and language became a marker of identity. Formation of national languages was considered a vital task by the Soviets to create a sense of national identity. Soviets considered language a powerful tool to induce unity.

In 1928, Latin script was used to replace the Arabic script across Central Asia. In 1940, Cyrillic script was used to replace the Latin script. The transition from Latin to Cyrillic slowly led to the decay of the native languages. A lot of Russian words had to be borrowed in each of the languages, limiting the social as well as occupational functions of such languages. The native languages began to be spoken less and less by the national intelligentsia, creating a wide gap between the educated and the non-educated people, as well as rural and urban populations (R'oi, 1984).

The major concern of the Soviet Union was to increase literacy to consolidate the people of all republics into one socialist system. Elementary schooling, adult education through special schools and "red corners" in factories and workshops changed the number to almost 70% by 1939. Soviets were trying to promote national identities and at the same time promote a unified soviet identity. After Lenin (who stressed the equality of all languages and a multinational state), however, with Stalin at the forefront, national/ indigenous languages were not promoted as such and instead Russian was forced as the official means of communication all over Central Asia. Any political, economic or professional status required proficiency in the Russian language. Only rural population was not as affected by russification and used their native tongue but overall, russification was very successful.

*Language and identity in the Post-Soviet era*

With the fall of the Soviet Union, the former Soviet nations struggled to build their nations a new country by reviving their language and rebuilding identity. Language was again relied upon to create a new identity of the nations freed from the Soviet influence. Since 1991 – the year the Soviet Union collapsed – the search and construction of a new identity has taken different forms, including adoption of the language laws; revitalization

of cultural traditions, customs and holidays that were forbidden under the Soviet regime; revision of history; reform of school curriculum; re-introduction of Islamic religious practices; and renaming of cities and towns (Landau & Kellner-Heinkele, 2001).

New nation-building efforts were centralized around revitalizing their suppressed culture and revolting against Russification (Lapidus, p335). Central Asian countries attempted “to oust Russian as the dominant language and to enshrine the titular language as the official one subsequently became the core of nation-building projects” for all Central Asian states (Lapidus, 2002, p. 335). In Kyrgyzstan, the dissatisfaction of the rural population with the dilution of Kyrgyz culture and language coupled with the expressive views from writers and intellectuals about the inappropriateness of Cyrillic alphabet usage in schools led to the declaration of Kyrgyz as the official language in 1989 (Fouse, 287). The former Soviet states made major language reforms and some of them converted back to their usage of the Latin alphabet. Indigenous people fought Russification because they felt that it had eroded their Kyrgyz culture and language through the domination of Russian language and the Cyrillic alphabet in the education system.

For instance, under the changing political and socio-cultural circumstances, to be a Kyrgyz in today's Kyrgyzstan means a radically different thing to Kyrgyz people. Historical circumstances, legacies of the Soviet/Russian cultural domination and resurgent nationalism appear to necessitate instrumentalization, as primordial entities, of the Kyrgyz language, culture, ethnicity, land, myths and legends to reassert and re-establish Kyrgyzness. Having shed off the identity of the Soviet nation, which denied and purged their pre-Soviet ancestors as bourgeois elements, Kyrgyz people strive to reclaim lost elements of their identity by turning to their historical roots and defending its historicity and authenticity. The rationale behind such claims as “Kyrgyz is a language spoken by Manas and ‘jeti-ata’ is the attempt of Kyrgyz people to challenge cultural oppression and marginalization and to counteract the notion that as a nation Kyrgyz people are a Soviet construct.

This demonstrates that, even though language is an important source of identity, its success as an identifier is largely dependent upon its relationship with other identifiers such as history, culture and education. Language on its own may not be able to instigate a sense of identity among a community member if there is no other commonality holding the nation together.

### **Conclusion**

In all three phases of nation building - pre-Soviet, Soviet and post-Soviet period - the reformers used language and education to create identity. Soviets believed that the creation of national identity would ease the process of modernization and regional administration. According to Stalin, territorial unity, cultural unity, economic unity and linguistic unity were the basic

requirements of a modern nation. Language planning was a key tool to instigate linguistic unity and history writing for cultural unity during the Soviet period. The Russian language was imposed upon the Central Asians by means of education. Language acquisition was also associated with progress whereas, the rural areas remained undeveloped. Russification was seen as being vital to creating a soviet socialist identity. Russian language signified modernization, and native languages were slowing fading away in their usage.

It can be said that although language was not a significant identifier in Central Asia before the Soviet arrival, language has been used time and again to instigate a sense of national unity and identity among the Central Asians. Similar was the case for other Central Asian countries as far as national identity was concerned.

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## Critical problems of cross-cultural communication

### Актуальные проблемы межкультурной коммуникации

### Маданият аралык баарлашуунун маанилүү көйгөйлөрү

**Abstract:** the main problems of Cross-cultural communication between different cultures are analyzed and the ways of eliminating of cultural misunderstanding are recommended in this article. National specific features of politeness and taboo are shown, cultural shock is analyzed and much attention is paid to the intercultural communicative competences as well.

**Аннотация:** в статье анализируются актуальные проблемы межкультурной коммуникации между разными культурами и рассматриваются пути преодоления межкультурных недоразумений. Показана национальная специфика вежливости и табу, анализируется культурный шок. Также уделяется внимание развитию межкультурной коммуникативной компетенции.

**Аннотация:** бул макалада ар кайсы улуттардын ортосундагы маданият аралык баарлашуунун маанилүү көйгөйлөрү каралат, жана маданият аралык түшүнбөстүктөрдү чечүү жолдору көргөзүлөт. Сыпайгерчилик жана табунун улуттук өзгөчөлүктөрү жана маданий шок изилденет. Андан тышкары, маданият аралык баарлашуу компетенциясына көңүл бөлүндү.

**Keywords:** foreign languages; communicative failures; misunderstandings; culture shock; social conventions; intercultural communication; intercultural communicative competence; politeness, taboo.

**Ключевые слова:** иностранный язык; коммуникативные неудачи; недоразумения; культурный шок; нормы общения; межкультурная коммуникация; межкультурная коммуникативная компетенция; вежливость; табу.

**Негизги сөздөр:** чет тили; баарлашуудагы пикир келишпестиктер; түшүнбөстүктөр; маданий шок; баарлашуудагы социалдык норма; маданият аралык баарлашуу; маданият аралык баарлашуу компетенциясы; сыпайгерчилик; табу.

In the last two decades of the XX<sup>th</sup> century, the pedagogy of foreign languages has changed completely. Traditionally, foreign languages were taught as a means for understanding foreign texts, as part of general academic requirements, and to assist visiting other countries. Today, in the era of globalization and technical-scientific progress the foreign languages are studied as critical means of communication with professionals and representatives of other cultures. It is not enough to speak the foreign

language (i.e. knowing its grammatical structure, phonetically system and vocabulary), it is necessary also to know and understand the culture of the people. These things include becoming acquainted with their traditions, history, world-view, valuable reference points, regional geographical knowledge, way of life, and mentality, psychology. Importantly, one must possess knowledge of nonverbal communication methods, such as gestures and body languages, or kinesics, in order to avoid communication failures and misunderstanding.

Language is, as a rule, a foundation of culture. It is a key method of cultural influence, conveying the world views of its bearer. The numerous studies of intercultural communications problems show that in communication with foreigners people make grammatical and lexical mistakes easily, demonstrating their lack of language knowledge. However, people in a culture are very sensitive to the breach of socio-cultural relations standards, as it is supposed they were broken deliberately with the aim of offending. These mistakes are not easily forgiven. Such communicative mistakes can create cultural shock and conflict in interpersonal communication situations or in interethnic interaction.

The main reason for communicative failures is a lack of understanding the difference in cultural disposition. Therefore, the foreign language learning, according to Humboldt, requires the acquisition of another point of view [1].

The main impediment, to successful intercultural communication is in that we perceive other cultures in the reflection of our own culture. The ethnocentrism disturbs the successful intercultural communication, because the language and the culture of one people are perceived as more important than other cultures.

Globalization has now opened the way to the closer contacts with people of other cultures. Cultural differences might be due to mentality of the people, shape of its thinking, its values and moral orientations, standards of behavior, national cuisine, clothing, as well as its attitude toward elders, women, nature, work, and time.

The mutual and reciprocal process of understanding between representatives of different cultures and association is known as "Intercultural Communication" in linguistics literature [2].

In the USA the term "Intercultural Communication" is linked with the name E. Hall, who understood this term to require teachers to provide analysis of definite samples of intercultural situations in the classroom. This perspective on communication among cultures began developing in U.S. educational institutions the 1950s. In the book «Culture as Communication 1954» by E. Hall and «The Silent Language 1959», the author showed a close connection between the culture and communication [3].

In Europe, the science of intercultural communication was developed differently. The creation of European Union opened the frontiers

for free people, capital and movements of goods. The educational departments of intercultural communication were opened in the early 1970's-1980s in some western European universities based upon the examples of those the USA (Bayreuth, Munich, Yen) in Germany.

The idea of intercultural communication in Kyrgyzstan appeared just in 1990<sup>th</sup> when teachers of the departments of foreign languages and the departments of the Germanic studies and intercultural communication began to pay attention to the problems of intercultural meetings. The changes in education in this area began in 1999 with the partnership of Germanic studies programs in Munich and the German language departments of High Schools of Bishkek. Later, conferences on pedagogy lead to greater understanding of interpersonal communication education.

The big impulse to this direction was given by so-called the program Au-Pair, in the frame of which the students of the foreign languages departments of the high schools from Kyrgyzstan began to go to Germany to improve their language skills.

Secondly, the scientific-practical conferences, which were held in the high schools of Bishkek, dedicated to actual problems of translation study, linguistics and intercultural communication assisted to the coming-to-be of the intercultural communication as a scientific discipline in Kyrgyzstan. And there were also 3 international conferences Humboldt's Colleagues with the invitation the scientists from Germany, Russia, Uzbekistan and Kazakhstan: "Intercultural scientific communication: problems and perspectives", 2007, "Science and culture in the globalized world", 2009[4, 28].

The study of Intercultural communication is now becoming part of sciences as pedagogy, philosophy, hermeneutics, jurisprudence semiotics, medicine and German studies.

There are many publications now on Cross-cultural communication including Shamne (1999), cultural Ther-Minasova (2000, 2003), Sadokhin (2000), Almazova (2003), Gudkov (2003) are devoted to the research of intercultural communication. There are works of Kluckhohn, (1952), Oberg, (1960), (Oguro, 1984), Ramsauer, (1996), Maletzke, (2000), Thomas et al. (2003a, 2003b, 2007), Ohler, (2007), Schreiner, (2007), Heringer, (2007), Handbook of Intercultural Communication (2007) Psychology of cultural shock among foreign research works.

It's important to investigate and research the following aspects of communication: taboos, politeness, speech etiquette, cultural conflict and cultural shock in cross-cultural communication with the aim of eliminating misunderstanding between different cultures.

One example the principle of politeness. What is understood as the politeness in one culture, may not be familiar or connected to another culture. The forms of politeness in different culture are revealed differently. Thus what we understand as politeness in one culture may not have anything



familiar with understanding and display of politeness in another culture. We understand certain forms of moral standards under the word “politeness”. It regulates interpersonal relations between people. The meaning of politeness established is mutual respect in society, independently of a person’s national, cultural, ethnic and racial group. The forms of expression in the Kyrgyz language are very peculiar and culturally- conditioned.

For example, there are a number of ways in which misunderstanding can occur within the area of politeness in the intercultural communication:

- Intentions (illocutions, perlocutions) are interpreted wrongly (the request as a question, offer as a demand...);
- Social conventions are interpreted intentionally (for example, silence as refusal);
- Social conventions are interpreted in a wrong way (the smile is interpreted in another way not only as expressing politeness);
- Social conventions are not interpreted (for example, mime isn’t interpreted as the politeness);
- Social conventions are estimated from the moral point of view (the absence of smile as the impoliteness or rudeness or (from another side) the smile as false).

Key areas for research will also be in cultural conflict, culture shock and cultural incidents. Relations with representatives of other cultures can lead to conflicts quite often, if linked with misunderstandings of another culture’s mentality. Experts define the stressful influence of another culture on human beings as „culture shock “by the specialists. The term „culture shock “was introduced in 1960 by researcher K. Oberg [5].

The main reason for culture shock is human impact of the difference in cultures. Specialists offered a model for this known as U-shaped adaptation, in which five stages of adaptation are promoted: *Honeymoon, Frustration and depression, Critical, Optimistic temper, full adaptation*.

The factors, influencing the culture shock are individual human characteristics: sex, age, features of character. Older people, more painful they perceive new surrounding, more difficult they feel the culture shock. The factor of education is important for adaptation. Higher the factor, more successfully the adaptation is felt. More complicated the world view the human has, easier and faster he perceive new things. There is, for example, so-called “gifted conflict” or social symbolism, It often spoils working and personal attitudes. In China, for example, you don’t have to present the watch for New Year not to mention about the fleeting time. In Japan such traditional gift to one’s sweetheart like the bouquet of flowers is allowed to give to only very famous, of high rank people. “Russian student in Paris took white chrysanthemums, which are brought to the funereal in France, to her friend’s wedding. Like a clove is thought the flowers of mourning in German culture, so then we give them on different holidays.” Russians think that



even numbers in bouquet are symbolized mourning meaning of bouquet but many people don't" [6].

In every culture there are standards of behavior such as how to and in which case to do things, what to wear, in which manner to greet, in which way to express one's feelings, how to thank or not to speak on this or that subject, the culture of food and drinks. This is important because it can provoke the cultural shock or can be a taboo. Taboos are very different from culture to culture. For example, you do not ask about salary, number of children etc., in the European culture, but in the Kyrgyz culture everybody can ask and answer about their salary. Yet, there are different areas of taboo conversation such as politics, or the name of a husband's relatives. These would be impolite in Kyrgyz society. In the U.S. these issues would be different still.

It is important to reveal of universal and national-specific features of verbal and non-verbal aspects of Cross-cultural communication, to develop the intercultural communicative competences.

The key areas for investigation are summarized as follows:

1. to substantiate the meaning of intercultural communication in order to teach foreign languages.

2. to analyze verbal and non-verbal aspects of Cross-cultural communication, such as politeness, taboo, speech etiquette in different cultures. European (English - speaking) culture in comparison to (Kyrgyz) one.

3. to develop models of intercultural communicative competences for successful intercultural communication with others cultures.

The development of intercultural communicative competencies in the field of intercultural communication has a big meaning to promote the professional skills of teaching staff development and students.

The professional skills include the competence in the field of profession, the competence in the field of foreign languages teaching methods, the competence in the field of culture and also in the field of Cross-cultural communication.

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## Jurisprudence

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[diana\\_legal@mail.ru](mailto:diana_legal@mail.ru)**Optimization of the electoral legislation of the Kyrgyz Republic  
through implementation of information technologies****Оптимизация избирательного законодательства КР в сфере  
внедрения информационных технологий****Маалыматтык технологиялар тармагында Кыргыз  
Республикасынын шайлоо мыйзамдарынына  
ылайыкташтыруу**

**Abstract:** the article reviews the electoral legislation of the Kyrgyz Republic, including new legal norms and regulations that improve the organization and conduct of elections. The issue of introduction of information technologies in the electoral system is also considered. The author presents some results of the public election monitoring using biometric data during local and parliamentary elections. The main goal of this article is to provide legal information to representatives of political parties, public activists, members of election commissions for the purpose of improving the conduct of elections.

**Аннотация:** в статье дается обзор избирательного законодательства КР, включающий новые правовые нормы и подзаконные акты, улучшающие организацию и проведение выборов. Рассматривается вопрос внедрения информационных технологий в избирательную систему. Автор представляет некоторые результаты общественного мониторинга выборов с применением биометрических данных во время местных и парламентских выборов. Основной целью данной статьи является предоставление правовой информации представителям политических партий, общественным активистам, членам избирательных комиссий для улучшения проведения выборов.

**Аннотация:** макалада шайлоону уюштурууну жана өткөрүүнү жакшыртуу үчүн Кыргыз Республикасынын жаңы укуктук ченемдери жана жоболор шайлоо мыйзамдарынын жаатында серептелген. Шайлоо системасында маалыматтык технологияларын колдонуу боюнча маселеси каралган. Автор жергиликтүү жана парламенттик шайлоодо жүргүзүлгөн мониторингдин кээ бир жыйынтыктарын биометрикалык маалыматтарды колдонуу аркылуу чагылдырылган. Бул макаланын негизги максаты шайлоо өткөрүүнү жакшыртуу үчүн саясий партияларга, жарандык активисттерге, шайлоо комиссияларынын мүчөлөрүнө укуктук маалымат берүү болуп саналат.

**Keywords:** *reform; elections, information technologies, biometric passport, elections to local councils (local keneshes); electoral process; voters, automatic scanning ballot boxes; state registration service; biometric registration.*

**Ключевые слова:** *реформа; выборы, информационные технологии, биометрический паспорт, выборы местных кенешей; избирательный процесс; избиратели, автоматические считывающие урны; государственная регистрационная служба; биометрическая регистрация.*

**Негизги сөздөр:** *өзгөртүү; шайлоо, маалыматтык технологиялар, биометриялык паспорт, жергиликтүү кенештин шайлоосу; шайлоо процесси; шайлоочулар; автоматтык эсептөөчү урна; мамлекеттик каттоо кызматы; биометрикалык каттоо.*

The reform of the electoral legislation in Kyrgyzstan has started after 2010, when the constitutional law "On Presidential and Jogorku Kenesh Elections in the Kyrgyz Republic" and the law "On Elections to Local Keneshes" were adopted [1]. Based on the above-mentioned laws, the elections of the President, members of the Parliament (*the Jogorku Kenesh*) and local councils (*keneshes*) were held. In practice, previous elections were accompanied by violations that led to unfair and non-transparent election results. In particular, such phenomena as carousel voting and ballot stuffing could have affected the results of the voting. To prevent such violations, a bill was initiated to introduce information technologies in elections at all levels. The following new concepts were introduced in the field of the automated electoral process: *operator, thermal printer, automatic scanning, ballot box, check, failure.*

The country's authorities, demonstrating strong political will, began active lobbying of the new draft law "On the biometric registration of citizens of the Kyrgyz Republic" [2]. The system for collecting biometric data allowed to create the single information space and the single database of citizens of the Kyrgyz Republic with centralized storage and regular information update. The law was aimed at creating the database of citizens of the Kyrgyz Republic based on biometric indicators and the exact compilation of the voters list; as well as establishing a legal framework regulating relations arising in the performance of the government agencies in collecting, storing, using, processing, updating and protecting the biometric data of citizens.

During the discussion of the draft law, two opposing views emerged in the society. The authors of the draft law, members of the Parliament (*the Jogorku Kenesh*), in their decision relied on the experience of other countries. For example, in many countries processing of biometric foreign passports lasted for ten years. In 2004, the European Commission issued an order on the integration of biometric information with foreign passports and

entry documents operating in the EU. These measures were taken to prevent illegal entry into the EU territory. Explanatory notes to the bill included arguments on the utility of the law for Kyrgyzstan. Although the issue of biometric passports was discussed during the adoption of the draft law, the main reason was the introduction of a biometric data system into the electoral process. This fact indicates that the authorities wanted to apply the experience of foreign countries in the use of new technologies exactly in the election process.

Introduction of biometric technology was to become one of the mechanisms to increase the level of citizens' trust in the elections, state electoral institutions and transparency of the electoral process. The government has fulfilled the task set for providing biometric passports to the population: from May 1 to the end of December 2017, the issuance of biometric passports to the population is free, and later it will become a paid service.

On April 15, 2014, the President of the Kyrgyz Republic A. Atambayev at the meeting of the National Council for Sustainable Development of Kyrgyzstan instructed the Government of the Kyrgyz Republic to begin the work on collecting biometric data of citizens. The government was in charge of resolving technical issues upon creation of the conditions for safe storage of the biometric data, purchase of equipment, development of software and opening of the biometric data collection points, as well as informing citizens about the need to participate.

On the other hand, active representatives of the civil society expressed doubts about the legality of the law: in their opinion, collection of the biometric data (fingerprinting and photographing) under compulsion is illegal, and contradicts the Constitution of the Kyrgyz Republic. In this connection, a petition was submitted by the civil activists to the Constitutional Chamber of the Supreme Court regarding the law "On the biometric registration of citizens of the Kyrgyz Republic." The Constitutional Chamber refused to satisfy the petition, referring to the political will of the country's authorities.

In October 2015, for the first time in Kyrgyzstan, parliamentary elections and in March 2016 elections to local councils were held using biometric data. The organization of the full-scale election activities using new technologies in Kyrgyzstan was a success. This process was observed by not only the whole community of Kyrgyzstan but also by the representatives of foreign countries. Implementation of the new information technologies in the electoral process has been supported by the multiple

factors: political will of the government officials, organizational and informational campaigns among the population, and extensive financial expenditures.

A new approach to the conduct of elections in Kyrgyzstan, with the use of innovative technologies actually contributed to the transparency of the elections that led to a significant increase in the voters' trust. Testing election management information system in the pilot areas helped to identify the strengths and weaknesses of their use. One of the problems was prevented admission of a certain number of voters to the voting process due to their absence in the database of polling stations. Representatives of the State Registration Service (SRS) explained this situation by the fact that the list of voters was formed from the database of the Central Election Commission (CEC).

The application of automatic scanning ballot boxes met expectations on the prevention of mass ballot stuffing with influencing the results of the voting. At the same time, it should be noted that during the initial launch of the system in some areas has delayed the voting process because of the automatic scanning ballot boxes failure. While calculating the results of the voting it became necessary to re-count the ballots in order to confirm the results. Manual counting of the ballots resolved the questionable issue. Based on the analysis of the shortcomings, recommendations were made for amending the law and for further implementation in practice during the parliamentary elections.

In April 2015, the following amendments were introduced into the constitutional law of the Kyrgyz Republic "On Presidential and Parliamentary Elections in the Kyrgyz Republic":

1. The identity document according to the new Elections Law is only passport (ID card). In this regard, officer's identification certificate, pension certificate, driver's license lost their force and were not allowed during the election processes.

2. Early voting and the marking of voters were excluded.

3. Automatic scanning ballot box is used on the Election Day. In case of failure of one machine, the spare machine is used. In case of failure of the spare machine, the process continues with the use of stationary box for voting.

4. The voter's list is prepared in both electronic and hard copy versions.

5. The voter's list includes only citizens who have biometric registration.

6. Voter's list is compiled by the State Registration Service on the basis of information about voters – their biometric and personal data.

7. To participate in the elections citizens have to check if their name is included in the final voter list not later than 15 calendar days before the voting day and should have passed the biometric registration.

8. State Registration Service forms the voter list based on the biometric data and transmits the database electronically to the CEC 50 calendar days before the voting day.

9. The CEC immediately prints out the voter list and sends it to the Precinct Election Commissions (PECs). The PECs at least 45 days prior to the voting date post lists for review at the polling stations.

10. The verbal request for voting outside the premises is excluded (only a written request of the voter is allowed).

11. During the voting, after the identification of the voter a receipt issued to the voter. The voter presents the receipt to the member of the PEC, who gives him a ballot in exchange for the receipt.

12. In the polling station, identification of voter according to his / her biometric and personal data is implemented by operators, the representatives of the SRS, together with the members of the PEC.

13. The possibility of appealing decisions, actions (inaction) of election commissions in courts of first instance is not allowed. They can be appeal to a higher election commission.

14. Only decisions and actions of the CEC can be appealed in courts.

15. Voting on the Election Day is conducted from 8 a.m. to 20 p.m.

16. To vote outside the premises is only allowed for those citizens who have filed written application to the Precinct Election Commission (PEC).

17. The responsibilities and duties of the Internal Affairs bodies and the Prosecutor's office for consideration of complaints of participants of the electoral process are delineated.

18. After the voting and prior to the distribution of mandates, candidate included in the list of candidates by a political party has the right to apply to the corresponding territorial election commission for withdrawal from the list of candidates.

In addition, on June 6, 2017, the following amendments and additions to the above-mentioned law were adopted:

1. A new concept of "public observer" is introduced. It is a person appointed by a non-profit organization of the KR to observe the election process. At the same time, citizens of the Kyrgyz Republic cannot be accredited as international observers.

2. Internet publications can be used for informing voters and conducting election campaigns.

3. The law prohibits the use of green plantations, trees, slopes, peaks of mountains and hills, other natural elevations to accommodate agitation materials in any form.

4. Depending on the degree of completeness and purpose, the voter lists are divided into preliminary, control and final.

5. To conduct voting and count the votes of electors, polling stations are formed taking into account local and other conditions in order to create maximum convenience for voters. Electoral precincts are formed by the relevant territorial election commissions no later than 75 calendar days prior to the voting day, according to a rule of no more than 2500 voters in each sector. The management of the boundaries of polling stations is carried out according to the procedure approved by the Central Election Commission (CEC).

6. Election information campaigns carried out on the radio are not subject to the requirement that all printed and other informational materials should contain, i.e.: the name and address of the organization (as well as surnames, first names, patronymics and addresses of the place of residence of persons) that produced informational materials; the surname, first name, patronymic of the person (name of the organization) who ordered the production of materials; information on materials circulation and the date of issue; the name, patronymic, middle name of the candidate/authorized representative of political party.

7. The procedure for publishing the preliminary results of voting, the results of voting and the election results on the official website of the Central Election Commission has been established.

8. If earlier registration of a candidate has been canceled if the candidate, his representatives, or close relatives of the candidate bribing voters has been confirmed. Now, this list has been extended by candidate's authorized representatives and observers.

9. In addition, it is established that with the entry into force of the conviction of a court against a candidate, his/her registration is canceled.

10. According to the law, the next presidential election is not held on the third Sunday of November, as it was before, but on the third Sunday of October, in which the term of office of the President for which he has been elected expires.

11. The procedure for establishing the command of the state language by a presidential candidate was revised.

12. The size of the electoral fund of a presidential candidate has been increased. The applicant's own funds, which cannot exceed the estimated figure by more than 15,000 times, are increased to 150,000 times [3].

In implementation of the constitutional law, the Central Election Commission adopted a number of by-laws. These are the regulation "On the organization and procedure for voting and determining the results of voting by election commissions during the election of members of the Parliament" from July 28, 2015 [4], and the regulation "On the procedure for interaction of the Central Commission for Elections and Referenda and the State Registration Service" from August 12, 2015 [5]. The first one regulates the



organization of voting, the will expression by voters, including the use of innovative technologies, counting the votes of the electorate and determining the results of voting by election commissions. In addition, the other one determines the procedure for interaction between the two state bodies on the issues of drawing up, transferring the voter lists, getting acquainted with them, considering voters' statements about their intention to vote at the electoral address and on other issues requiring prompt resolution.

All of the above regulatory and legal acts are aimed at improving the electoral system, upgrading and facilitating the work of the members of the election commissions. Two state bodies, the CEC and the SRS, can interact in the rapid and qualitative compilation and updating of the voter lists, that is one of the important factors in the electoral process.

The Government of the Kyrgyz Republic and the CEC have made significant efforts to introduce a new system of biometric voter registration and electronic voting. During the testing of the automated control system, some problems were identified: the system could not recognize the fingerprints of some citizens, or the system displayed the data of another person in identification with fingerprints. In some cases, during the identification of voters some equipment malfunctions took place.

According to the results of the parliamentary elections observation by an independent organization - the Coalition for Democracy and Civil Society, it can be concluded that, in general, the violation rate is low (9%). However, in some regions violation were more common, for example, in the city of Osh (19% PECs), in Naryn oblast (14% PECs), Talas oblast (12% PECs) and Issyk-Kul oblast (12% PECs). Technical malfunction of equipment for the identification of voters was observed in 40% of PECs. In the regional context, the situation in Osh needs to be mentioned, as such: in every second PEC (50% of PECs) equipment malfunction lasted no more than 10 minutes, in 6% PECs equipment did not work for 10 to 30 minutes, and in 6% PECs equipment did not work for more than 30 minutes. In addition, problems with the operation of equipment were widespread in Chui oblast and in Bishkek (46% of PECs). Despite the first experience of using complex equipment and changes in the voting procedures, in 72% of PECs equipment worked properly [6].

On March 27, 2016, biometric identification technologies were also used in the elections to local councils (*keneshes*). Local elections took place in 6 cities and 21 villages (*ayil aimak*) at 199 polling stations. The SRS reported that 264,000 voters has participated in the elections. Local elections were conducted using procedures tested in the last parliamentary elections in October 2015, namely: identification of voters based on biometric data and using of automatic scanning ballot boxes. To implement the tasks set, the Law on Local Elections to the Jogorku Kenesh of the Kyrgyz Republic was

amended on January 21, 2016, two months before the election [7], to introduce these procedures.

As a result, we can say that the introduction of the information technology has brought greater transparency in the procedure of counting votes. It is worth noting that the results of these elections were not disputed by rallies and demonstrations. The electronic voting contributed to fulfilling the "one voter - one vote" principle. In the parliamentary elections of 2015, the CEC has limited itself to publishing preliminary data from the automatic scanning ballot boxes, while manual counting protocols are official, though the results of manual counting have not been posted on the CEC website.

Nevertheless, there is another problem, which cannot be solved using information technology in elections that is bribing of voters. According to experts, if earlier, before the use of new information technologies, candidates could buy wholesale votes of the members of election commissions or use the administrative resource; then during the parliamentary election campaign the practice of voters bribing started being used more widely.

Thus, the analysis of the election legislation of the Kyrgyz Republic and the practice of its application show the following positive aspects:

1. Innovation of information technologies in the electoral process;
2. Simplified counting of the votes when summarizing the voting results;
3. Decrease in the number of falsifications during elections;
4. The range of subjects of punishment for bribing voters, such as candidate proxies and observers, has been expanded.

However, at the same time, there are also negative aspects, such as:

1. Restriction of observers from non-profit organizations to move freely and to attend any polling stations, as well as to appeal against the decisions and actions (inaction) of the election commission.
2. Increase in the size of the electoral fund of a presidential candidate f. This financial barrier opens the way only for rich and influential people to run for presidency.
3. Reducing the number of voters due to those who refused to undergo the procedure of biometric data collection.

Currently, the voter lists included 2 914 588 citizens of the Kyrgyz Republic who have reached 18 years of age and have passed biometric registration. That shows greater number of voters who passed the biometrics comparing to the last elections (2 807 549) [8]. For constant communication with the population, the Kyrgyz Central Election Commission (CEC) has started using a WhatsApp application, and in addition, operates a public consultation room. The President of Kyrgyzstan Almazbek Atambayev instructed the CEC to rectify all defects and omissions in the work of the automatic scanning ballot boxes to ensure the uninterrupted functioning.

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## Negotiations with local community in the mining industry of Kyrgyzstan

**Способы согласования спорных вопросов с местным населением в горнодобывающей индустрии в Кыргызстане**

**Кыргызстанда тоо-кен тармагында жергиликтүү калк менен болгон талаш суроолорду сүйлөшүү ыкмалары**

**Abstract:** the paper presents a research on the ways to resolve mining companies misunderstanding of local population using negotiations and provides successful examples from other countries.

**Аннотация:** статья рассматривает способы согласования спорных вопросов горнодобывающих компаний с местным населением, а также приводит успешные примеры таких переговоров в других странах.

**Аннотация:** макала тоо-кен тармагындагы тоо-кен казып алуу компаниялардын жергиликтүү калк менен болгон талаш суроолорун чече турган ыкмаларды изилдейт, жана башка өлкөлөрдүн ийгиликтүү мисалдары жөнүндө талкуулайт.

**Keywords:** mining industry; Kumtor, negotiations; Centerra Gold; conflicts.

**Ключевые слова:** горнодобывающая индустрия; Кумтор; переговоры; Центерра Голд; конфликты.

**Негизги сөздөр:** тоо-кен өнөр жайы; Кумтор; сүйлөшүүлөр; Центерра Голд; чыр-чатактар.

In recent years, many foreign-owned mining companies, such as Kumtor, Chaarat Gold and Talas Copper Gold have faced tremendous hardships. Over the past years, series of protests and unrests of the local communities against the work of mining operators have led to disruption of their work [1]. The situation in the mining sphere has had a negative impact on the country's image abroad leading to an outflow of many foreign investors from Kyrgyzstan [2].

Kumtor is the largest taxpayer in the country, only in the first financial quarter of 2017, it paid around \$35mln to Kyrgyzstan's budget in form of taxes, social payment and other mandatory payments [3]. Under the existing agreement, Kyrgyz Republic owns 26.6% in Centerra Gold, which is 100% owner of Kumtor, via Kyrgyzaltyn JSC [ibid.].

Operating in Kyrgyzstan, Kumtor faces typical challenges investors face in developing countries: corrupt government, political instability, and local population's resistance, resulting in constant disruption of the

company's work. Understanding that a broader issue of corruption in the government should be addressed in the first place, this article, nevertheless, tries to find a way to solve mining companies misunderstandings with local population using negotiations, based on Kumtor's example.

Section 5 of the Article 12 of the *Constitution of the Kyrgyz Republic* states that "The land, its resources ... as other natural resources shall be the exclusive property of the Kyrgyz Republic; these shall be used for the purpose of preserving a unified environmental system and shall enjoy special protection from the State." Section 1 of the Article 2 establishes that "the people of Kyrgyzstan are the bearer of sovereignty and the sole source of state power in the Kyrgyz Republic" [4]. These two articles are used as a justification of the local community's claims to Kumtor, because they believe people of Kyrgyzstan shall solely benefit from its resources. This opinion is also supported in David Gulette's research on conflict sensitivity in mining in Kyrgyzstan [5]. Especially taking into account widely known violations of the Government when signing the concession agreement with Kumtor [6].

#### *Conflict history*

There were many occasions of conflicts with the local population, the biggest ones being the following:

1. In 1998, a truck carrying 1,762 kg of sodium cyanide fell into the Barskaun River, which falls into the biggest lake in Kyrgyzstan – Issyk-Kul. Kumtor had to settle this environmental catastrophe for 3.7 million USD [7].

2. In 2012, political opposition used the sensitive topic of Kumtor to organize protests and demand nationalization of the company. However, they were arrested, which caused unrests in Issyk-Kul in support of the opposition [5; p 29]. Environmental concerns such as displacement of glaciers, radiation, dust pollution and cyanide poisoning, were raised again.

3. In 2012 and 2013, there was a series of road blockades; experts predicted that continuing social and legal instability in the mining sector might lead Kumtor to close down, and the country would incur great financial losses [8]. Being under pressure the Government started renegotiations with Kumtor, but it did not prevent mass protests on May 29, 2013 when 250 young men blocked the road to the gold mine in Barskaun village, cut the power off demanding denunciation of the Agreement with Kumtor and damages to be covered with 5 billion USD [9]. Protests continued for many days and expanded further; the President declared a state of emergency in the area. Protesters attacked police forces, and 90 people were arrested as a result.

4. In August of 2012, a video was made public where two men, claimed to be organizers of the blockade in Barskaun, met with a representative of Kumtor, requested 3 million USD for "peace" in the region and threatened with civil war in the event of a failure to comply [10]. Extortion of money was recorded with a hidden camera and resulted in

criminal charges brought against these two men.

5. In October 2013, protesters captured the Governor of the Issyk-Kul oblast and demanded nationalization of Kumtor and release of the people arrested in Barskaun [11]. Again, mainly young men from Jeti-Oguz district participated in protests with no women or elderly people. To release the Governor the police used tear gas and rubber bullets and was able to stabilize the situation in Karakol. The Prime Minister of Kyrgyzstan met with people in Karakol, promised renegotiation of the Agreement with Kumtor and stated intentions on opening a new Joint Venture with 50% shares for Kyrgyzstan [12].

Kumtor, to loosen the existing tension, kept investing in the infrastructure by reconstructing road Balykchy – Karakol in 2013 [ibid.] and continued paying 1% of its annual gross revenue to the Issyk-Kul region Development Fund, established in 1994.

#### *Challenges for Kumtor*

Kumtor faces several challenges when tries to facilitate negotiation processes with the local community. First, there is a problem with identification of stakeholders and their authorized representatives, as in situation with the extortionists. They claimed to represent the local community's interests, but in reality they were not supported by the local population at all [10, p. 1].

Second, over the years conflict broke out in different parts of the Issyk-Kul region, in Barskaun, Saruu and Karakol, each village having shared interests and some interests distinguishable from others. If in Jeti-Oguz people were more concerned with ecology and demanded more employment opportunities as the area located closest to the mine, Karakol demanded increased payments to the local budget.

Third, acknowledging these interests, nevertheless Kumtor must consider local populations' mistrust to foreign investors and corrupt state officials, misunderstanding of the investments impact on the region, lack of knowledge on the international arbitration and other instruments to be employed by the investors.

In 2014, reporters conducted independent investigations and found out that the management of the Development Fund was highly untransparent and involved corruption and misconduct [13]. As a result, criminal proceedings were instituted against the Board of the Fund and the management of the tender commissions [14]. Many projects were suspended, subcontractors poorly performed their work or did not finish the reconstruction of the ongoing projects. Obviously, the Fund's work had not been externally audited over the years. Its sole auditor – the

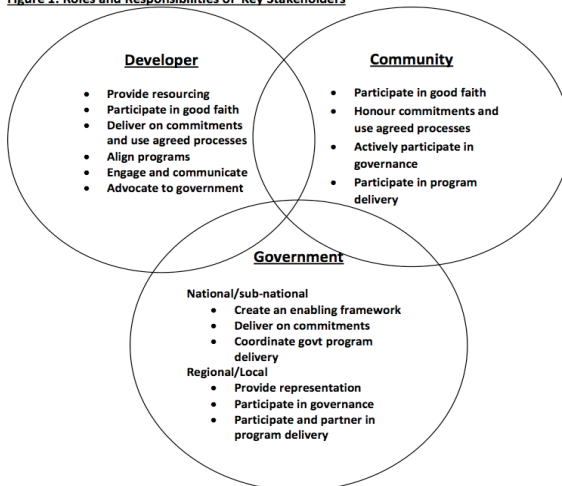


Accounts Chamber of the Kyrgyz Republic had been widely perceived as one of the most corrupt government agencies in Kyrgyzstan itself [15].

According to the *Statute of the Fund*, the Board of the Fund consists of 12 people: 3 - from the Government, 3 - from the local administration, 3 - from the local council (kenesh), 3 - from non-governmental organizations, which are appointed by the Prime Minister based on recommendations of the Governor of the Issyk-Kul oblast [16]. The local community does not participate in this process, which undermines the legitimacy of the Fund in public perception. Clearly, transferring 1% of Kumtor's gross profit to the Fund did not benefit the company as it would in countries with the rule of law and good governance practices. It is also important for Kumtor to recognize that this approach is perceived rather as a lack of interest in the local community's concerns and Kumtor being engaged in corrupt practices with the Fund.

In approaching negotiations with each stakeholder, it is very crucial to acknowledge that each party has to participate in negotiations in good faith and communicate with each other. The Centre for the Social Responsibility made a clear distinction in each stakeholder's roles [17], which should guide stakeholders in the Kyrgyz gold mine industry.

Figure 1: Roles and Responsibilities of Key Stakeholders



### *Successful cases of negotiations*

Case of Chevron Nigeria LTD (Chevron) and local population affected by oil and gas extraction in Niger Delta presents particular interest due to hostile relationship between the local community and investors [18]. Considering their previous negative experiences, in Nigeria Chevron successfully signed the General Memoranda of Understanding (GMOU) with the clusters of the communities impacted by the company's operations



[18, p. 2]. GMOU model specified the principles of mutual work such as transparency, partnership and accountability and allowed people to engage in every step of the community development projects. GMOU model created the Regional Development Council (RDC), which was comprised of local government, local community representatives, donors, Chevron, state representatives and other stakeholders. The Council in its turn was divided into the Project Review Committee, the Peace Building Committee and the Accounts and Audit Committee.

RDC carried out two substantial participatory stakeholder evaluations that researched the local community's perception of investors, community engagement project and ideas of transparency, fairness and accountability [18, p.8]. They worked to identify interests of different groups: elderly, youth, women etc.

As a result of the comprehensive approach, the parties successfully negotiated for only several weeks instead of months [18, p. 9], with the following steps proved to be successful:

- Joint training of the parties on Mutual Gains approach to negotiations;
- Joint naming of the issues to be negotiated;
- Joint sessions to share interests and options;
- Joint sessions to build packages that could create joint gains;
- Joint sessions to resolve impasses and disagreements.

This example presents highly organized and structured negotiation process with the local community's engagement starting from the early preparation steps for the negotiations.

The Peru LNG Project operated by Hunt Oil Company addressed the local community's environmental issues by involving a third neutral party to implement the Participatory Environmental and Social Monitoring Programme [19]. The successful program included in monitoring process people that were selected by their communities. The program set criteria to ensure people with relevant background and knowledge would be nominated by their communities, and provided them with necessary trainings to enable their full and comprehensive participation in the project. This is another successful mechanism to build trust, because first of all community is giving consent to specific people, which are able to make proper decisions on behalf of their community when they are educated and not driven by emotions and frustration.

Thus, mistrust of the local community to the Fund in the way of spending Kumtor's money could be addressed similarly as in Nexen's

successful project – the Aboriginal scholarship programs [20]. Nexen, Canadian oil and gas Company launched a scholarship project for local students, which was administered in cooperation with universities; another successful project was the Summer Student Employment Program that offered students trainings for improving their employment opportunities upon graduation.

*Preparations to attract investors*

Legitimacy of the mining company's operation in the country is highly controversial due to the lack of the local population's trust to the state and local authorities. Because the local population does not participate at the stage of granting a license and generally does not understand how the selection process happens, they feel deceived. Therefore, it is very important to make them feel included in the decision-making. IPIECA (global oil and gas industry association for environmental and social issues) recommends a concept of free, prior and informed consent, the idea of which is to engage local communities at the early stage of negotiations with government and ask for their consent to launch mining project [19, p. 19].

Government might contest this approach; however, mining companies should at least propose it to earn trust of local community. Voting 'yes' to investments would sufficiently decrease local populations' objection to company's work at later stages, therefore prior to a tender or auction to sell exploration and mining rights, the Government is recommended to hold a referendum at a desired location in support of free, prior and informed consent.

Prior to a referendum, government and mining company must jointly inform local population about the mine, its approximate value, resources needed, the length of the project, and benefits of investment to their region. A model of Kurultai (Kyrgyz for – “national/local assembly with participation of well-respected members of the community) could be employed, where not only foreign company, but distinguished economists, professors and local leaders would talk to the communities and explain information in a clear and precise way. Using its authority, state agency could also seek out to the assistance of international organizations specializing in the field, which could serve as independent party that would ensure fairness of negotiations with mining company and upheld international standards in protecting local community's interest in such projects.

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*Selection of a mining company*

When a state agency makes a shortlist of possible companies to obtain a license it must consider company's plan on negotiations and possible agreement draft. It would help to identify those companies that would be interested in negotiations with local communities and determined to compromise. Additionally, their draft proposals would draw a zone of possible agreement for a state agency to analyze if it meets the existing requirements of local communities.

Before signing a final agreement with a company, state must verify if company has started groundwork informing local population on its work, on how ecology will be preserved and which benefits will they receive. At this stage, the role and presence of state agency should be minimized in the best interest of mining companies.

*Preparation for negotiations*

When preparing for negotiations, mining company should carry out evaluation of local community's interests and concerns and consider possible solutions to address them. Simultaneously, mining company should be able to identify stakeholders and possible informal leaders it will be working with in a long-term.

This approach would definitely benefit Kumtor, because inclusiveness of different groups is extremely important. They should, first of all, divide local communities into groups: first – the closest located villages, which would be small villages from Barskaun to Kyzyl-Suu, second – qualified community of the further located villages and cities, including small villages from Kyzyl-Suu to Karakol. Within these qualified communities they should also distinguish age groups (children, youth, working people, elderly people), social groups (workers, unemployed, skilled professionals etc.). Usually in Kyrgyzstan negotiations are held with aksakals (Kyrgyz for – “older respected informal leaders”) in conflicting regions [21], however currently newly emerged groups of young men has become the driving force in unrests [10, p. 2]. Therefore, defining stakeholders in a meticulous way would enable mining company to address interests and concerns of local community more efficiently as Chevron successfully did in Nigeria.

The company can have its own department that would work directly with communities on social projects. For instance, it can launch scholarship programs for school and university students as Nexen's Aboriginal Scholarship Programs. Undoubtedly, local people are interested in their

children receiving good education; therefore, such scholarship programs would positively impact mining company's reputation.

Another emphasis should be made on guided tours for local population. Such public tours would enable to see which technics are used in mining, and what kind of environment protection measures is implemented. For instance, rare photos of Kumtor exploding mountains and digging a huge hole amidst mountains are perceived as the images of colonizers destroying the nature, and it strongly disturbs the minds of local population [22]. Considering this fact, guided tours should be approached very carefully; for instance, with explanatory movie offered in the beginning of the tour, when mining company explains its goals and benefits the country is receiving from mining.

In addressing environmental issues, mining company should definitely use a model of Hunt Oil Company's Participatory Environmental and Social Monitoring Programme discussed previously. Involving a prominent environmental organization and local community to monitor changes in ecology of the region, as well as participate in the project to minimize the harm, would positively benefit mining company and reduce aggression based on the lack of information.

It is to be noted that over the years of conflict, Kumtor has started contributing to the community development projects such as supporting agricultural innovations, cooperating with microfinance companies to further lend money with low interest rates, launching vocational education training and organizing summer camps for local children. Additionally, by 2017 it employs around 3000 locals with salaries much higher than average in the country [23]. Kumtor's approach has been successful in keeping peace since 2015.

Additionally, considering mistrust of the local population to the corrupt state, Kumtor should control its financial contributions to the Fund. As noted earlier, the Fund is not transparent; therefore, either Kumtor should pay for independent external audit, request to change the Statue and appoint representatives from the community to the Board, or fund the local community's projects directly, without any participation of the third parties.

#### *Negotiations*

In negotiations, mining company have to avoid positional bargaining and negotiate on the basis of shared interests. Both parties, mining company and local community are interested in having the mine. Nevertheless, people have specific attachment to the nature, the land and strong feeling of ownership for natural resources; therefore, mining company has to approach their feelings very carefully. Learning more about the country's culture, traditions would benefit mining companies immensely; they should show respect and interest in local issues.

It is very important to have the Kyrgyz speaking people in a mining company's negotiating team; if it consist fully of foreigners, the local community might not feel even being listened to and heard due to the language barriers. Thus, it is very important to create friendly and familiar environment. Not only should an agreement be a result of such negotiations, but also many spin-off projects proposed by mining company.

Mining company should also genuinely inform the other party about alternatives they have, such as international arbitration, which might be used if local communities disrupt its work. It should be explained that the state will be held liable and has to pay reparations that might negatively affect social programs run by the company in the region. And by no means should it be presented as a threat, rather as a remedy that would largely harm state and local budget, and approached with shared interest in stability and cost saving.

It is very important to acknowledge that for effective negotiations mining companies should avoid any secret negotiations with government. If the information on secret negotiations becomes public, trust of local community will be lost for decades. It is very important for mining company to acknowledge that it must approach negotiation process in good faith, disclose all the relevant information on the project and its implications for ecology, and inform about protective measures to be taken. Considering that local communities have trust issues, it is very important to recognize their concerns and start building trust from the very beginning.

Obviously, government should take part in fostering the relationship between mining companies and local population, but rather it should internalize laws, procedures and agreements concluded with investors within the local community. In this respect, the state shall cooperate with advocacy initiatives and civil activist groups competent in working with grassroots. They could carry out large-scale campaigns aimed at refuting misconceptions that local people might have.

The paper suggests mining companies to approach negotiations using the principle of mutual gains; nevertheless, it recommends to consider local community's interests and concerns in the first place. Mining companies should be aware of the influence of the third parties; therefore, it should diligently work on the trust-building process with local communities, which requires good-faith participation and direct involvement in the projects that address concerns of local communities. The paper emphasizes that conflicts with local people are separable from larger issues in a country and can be solved through negotiations.

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