

THE SHARE OF REQUIRED COSTS IN INVESTMENT AMOUNTS FOR MINING OPERATING ACTIVITIES IN PASTURE LANDS IN TURKEY

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ABSTRACT

To realize mining operations in pasture lands in Turkey, once within the total life of mine operations, some cost items, such as land and grass loss expenses, are requested from mining investors. To determine the share of these costs within the mining investment amounts, surveys were carried out through the "Survey Monkey" survey program for mining enterprises. In the answers to these questions, the cost of the pasture lands is calculated as the ratio of each mining enterprise to its investment amounts. The average of all fees paid by the mining enterprises for the pasture lands to a total of pre-2018 and new mining investment amounts after 2018 is 0.44% for all mineral groups. These numbers show that pasture costs taken once from mining enterprises in Turkey have a significant share in total investment amounts.

Anahtar Kelimeler: Cost, Expenditure, Investment, Mining, Operation.

TÜRKİYE'DE MERA ALANLARINDA MADEN İŞLETME FAALİYETLERİ YAPILABİLMESİ İÇİN İSTENEN BEDELLERİN YATIRIM TUTARLARI İÇERİSİNDEKİ PAYI

ÖZET

Türkiye'de mera alanlarında maden işletme faaliyetleri gerçekleştirebilmek için maden yatırımcılarından, maden işletme ömrü içerisinde bir defa olmak üzere, arazi ve ot kaybı gideri gibi birtakım bedeller istenmektedir. Bu bedellerin maden işletmelerinin yatırım tutarları içerisinde ne kadarlık bir pay aldığını tespit edebilmek amacıyla "Anket Maymun" programı kullanılarak maden işletmelerine anket gerçekleştirilmiştir. Bu sorulara verilen cevaplarda mera bedelleri, her maden işletmesinin kendi yatırım tutarlarına oranlanmıştır. Anket sorusuna cevap veren tüm maden işletmelerinin mera alanları için ödedikleri tüm bedellerin 2018 yılı öncesi mevcut ve 2018 yılı sonrası hedeflenen yeni madencilik yatırım tutarları toplamına oranı tüm maden grupları için ortalama % 0,44'dür. Bu rakamlar dahi Türkiye'de maden işletmelerinden bir kez alınan mera bedellerinin, mevcut ve hedeflenen toplam yatırım tutarları içerisinde hiç de küçümsenmeyecek bir paya sahip olduğunu göstermektedir.

Keywords: Maliyet, Gider, Yatırım, Madencilik, İşletme.

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1. Introduction

It is an indisputable fact that the development of the national industries should be accelerated by developing mining, by using the resources available in the best way that they are not left idle and by the production of resources through identifying unknown resources to ensure the development of countries in the world.

There is no chance to choose a place in mining because the mines must be produced where they are located. The fact that the mines have to be produced where they are located brings along other benefits and field usage conflicts. Indeed, one of the most common ones is *pasture lands*. *Pasture lands* constitute 18.6% of the 78,534,470 million hectares, which are the total surface of Turkey (Figure 1).

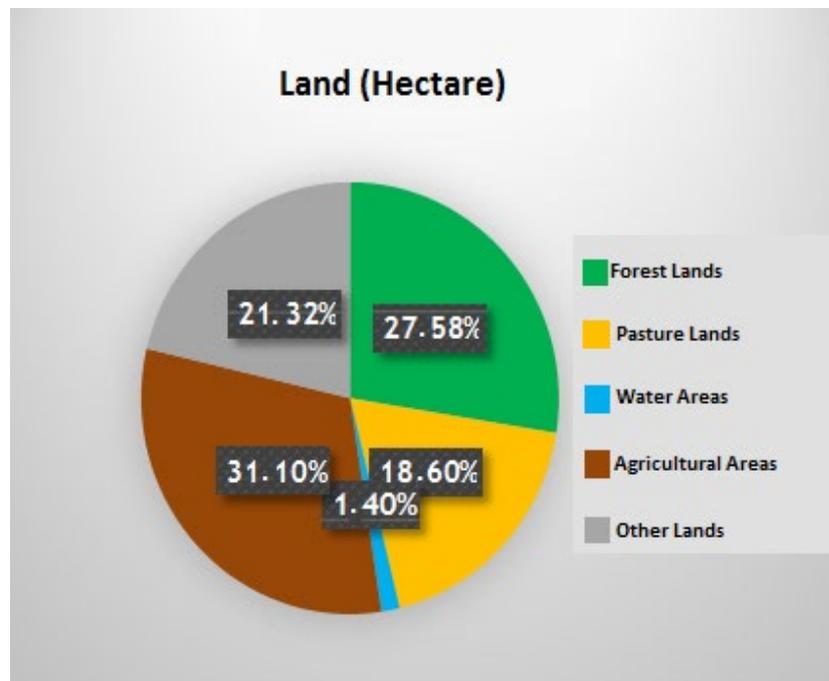


Figure 1. The proportion of land use classes to the total surface of Turkey

The immovable properties in Turkey can be divided into two main categories: Immovable property subject to private ownership and immovable properties under the public ownership of the state [1]. In administrative law, the state-owned immovable properties are classified into three groups: ownerless properties (including *pasture lands*), common properties and service properties[†].

The allocation of service properties to mining is almost impossible. However, the state-owned immovable properties in terms of mining law are common properties such as wastelands and *pastures* [1]. In Turkey, it is possible to allocate the qualified common property among the immovable property necessary for the operation of natural resources and energy investments if required by the licensee [2].

[†] • Ownerless Properties": These are the properties suitable for establishing ownership. However, the ownership has not been established on them so far. Examples of such properties that are not under private ownership include rocks, mountains, hills, coasts, and forests.

• It is stated that the properties, which are called "common properties" in Turkish law, consist of goods which are allocated to the direct use of the people. Examples of such properties include roads, bridges, squares, marketplaces, highlands, and *pasture* lands.

• "Service properties" are the properties of public legal entities and allocated to public service. They are reserved for indirect use of the public. Examples of such properties include ports, military facilities, railways, hospitals, universities, mosques, and courthouses [1].

Pasture lands are the places where animals are assigned to the village or town residents to take advantage of grazing their animals and using the land's grass. These lands have been used with this orientation since the past. Essentially, for the acceptance of a place as *pasture*, it must be entered in the register of common properties, which is a separate register from the land registry.

In other words, unless the nature of the pasture changes, it cannot be subject to private ownership, and due to the timeout, ownership cannot be acquired [3]. Also, *pastures*, highlands and winter quarters have the same legal value as the registered *pasture* for non-agricultural use and these areas refer to the lands used for grazing. In Article 4 of the Pasture Law No. 4342, it is envisaged that the provisions of the Pasture Law will be applied to these.

According to the Pasture Law, mining activities in pasture lands are subject to many conditions. According to Article 14 of this Law amended by Law No. 4368, in *pasture lands*, mining exploration activities, and efficient mining operation activities can be performed [4]. To register the area whose allocation purpose was changed in the name of the state treasury, the licensee is required to give the Environmental Impact Assessment Positive document before starting the operation. Hence, it is mandatory that the damaged lands due to mining operation activities should be harmonized with the environment when the activity is finished. In this respect, necessary arrangements were made in the Mining Law. The duration of a mining operation is limited to the period envisaged in the Mining Law No. 3213. It should be noted that where the purpose of *pasture* allocation is changed, vegetation generally shows a weak feature. For example, in a gypsum field, it is clear that when gypsum is removed and replaced with fertile ground cover, the *pasture* will be much more useful than its former condition. In the Regulation on Pasture – similar to mining legislation- for harmonization with the environment, it is envisaged that the licensee will make a down payment to be determined by the commission in order to make the areas damaged by them unchanged. Otherwise, the commission will use this payment to fulfill this task and all costs incurred together with the loss of the value of the grass is regulated in Article 8th of Regulation on Pasture [5] and [6].

There may be adverse decisions regarding the change of the *pasture* allocation and the decisions taken to prevent mining operations. In some regions where these decisions are made, when we look at the operating project incomes of the mines to be produced, it is seen that the livestock activities that will benefit from the *pasture* have a value above the contribution to the country's economy. In such cases, it is not understood that the change in allocation purpose is not appropriate. Once an unfavorable decision is made on the allocation of *pastures*, then similar decisions are made in this regard, and the *pasture areas* are closed to mining. This time, it is ignored that the purpose of allocation of the *pasture* is to be done temporarily and these lands remain as *pastures*. In other words, it is not possible to shrink the *pasture lands* as a result of mining activities [6]. As shown above, *pasture lands* constitute 18.6% of the total surface of Turkey, which means that these lands also have alternative areas. However, it is necessary to give importance to scientific criteria in determining which is a superior public interest compared to the mines which are limited and which are mandatory on-site production and this should be determined by legislation.

A brief review of mining operation activities in *pasture lands* has been made, especially in terms of competent authorities and legislation. To perform mining operation activities in *pasture lands*, mining investors pay some costs such as land and grass loss expenses for once only. In this respect, a survey was carried out through the "Survey Monkey" Survey Program for mining enterprises in May, June and July 2018 to determine the amount of these costs in the investment amounts of mining enterprises[‡].

In this study, based on the answers that the mining enterprises gave, the change of the costs required to perform mining operation activities in *pasture lands* in Turkey according to the different mineral groups was examined. At the same time, the ratio of these costs to the investment of mining enterprises were analyzed in terms of their differences according to the mineral groups.

[‡]. The survey questions were answered by the relevant departments of the mining companies. The answers were transferred collectively to the survey program, regardless of which companies answered the survey and what responses were given to the questions.

2. Costs Paid By Mining Enterprises for Pasture Lands & Their Share in Investment Amounts

In the world, past mining experiences highlighted the interdependent relationship between commercial and economic benefits and the legal change in environmental impact. When determining where to put the right balance, attention should be paid to the negative consequences of the environment on the environment, to ensure the sustainable management of natural resources by creating an optimum balance [7].

Investors in mining face both technical and non-technical risks. Risks in the non-technical category are land access laws, land claims, bureaucracy, environmental risks, social risks, and infrastructure risk. Such risks cannot be separated entirely from the technical risks in any comprehensive risk classification system applied to the mining sector; they inevitably overlap. Environmental risks, for example, include technical aspects of the design and engineering of the mine, infrastructure, and waste facilities, as well as non-technical risks related to government regulations and permits [8].

Governments can improve the prospect of investment in the mining sector by establishing regulatory structures that guarantee "investment and license security" by taking necessary steps to meet investors' decision-making criteria [9]. If the state cannot direct sufficient capital and technology for mining activities, then it is essential to apply market-friendly policies to attract private investors and firms that can provide them [10].

On the other hand, the limited availability of resources in a country requires that these should be used in an efficient and maximum way without wastefulness. Because investment projects (such as raw materials, capital, labor etc.) are the plans for the optimum utilization of limited economic resources in a way to maximize their benefits. Investment is a strategic decision that is of utmost importance for the companies. The investment project, which is one of the most important means of economic development, to reach the projected targets (minimum time, minimum cost, minimum capacity) in the project [11], should not be out of expectations due to the legislation.

Thus, in terms of expenditures and risks, the most crucial activity group related to mining in pre-production activities [12]. These activities include mining operations permit process.

Considering this explanation in case of overlapping of mining activities with *pastures* in Turkey, it is useful to determine how much the related permitting process costs have taken in mining investments. In this respect, first of all, the pasture costs should be shown according to different mineral groups.

2.1 Paid Costs for Pasture Lands

The mining enterprises were asked: "*How much is the amount (TL[§]) you pay (if paid) for the pasture lands (land and grass loss expenses etc.)?*" Forty-two mining enterprises answered to this question. The ratio of these answers according to different mineral groups** is shown below (Figure 2).

§ 1 USD Dollar = 4.84 Turkish Lira (16th July 2018) [13]

** According to the Mining Law number 3213, minerals shall be licensed in accordance with the group listed below:

Ist Group Minerals

a) Sand and Gravel which are used in construction and road building and that are naturally present in nature.

b) Brick-Tile clay, Cement clay, Marn, Pozzolanitic rock (Trass) and the rocks that are used in cement and ceramics industries and not include in other groups.

IInd Group Minerals

a) The rocks such as Calcite, Dolomite, Limestone, Granite, Andesite, Basalt used for constructing Aggregate, Ready-mixed concrete and asphalt.

b) Rocks produced as a block such as Marble, Travertine, Granite, Andesite, Basalt and natural rocks used for decorative purposes.

c) The rocks such as Calcite, Dolomite, Limestone, Granite, Andesite, Basalt used at grinding facility of concrete, lime, and calcite.

IIIrd Group Minerals

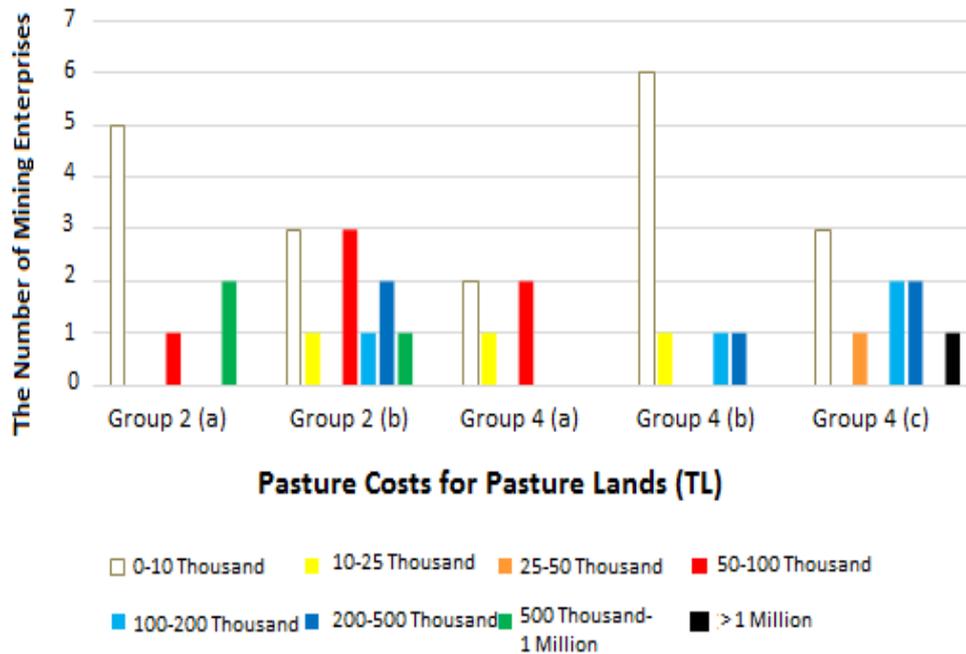


Figure 2. All costs paid for pasture lands^{††}

The change in these costs between the mineral groups can be examined on average as follows (Figure 3).

Salts being in the form of a solution and which will be obtained from sea, lake and spring water, Carbon Dioxide Gas (CO₂) (except geothermal, natural gas and petroleum areas). Hydrogen Sulfide (in case of remaining conserved the provisions of Petroleum Code Numbered 6326 and date 07th March 1954).

IVth Group Minerals

a) Kaolin, Dickite, Nacrite, Halloysite, Endellite, Anauxite, Bentonite, Montmorillonite, Baydilite, Nontronite, Saponite, Hectorite, Illite, Vermiculite, Allofanoid, Imalogite, Chlorite, Sepiolite, Palygorskite (Attapulgit), Loglinite and clays that are a mixture of those, Refractory clays, Gypsum, Anhydride, Alunite (Alum Stone), Halide, Sodium, Potassium, Lithium, Calcium, Magnesium, Chlorine, Nitrate, Iodine, Fluor, Bromine and other salts, Boron salts (Colemanite, Ulexite, Boracite, Tincal, Pandermite or at least other boron minerals containing 10% B₂O₃), Stroncium salts (Celestite, Stronthianite), Barite, Vollastonite, Talc, Steattite, Pyrophyllite, Diatomite, Olivine, Dunite, Silimanite, Andalusite, Dumortierite, Disten (Kyanite), Phosphate, Apatite, Asbestos (Mineral Wool), Magnesite, Huntit, Natural Sodium Minerals (Trona, Nacolate, Dawsonite), Zeolite, Pumice, Pitchstone, Perlite, Obsidian, Graphite, Sulphur, Fluorite, Cryolite, Emery stone, Corundum, Diasporite, Quartz, Quartzite, A sand containing quartzite and at least 80% SiO₂ in its composition, Feldspar (Feldspar and Feldspathoid group minerals), Mica (Biotite, Muscovite, Sericite, Lepidolite, Flogopite), Cyanite with Nepheline, Chalcedony (Silix, Chert)

b) Peat, Lignite, Hard Coal, Anthracite, Asphaltite, Bituminous Schist, Bituminous Shale, Coccolith and Sapropel (provided that the provisions of Petroleum Law remain reserved.)

c) Gold, Silver, Platinum, Copper, Lead, Zinc, Iron, Pyrite, Manganese, Chromium, Mercury, Antimony, Tin, Vanadium, Arsenic, Molybdenum, Tungsten (Wolframite, Scheelite), Cobalt, Nickel, Cadmium, Bismuth, Titanium (Ilmenite, Rutile), Aluminum (Bauxite, Gypsite, Böhmit), rare earth elements (Cerium Group, Yttrium Group) and rare earth minerals (Bastnaesite, Monazite, Xenotime, Serit, Oxsenite, Samarskite, Fergusonite), Cesium, Rubidium, Beryllium, Indium, Gallium, Thallium, Zirconium, Hafnium, Germanium, Niobium, Tantalum, Selenium, Tellurium, Rhenium.

Vth Group Minerals

Diamond, Sapphire, Ruby, Beryllium, Emerald, Morganite, Aquamarine, Heliodor, Alexandrite, Agate, Onyx, Sardonyx, Jade, Carnotite, Heliotrope, Bloodstone, Chrysoprase, Opal (Irize Opal, Fire Opal, Black Opal, Wood Opal), Quartz crystals (Amethyst, Citrine, Rock crystal (Mountain crystal), Misty Quartz, Tiger's Eye, Aventurine, Venus Stone, Rose Quartz), Tourmaline (Rubellite, Vardelite, Indigolite), Topaz, Moonstone, Turquoise, Spodumene, Amber, Lazurite (Lazuli), Jet, Diopside, Amozonite, Meerschaum, Labradorite, Epidote (Zoisite, Tanzanite), Spinel, Jadeite, Jade or Jad, Rhodonite, Rhodochrosite, Garnet Minerals (Spessartite, Grosullar Hessonite, Dermontoite, Uvarovite, Pyrope, Almandine), Diaspore Crystals, Kemererite.

†† ">1 Million": was accepted as 1-2 million TL, namely 1.5 million TL on average.

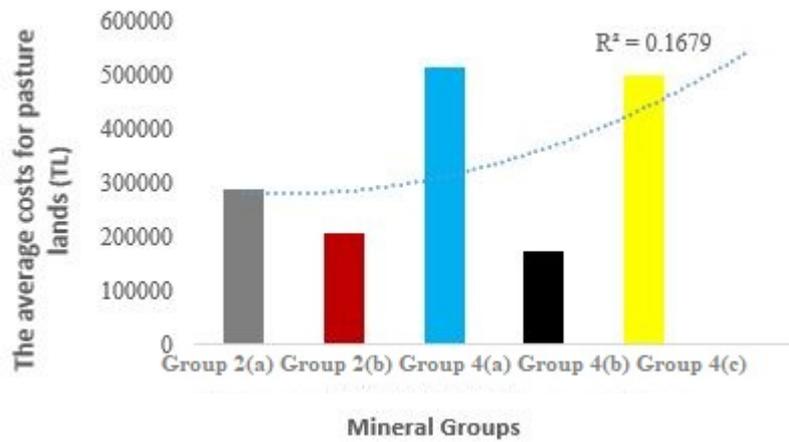


Figure 3. Change between the pasture costs and mineral groups

As can be seen from the figure above, any change relationship and the degree of significance among the average values of the *pasture costs* for different mineral groups cannot be mentioned. The correlation coefficient is $R^2 = 0.17$. It should be noted that other factors are affecting the increase in *pasture costs*. The reason why the correlation coefficient is too low in this increase is that the amount of *pasture land* that overlaps with the mining areas is variable for different mineral groups (In fact, it is not known how many hectares of *pasture lands* overlap with the mining enterprises that respond to the survey).

Thus, it is useful to determine how much these *pasture land* using costs are paid by each enterprise in their mine investment amounts and average annual operating costs to perform mining activities.

2.2. The ratio of the pasture costs to the total investment amounts

For calculating the rate of pasture costs to mining investment amounts, the mining enterprises were asked: “How much is the investment amount (TL) of your mining enterprises (by the end of 2017)?” All mining enterprises are shown in Figure 2, 42 mining enterprises, answered to this question. These answers, according to different mineral groups, as shown below (Figure 4).

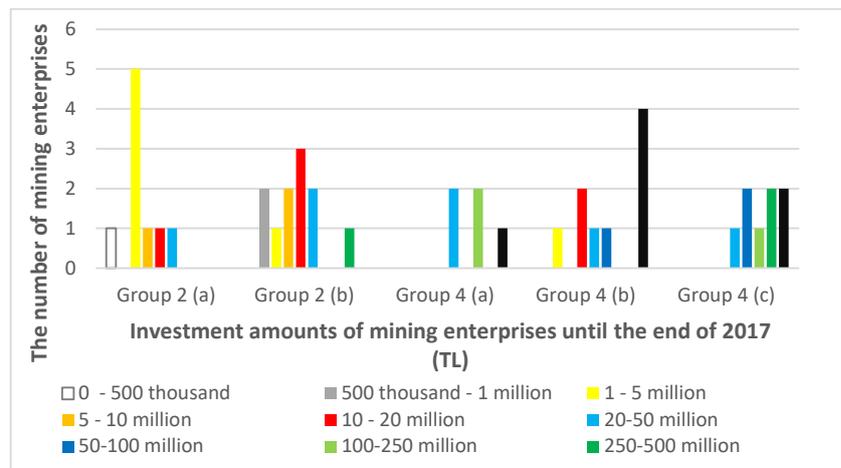


Figure 4. The investment amounts of mining enterprises until the end of 2017^{##}

^{##} “>500 Million TL”: was accepted as 500 million- 1 billion, namely 750 million TL on average.

The ratio of these investment amounts shows that the mining enterprises in Turkey are mostly in the small and medium-sized business group. This indicates that the *pasture costs* required from the mining enterprises will have a more significant impact on those enterprises.

For perform mining activities in *pasture lands*, all costs to be paid (land and grass loss expenses) are given only once at the start of the mining operation. Thus, considering this situation, the amounts paid for the *pasture lands* by each mining enterprise that is individually responding to the survey were proportioned to the total investment amounts before 2018.

However, these mining enterprises are planning to make new investments in 2018 and the following years. In this respect, mining enterprises were asked: "How much (TL) is the new investment amount aimed in your mining enterprises in 2018 and the following years?" The answers of 42 mining enterprises are shown below according to different mineral groups (Figure 5).

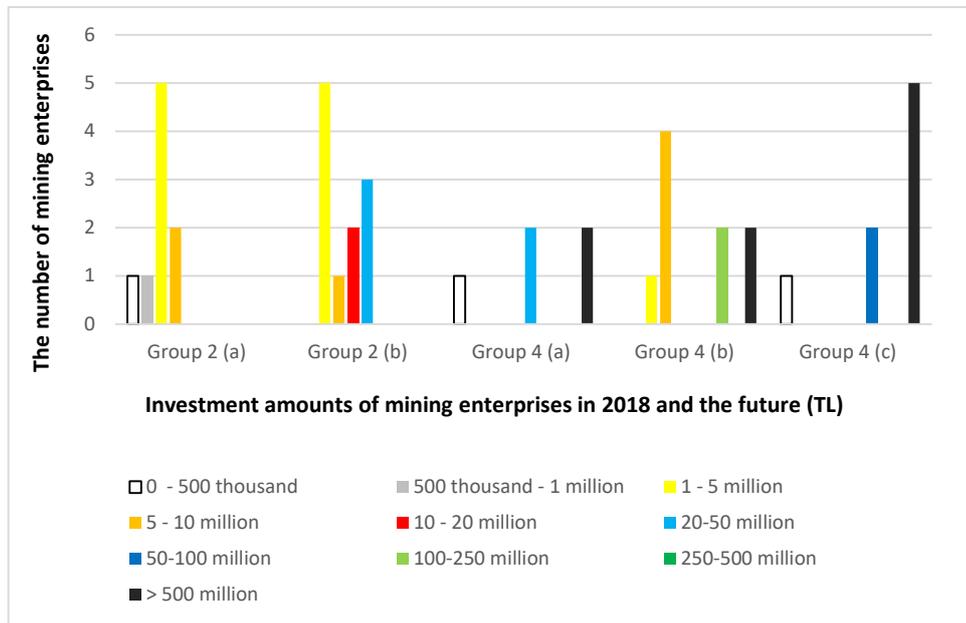


Figure 5. New investment amounts aimed by mine enterprises in 2018 and the following years

The total investment amounts paid by mining enterprises are obtained through the collection of the investment amounts in 2018 and the following years (aimed) and before 2018 (current). The ratio of the *pasture costs* paid by the mining enterprises to the total investment amounts paid by those enterprises during their entire lifetime is shown below (on a weighted average) (Table 1).

Table 1. The ratio of pasture costs to the sum of current and future investment amounts.

Mineral groups	The number of mining enterprises	Total investment amounts (TL)	Average of pasture costs (TL)	The ratio of the pasture costs to the total investment amounts (%)
Group 2 (a)	2	21250000	287500	1.42
Group 2 (b)	9	73277778	205278	0.56

Group 4 (a)	2	892500000	512500	0.06
Group 4 (b)	3	43666667	172500	0.36
Group 4 (c)	5	1175000000	500000	0.05
For all mineral groups	21	404428571	307857	0.44

Table 1 – Continue

As it is seen in the table, the average rate of *pasture costs* to the total investment amounts is 0.44% for 21^{§§} mining enterprises. This percentage shows that the *pasture costs* required from the mining enterprises have a significant share in the current and aimed investment amounts by itself. The ratio of the *pasture costs* to the total investment amounts and mineral groups are shown below (Figure 6).

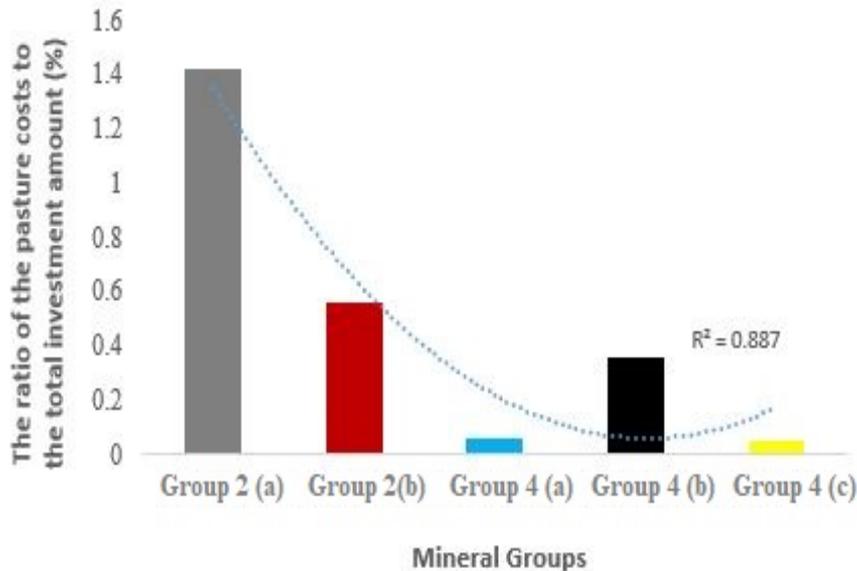


Figure 6. Mineral groups & the ratio of the pasture costs and to the total investment amounts

As it is seen in the figure, the relationship between these proportions shows a polynomial change as the correlation coefficient. Then the correlation coefficient is $R^2 = 0.887$. Based on this data, there is a reasonable degree of significance between this variable relationship.

It is remarkable that the share of the *pasture costs* in the total mining investment amounts is quite high in the 2nd Mineral Group compared to other groups. This situation shows that the mining enterprises in the 2nd Mineral Group will have great difficulty in paying the *pasture costs* since their investment amounts are low compared to other enterprises in the 4th Mineral Group.

^{§§} Of the 42 mining enterprises that gave information about the amounts of the mining investment and the pasture costs they paid, 21 of the mining enterprises which stated that they paid the pasture price between “0-10000 TL” were excluded from this calculation. In particular, this situation was preferred by considering that the mining enterprises may not have paid the pasture cost, but could have mistakenly selected the “0-10000 TL” pasture cost option in the survey question. Thus, as the average of mineral groups, it is aimed to calculate the share of pasture costs more consistently within the investment amounts of mining enterprises.

3. Conclusion and Suggestions

The delays in the *pasture land* using permits to be taken to perform mining activities in case of overlapping with *pasture lands* are reflected the mining enterprises in our country as a cost. Also, the required costs are added for the *pasture lands*.

The ratio of these investment amounts shows that the mining enterprises in Turkey are mostly in the small and medium-sized business group. This indicates that the *pasture costs* required from the mining enterprises will have a more significant impact on those enterprises.

As discussed, the results show that *pasture costs* have a significant share. Notably, the mentioned *pasture costs* are quite compeller cost item for the mining enterprises in 2nd Mineral Group economically since their investments are lower than the other enterprises. Thus, lowering the *pasture costs* to a more reasonable level with legislation will be a positive development for the mining sector.

Pasture lands constitute 18.6% of the total surface of Turkey, which means that these lands also have alternative areas. However, it is necessary to give importance to scientific criteria in determining which is a superior public interest compared to the mines which are limited and which are mandatory on-site production and this should be determined by legislation.

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