Intellectual property as an intangible asset of coal mining enterprises

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Abstract. The article is devoted to the analytical study of the value of intellectual property in the activities of coal mining enterprises (companies) of Kemerovo region. The authors test the hypothesis that knowledge-intensive technologies are considered by coal mining enterprises (companies) to be their intangible assets and should constitute a significant share in the overall structure of assets.

1. Introduction
Knowledge intensive technologies have a serious impact on the economic performance of coal mining enterprises (companies) and the economy of the region as a whole [1]. Knowledge intensive technologies as intellectual property objects (IPO) should be recorded on the balance sheet of coal mining enterprises (companies) as intangible assets (IA). The purpose of this study is to test the hypothesis that knowledge-intensive technologies are considered by coal mining enterprises (companies) to be their intangible assets and should constitute a significant share in the overall structure of assets.

2. Practice of coal mining enterprises (companies): analysis of statistical data
The authors’ study was based on the data from open sources: SPARK information system and reports of coal industry enterprises (companies) according to the data of Rosstat (Russian Federal State Statistic Service). The authors used the balance sheet data of coal enterprises (companies), reflecting the results of their intellectual activity, to assess the level of innovative activity in Kuzbass on the example of the coal industry.

The assets of coal enterprises (companies) that do not have a material form can potentially include everything that is listed in the relevant Russian Accounting Standards (RAS) and is included in the “Fixed assets” section of the balance sheet, namely:

- intangible assets (line 1110) regulated by RAS 14/2007 “Cost accounting for intangible assets”. The value of the license for mining for the proven commercial viability of the coal field and the value of protected intellectual property specified in part 4 of the Civil code of the Russian Federation (e.g. PJSC “Kuzbass fuel company” has six trademarks and one website falling under this provision) are counted in this line [2];
- R&D results (line 1120) – regulated by RAS 17/02 “Cost accounting for research, development and engineering”. As a rule, coal enterprises (companies) currently reflect the cost of contract external R&D (environmental and other research conducted by research institutes, universities and other organizations specializing in contract R&D) in this line [3];
intangible exploration assets (line 1130) – regulated by RAS 24/2011 “Cost accounting for natural resources development”. This line includes the cost of exploration prior to production. After the commercial feasibility of the coal deposit is proved by the General Board of State Expert Review (Glavgosexpertiza), intangible exploration assets are transferred to the category of intangible assets (line 1110) [4].

Initially, the selection of coal industry enterprises (companies) was made on the basis of the data from SPARK information system, which allowed us to identify 1316 entities of the Russian market engaged in mining, performing various kinds of work and providing services in the field of mining in 2016. Out of 1316, we identified 162 enterprises (companies) engaged in coal mining and coal enrichment, including: 59 enterprises (companies) that had intangible assets (IA), and 103 enterprises (companies) that had no have intangible assets. As for the 103 enterprises (companies) that used not IA in their activities, 78 of them were enterprises (companies) whose activities were related only to coal mining, 19 were engaged only in the enrichment of coal, and 6 enterprises (companies) were engaged in the extraction and enrichment of coal and anthracite [5].

As for the 59 enterprises (companies) that had IA in 2016, 9 of them operated in the field of coal enrichment (6 companies were engaged only in enrichment, and 3 companies were engaged both in the extraction and enrichment of coal and anthracite). As for the 53 enterprises (companies) engaged in coal mining, 42 of them work only with open-pit mines, 7 are involved in underground coal mining, and 3 enterprises (companies) combine open-pit and underground coal mining (JSC “GOK “Inaglinsky” and JSC “GOK “Denisovsky”, included in the structure of “Kolmar” coal mining company, and PAO “Raspadskaya”) [5].

After selecting the coal industry enterprises (companies) that had intangible assets in 2016, the authors analyzed the information from the financial (accounting) statements of Kemerovo region’s coal industry enterprises (companies) for the period from 2013 to 2017 (according to Rosstat data) [6].

The study focused on the data provided by 33 coal enterprises (companies) of Kuzbass. We studied the value of their intangible assets in 2017: in 21% of coal enterprises (companies) of Kuzbass it amounted to less than 1 million rubles; in 24% of enterprises (companies) it ranged from 1 to 100 million rubles; in 39% of enterprises (companies) it ranged from 100 to 500 million rubles; in 15% of enterprises (companies) it exceeded 500 million rubles. In 2016–2017, 75.7% of the studied enterprises (companies) showed a negative dynamics in the value of intangible assets recorded on the balance sheet [5; 6].

Table 1 provides the data on 10 leading enterprises (companies) by the value of intangible assets in 2017. The absolute leader in the value of intangible assets in 2015-2017 was PAO “Southern Kuzbass”: the value of its intangible assets in 2017 exceeded 2.19 billion rubles, which was 49.9% more than in 2016. JSC “Salek” ranked second, with the value of intangible assets amounting more than 1.5 billion rubles, which was 33.4 times as high as in 2016. Also in 2017, a significant increase in the value of intangible assets (by 4.4 times) was observed in AO “Open-cut mine Shestaki” [5; 6].

The presence of intangible exploration assets of coal enterprises (companies) is associated with exploration work, evaluation of mineral deposits and (or) mineral exploration, collection and analysis of geological information on the subsoil, and evaluation of commercial feasibility of development and production. 12 coal enterprises (companies) of Kuzbass (36.4%) had intangible exploration assets on the balance sheet in 2017, including 4 enterprises (companies)-leaders by the value of intangible assets. The leader by the value of intangible exploration assets in 2017 was OOO SP “Barzasskoye tovarischestvo”, the value of its intangible exploration assets amounted to over 1.2 billion rubles. AO “Kuzbassrarezugol Mining Company” ranked second, with the cost of its intangible exploration assets exceeding 465 million rubles [5; 6].
Table 1. Dynamics of intangible assets and intangible exploration assets of the leading Kuzbass coal enterprises (companies) in 2015–2017 (million rubles, %)\textsuperscript{a}.

| No. | Company                                | Intangible assets, million rubles | Growth rate, % | Intangible exploration assets, million rubles | Growth rate, % |
|-----|----------------------------------------|-----------------------------------|----------------|-----------------------------------------------|----------------|
|     |                                        | 2015    | 2016    | 2017    | 2016/2015 | 2017/2016 | 2015    | 2016    | 2017    | 2016/2015 | 2017/2016 |
| 1   | PAO “Southern Kuzbass”                 | 1603.0  | 1470.4  | 2195.9  | 91.7      | 149.3     | 70.8    | 51.1    | 53.6    | 72.1      | 105.0     |
| 2   | JSC “Salek”                            | 51.8    | 46.6    | 1557.3  | 90.0      | 33.4 by   | 0.0     | 64.5    | 0.0     | -         | -         |
| 3   | “Resurs” LLC                           | 692.7   | 817.9   | 1366.9  | 118.1     | 167.1     | 0.0     | 0.0     | 0.0     | -         | -         |
| 4   | AO “Kuzbasskarezuogol Mining Company”  | 1061.0  | 1182.6  | 1165.3  | 111.5     | 98.5      | 533.8   | 421.4   | 465.0   | 78.9      | 110.3     |
| 5   | PJSC “Kuzbasskaya Toplivnaya Company”  | 598.4   | 558.6   | 511.2   | 93.4      | 91.5      | 49.8    | 80.0    | 103.0   | 160.6     | 128.8     |
| 6   | AO “Chernigovets”                      | 580.8   | 517.7   | 455.1   | 91.7      | 87.9      | 0.0     | 0.0     | 0.0     | -         | -         |
| 7   | AO “Yuzhnaya mining company”           | 495.5   | 457.8   | 420.2   | 92.4      | 91.8      | 0.0     | 0.0     | 0.0     | -         | -         |
| 8   | AO “Open-cut mine Shestaki”            | 100.5   | 93.3    | 409.4   | 92.8      | by 4.4 times | 314.8 | 332.1   | 5.7     | 105.5     | 1.7       |
| 9   | OOO “V.I.Cheremnov open-cut mine”       | 377.8   | 351.0   | 324.1   | 92.9      | 92.4      | 0.0     | 0.0     | 0.0     | -         | -         |
| 10  | OOO “Kiyazzky open pit mine”            | 259.6   | 230.9   | 315.2   | 88.9      | 136.5     | 53413   | 89297   | 0       | 167.2     | -         |

\textsuperscript{a}Source: compiled by the authors based on [5; 6].

The distribution of the studied enterprises (companies) by the share of intangible assets in the overall structure of assets is shown in figure 1.

![Figure 1](image1.png)

**Figure 1.** Distribution of the studied enterprises (companies) by the share of intangible assets in the overall structure of assets in 2016–2017, %.

In almost 80% of the studied 33 enterprises (companies) the share of the intangible assets in 2016-2017 was less than 5%. Only in 3 enterprises (companies) (9.1%) the share of intangible assets in the overall structure of assets ranged from 15 to 30% in 2017: in OOO “V.I.Cheremnov open-cut mine” (ranking 9th) the share was over 27.2%, in “Resurs” LLC (ranking 3rd) the share was over 22.2%, and in JSC “Salek” (ranking 2nd) the share was over 17.7%.

The R&D results were recorded on the balance sheet of only 4 (12%) Kuzbass coal enterprises (companies) [6] (figure 2).
Figure 2. Value of R&D results of Kuzbass coal enterprises (companies) in 2015–2017, thousand rubles.

The highest value of R&D development results was observed in AO “Joint mining company Yuzhkuzbassugol”, in 2017 their value amounted to 19.5 million rubles, and that of PJSC “Kuzbasskaya Toplivnaya Company” amounted to 10.4 million rubles [6]. The share of R&D results in the overall structure of assets of coal enterprises (companies) did not exceed 0.05%. As a rule, the R&D results in the activities of Kuzbass coal enterprises (companies) include paid contract R&D (environmental and other research conducted by research institutes, universities and other organizations specializing in contract R&D).

3. Organizational and economic aspects of using IPOs in the activities of coal mining enterprises (companies)
Statistics show that the value of IPOs is difficult to distinguish from the assets of coal mining enterprises (companies) due to the peculiarities of organizational and economic nature. Intellectual property may be registered (i.e. inventions, utility models, industrial designs, trademarks) and not registered (e.g. know-how, although according to Clause 1 of Article 1225 Part 4 of the Civil Code, know-how belongs to the list of intellectual activity results whose legal protection is provided) [7].

IPOs can be counted on the balance sheet of the enterprise (company) in the following cases:
• when the IP right is owned by the enterprise (company), as evidenced by appropriate documents (patent or certificate of registration);
• the IP right is acquired within the framework of contractual relations (on the basis of a license agreement or alienation agreement). In this case, the exclusive right to the IPO may belong to another enterprise, the company-developer of the technology necessary for the coal mining enterprise (company), or to an individual developer, perhaps even an employee of the coal enterprise (company).

In addition to the above cases of using and accounting of knowledge intensive technologies on the balance sheet, coal enterprises (companies) can use such IPOs (knowledge intensive technologies) by acquiring the services of third parties on the terms of contracts or outsourcing. E.g. as a rule, geological exploration in the activities of coal enterprises (companies) is carried out by third parties. overburden removal, transportation and even coal mining can be carried out both by the coal company itself and by contractors (in particular, this is the case in PJSC “Kuzbasskaya Toplivnaya Company”). Thus, knowledge intensive technologies involved in the activities of coal mining enterprises (companies) may not always be considered as intangible assets. The use of the latest technologies by coal mining enterprises (companies) can take place in mining equipment leasing [8]. Knowledge intensive technologies involved in the production processes of coal mining enterprises (companies)
may also be associated with the use of fixed assets in their activities, so they will be counted in line 1150 of the balance sheet “Fixed assets”. Since it is difficult to distinguish between the main and auxiliary mining equipment in the financial statements, it is impossible to count the share of IPOs in the overall structure of assets and their effect on the efficiency of the entities operating in the field of coal mining [9].

4. Conclusions

- The role of knowledge intensive technologies in the activities of coal mining enterprises (companies) is significant. However, it cannot be argued that all knowledge-intensive technologies involved in the production processes of coal enterprises (companies) are accounted as IA. Yet, the value of the license for coal mining is reflected in the accounting statements of enterprises (companies) as IA, which significantly increases the share of IA in the overall structure of assets;
- the registered IPOs, such as trademarks and domain names are counted in the total value of coal enterprises’ (companies’) IA; they are not directly related to the production processes, but promote the coal enterprise (company) and its (its) products in the domestic and global market and increase the share of IA in the overall structure of assets of the enterprise (company);
- the knowledge intensive technologies involved in the production processes of coal mining enterprises (companies) may also be associated with the use of fixed assets in their activities, so they will be reflected in line 1150 of the balance sheet (“Fixed assets”). Due to the difficulty of distinguishing the main and auxiliary mining equipment in the financial statements, it is not possible to take into account the share of the IPOs in the overall structure of assets and to assess their effect on the efficiency of entities operating in the field of coal mining;
- the use of IPOs by both coal mining enterprises (companies) and the organizations whose activities are related to servicing coal industry enterprises (companies) (both their own IPOs or and the IPOs the rights to which were acquired under an alienation agreement or license) expands the range of possibilities for such enterprises (companies) – when choosing the most effective knowledge intensive technologies to be used in production processes, and when promoting themselves and their products on the market.

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