

# AFGANISTAN AND RARE EARTHS

**Emilian M. Dobrescu\***  
**Edith Mihaela Dobre\*\***

## **Abstract**

On our planet, over a quarter of new technologies for the economic production of industrial goods, are using rare earths, which are also called critical minerals and industries that rely on these precious items being worth of an estimated nearly five trillion dollars, or 5 percent of world gross domestic product. In the near future, competition will increase for the control of rare earth minerals embedded in high-tech products. Rare minerals are in the twenty-first century what oil accounted for in the twentieth century and coal in the nineteenth century: the engine of a new industrial revolution. Future energy will be produced increasingly by more sophisticated technological equipment based not just on steel and concrete, but incorporating significant quantities of metals and rare earths. Widespread application of these technologies will result in an exponential increase in demand for such minerals, and what is worrying is that minerals of this type are almost nowhere to be found in Europe and in other industrialized countries in the world, such as U.S. and Japan, but only in some Asian countries, like China and Afghanistan.

**Keywords:** *rare earths, minerals, reserves, assessment, industrial products, shortage, supply*

*JEL Classification: L 61, L 72, Q 32, Q 55*

## **Introduction**

Experts are studying rare earths for almost three decades, because of their unusual properties highly recommended for a successful use in the composition of wind generators, as parts of electronic assemblies, in the metal separators, motors, clutches and other auto parts, devices lifting and extraction etc. Rare earths are part- very few people know - of the laser components, mobile phones, computers, iPods, LCD screens, washing machines, cars, hybrid, digital cameras, some headphones, sonar, radar, mobile, portable, liquid crystal displays, electric vehicle batteries and even in the composition of missile guidance systems, smart bombs and missiles in space. Despite the name "rare earths" they are not so rare, but - usually - they are in very small volumes, arranged on large areas and requiring a complicated post-processing, which makes the majority of deposits to be quite expensive for exploitation<sup>26</sup>.

### **1. Afghanistan high potential in rare earths**

In January of 1984, shortly after the outbreak of hostilities in the "war with the Soviets" Afghan Manager of Geology Department published a report that the country's subsoil has a wide variety of mineral resources, including: iron, chrome, gold, silver, sulfur, talc, magnesium, marble and lapis lazuli.

---

\* Professor Ph.D., Scientific secretary of the department of Economics, Law and Sociology of the Romanian Academy and Professor Ph.D., Sociology- Psihology Faculty, Spiru Haret University, e-mail: [dobrescu@acad.ro](mailto:dobrescu@acad.ro).

\*\*Assistant Ph.D., Associate researcher of National Economic Research Institute of the Romanian Academy and Assistant Ph.D., Sociology- Psihology Faculty, Spiru Haret, e-mail: [edithdobre@gmail.com](mailto:edithdobre@gmail.com).

<sup>26</sup> \*\*\*Avatar on Terra: rare earths are the sap of civilization, on the site [www.descopera.ro](http://www.descopera.ro), 16 March 2010.

It was only a superficial estimate, Afghan geologists not having the time and also the performance equipment with which to evaluate all the minerals in the subsoil or even to evaluate the size of the deposits in question. Information provided by Afghan geologists reached to the ears of the Soviets, who even before the beginning of their presence in Afghanistan, knew that this arid country hides also other valuable minerals than the huge deposits of natural gas, on which the Kremlin knew since 1957, Russian geologists investigating the natural gas reserves near the river Amu Darya. At that time Afghan government was a puppet supported by the former Soviet Union: therefore, the authorities in Kabul were preparing to develop and exploit the mineral resources using extraction and processing technology of ex-Soviets who were supposed to train Afghan engineers, while ex-USSR planned to keep the lion's share for herself. Another treasure long sought by ex-Soviets was Afghan uranium reserves, usually being very popular throughout the world since they supplied raw material for nuclear weapons whose development was at its peak at mid 80's. Over Soviet-Afghan plans laid out the dust after ex-USSR was defeated by mujahedeen, which ended with a shameful withdrawal of the Russians in 1989.

In 2004, American geologists, who were sent to Afghanistan as part of a reconstruction team, discovered a strange series of maps deposited by Afghan Geological Survey in Kabul Office. At first assessment, the maps presented new data on mineral deposits of the country. U.S. team learned later that these data were collected by Russian mining experts during the Soviet occupation of Afghanistan. Due to the rush withdrawal in 1989, all maps and materials prepared by the Russians were abandoned. During the chaos years of 90's, when Afghanistan was crushed by endless civil wars and the iron regime of the Taliban, a small group of Afghan geologists managed to protect maps, concealing in their own homes. Afghan geologists have returned to Afghan Geological Office only after the American invasion and chasing of the Taliban in 2001.

"The maps were made long years ago, places were known, but mining development was non-existent in those 30-35 years of continuous war," said Ahmad Hujabre, an Afghan engineer who had worked in the years '70 in the Ministry of Mines in Afghanistan.<sup>27</sup> Armed with the old Russian charts, the U.S. Geological Survey began in 2006 a series of investigations high over Afghanistan. American scholars have used the latest equipment based on magnetic and gravity measurements. The equipment was attached to a plane P-3 Orion Navy guy who flew as over 70 percent of the country. The data obtained were so optimistic for Washington that, in 2007, the team of geologists returned for an even more sophisticated study, this time aboard a British bomber aircraft, equipped with instruments that offered dimensional images of small mineral deposits and their deep. It was the most detailed and advanced study of Afghanistan basement ever made. The results were - apparently - forgotten, but in November 2009, a special force of the Pentagon was delegated the task to find final data on Afghanistan wealth and to set up emergency Afghan 'terrorism theater ". By 2010, according to the Pentagon, the largest natural deposits investigated contained *major deposits of iron and copper*. Fields are so large that theoretically Afghanistan holds the largest reserves of copper and iron in the world. Other finds include *large deposits of niobium*, a light metal rarely used to obtain superconducting properties of steels. *Afghanistan's natural gas reserves* amount to approximately 150 billion cubic meters. Coal deposits in this country amount also to enormous figure of over 400 million tones. In 1983, in Khwaja Rawash Mountains, north of Kabul, Soviet experts had identified one of the *largest uranium deposits in the world*. In 2009, Americans discovered further that Afghanistan also holds similar deposits of uranium in Koh Mir Daoud, near Herat and in Kharkiz from Khandahar province. Furthermore,

---

<sup>27</sup> Mention made public on the site [7126569-treasure-from-afghanistan-real-reason-of-American-invasion\\_files/index\\_white\\_980.htm](http://7126569-treasure-from-afghanistan-real-reason-of-American-invasion_files/index_white_980.htm), visited on 11 September 2010.

Afghanistan also holds important *natural deposits of gold, silver, nickel, zinc, mercury, bauxite, potash, graphite, tourmaline, emeralds, sapphires and rubies*. Afghanistan's gold deposits are also important, some experts believe that if one is going to exploit all Afghan gold deposits, then gold price on world market will decline by 50 percent in the short term.

But the vast wealth of the *Afghan iron deposits is characterized by an unparalleled purity*. At first assessment, ferrous deposits contain about 2 billion tons of mixtures of hematite and magnetite with about 62 percent iron. The largest copper deposit in Afghanistan is 50 km north of the capital Kabul, in the Aynak valley. Deposits contain over 300 million tons of ore, with 0.7-1.5 % copper. About 80% of the world's lapis lazuli, a semi-precious stone, yet untapped, are hidden in the basement of Afghanistan. Before the Soviet invasion in 1979, Afghan miners extracted annually about 6,000 tons of lapis-lazuli, a tiny amount compared to large bulk deposits.

In November 2009, not incidentally, a team of specialists from Pentagon and American geologists discovered mineral deposits in Afghanistan worth about 1 trillion dollars<sup>28</sup>. In early September 2010, the Minister of Mines in Afghanistan, Shahrani Wahidullah came with a statement which literally disturbed the stock exchanges in London, New York and Tokyo. Afghan official said that following repeated research, carried out by American geologists and Pentagon specialists, the natural mineral deposits, initially estimated at about 1 trillion dollars are actually much higher. According to data submitted by American scholars, only lithium reserves of Afghanistan are greater than those held by Bolivia, the country considered, by 2009, the first world exporter. Similarly, natural reserves of copper and iron are well above those originally estimated. Only iron stores in Bamyan province are higher than those in Western Europe. Shahrani also said that according to American data, the found mineral reserves would be worth "only" 1,000 billion dollars, but these figures were released especially in the last years because Washington did not want to destabilize the markets by announcing a more realistic figure of about 3000 billion dollars. According to U.S. officials, the new discoveries have fundamentally changed the prospects for Afghan economy, and now it is obvious why US deploys a costly war for acquiring these resources, which are actually owned by Afghanistan. New deposits, previously unknown, containing huge veins of iron, copper, cobalt and gold and critical industrial metals such as lithium, are so big and include so many minerals essential to modern industry that Afghanistan could be transformed in one of the most important mining centers in the world. According to a Pentagon memo, Afghanistan could become the "Saudi Arabia of lithium," a key material in the manufacture of batteries for laptops<sup>29</sup>.

The Afghan government and President Hamid Karzai were informed about the new discovery. While it may take several years to develop this mining industry, the potential is so great that officials and executives in the industry believe it could attract heavy investment even before mines are profitable, providing the possibility to create jobs that could detract from the war. *'There is a stunning potential here,* "Gen. David H. Petraeus said, the head of U.S. Central Command."*There are a lot of conditions, of course, but I think there is a huge potential,*" he added.

United States announced the discovery of these large mineral deposits of such magnitude that might change the Afghan economy and the war waged by Allied Coalition, led by the U.S. for so many years. Deposits contain iron ore, cobalt and gold, and rare metals such as lithium, essential for the modern electronics industry. Perhaps the most coveted

---

<sup>28</sup> \*\*\* , Treasure from Afghanistan – the real reason for American invasion?, on the site [www.mozilla.firefox.ro](http://www.mozilla.firefox.ro), visited on 16 September 2010.

<sup>29</sup> Stoica, Mihaela, Americans have made a huge discovery in Afghanistan: mineral ores worth of about one trillion de dolari, in Adevărul, 14 June 2010.

"treasure in Afghanistan" is huge lithium deposits discovered by Americans in autumn 2009. Alone, only lithium reserves of Afghanistan could bring down severe poverty today and - in theory - would make this country richer than the 10 Eastern European countries that joined the European Union in May 2004. It is known that this raw material is used for lithium batteries and some parts of laptops, mobile phones and other devices, from pocket dimension to cosmic shuttles.

## **2. Importance of rare earths for Afghan economy**

The value of the newly discovered mineral deposits put in a new light Afghanistan's economy, based mainly on opium production and drug trafficking as well as on aid from the United States and other industrialized countries. Afghanistan's GDP is only 12 billion dollars. American and Afghan officials agreed to discuss the fate of these extremely valuable deposits in a difficult time of war. But U.S. officials acknowledge that the mineral discoveries will certainly have a double-edged impact. Instead of bringing peace, its mineral wealth could lead the Taliban to intensify their struggle to regain control of the country. However, corruption, which is already quite high in the Karzai government could be amplified by the new wealth, particularly if a handful of oligarchs who have personal ties with President might take control of these resources. Last year, the Afghan minister of mines was accused by American officials of accepting a 30 million dollars bribe to award to China the rights to develop copper mines. The minister was later replaced. Experts believe that without "the mining culture" it will take decades until Afghanistan will be able to fully exploit minerals. Mineral deposits are scattered throughout the country, including the Southern and Eastern parts, along the border with Pakistan, where there have been the most intense battles in the war against the Taliban insurgents.

The Pentagon has already begun to help Afghans to set up a system to deal with mineral development. International accounting firms that have expertise in mining contracts have been hired to offer consultancy to the Afghan Ministry of Mines, and technical data are ready to be handed over to multinational mining companies and other potential foreign investors. Pentagon had already helped Afghan officials in their efforts to seek bids for starting the mining in the fall of 2011. In this new context, China could provide exactly what is missing in Afghanistan: tools for extraction. Afghanistan is totally lacking the necessary mining infrastructure and needs decades until it may get some profit from these deposits just discovered. "*This country has no mining culture*", said Jack Medlin, a geologist involved in geological exploration. It has some small mines, but it will take a long time to have modern mines.

It is not actually a single enormous reservoir: the whole country seems to be dotted with mineral deposits, their discovery seems to have been possible thanks to some old maps found in the library of the Afghan Geological Institute in Kabul, most maps showing the country's mineral deposits. These maps and satellite mapping have been studied since 2004, and American geologists have confirmed the data collected by Soviet geologists which proved the existence of huge mineral deposits. "*There were maps, but the development of mining could not start due to the 30-35 years of war*," said Ahmad Hujabre, engineer in Afghan Ministry of Mines. Based on these maps, American geologists have been exploring using an aerial satellite belonging to Navy P-3 Orion, over 70 percent of Afghan territory, obtaining three-dimensional results of underground mineral deposits, the results being amazing: copper and iron deposits and rare earths are so important that could make Afghanistan a major world producer, deposits contain niobium - a rare metal, which is very important for manufacturing missiles, nuclear energy, for capacitors and production of lithium, a crystal able to change the refractive index, being used to manufacture high capacity optical fiber. There are also large deposits of gold in Pashtun province, and huge lithium deposits in Ghanzi province. The news

of the discovery of these deposits remained silent for many years and was deliberately ignored<sup>30</sup>.

### Conclusions

There is not a risk of shortage of raw material deposits of rare earths, but there is a risk of shortage of processed rare earths available for consuming industries. Fast enough to compensate for the reduction of rare earth production announced by China, it is essential to make available as fast as possible the new deposits on the planet, especially in Afghanistan, but they are inaccessible deposits because there is no infrastructure in the area where the discovery of deposits was made. But financing such operations is difficult in times of crisis. Economy of raw materials and manufacturing technologies, some of them, as we have mentioned, very recently, do not allow the overnight replacement of these raw materials, rare earths. Permanent magnets obtained from neodymium have qualities that can not be changed with ferrite magnets. Only car batteries on nickel metal hydride (NiMH) containing lanthanum may be gradually replaced with batteries based on lithium-ion (Li-ion). Rare earths are used in the composition of a long list of electronic devices - ranging from wind turbines to flat screen TVs of the most consumer electronics, the economics of green energy goods. Rare earths include the minerals, such as dysprosium, terbium, thulium, lutetium and yttrium, which have applications in electronics, aviation, atomic energy, aeronautics and space research. Rare earths are used by specific technologies for fabrication of wind turbine generators and motors, electric vehicles and their electric batteries, fuel cells and energy efficient lighting. Current and future economic world depends more than extracts from rare earths metals, which form the basis of a very diversified production of industrial goods, from electric motors to solar panels and computer parts. In 2009-2011 period, the global economic crisis also hit the non-energy raw material supply<sup>31</sup>.

### References

- Bradsher, K. (2009). *Earth-Friendly Elements. Mined Destructively*, in The New York Times, December 25
- Dobrescu, E. M. (2010). *A deposit of rare earths will change the fate of Afghanistan war*, in The Financial, 17 august
- Dobrescu, E. M., (2010). *Rare Lands Economy. A New Branch of Economic Sciences*, în Business & Leadership, nr. 1, 2010, pp. 31-52
- Gorman, S. (2009). *As hybrid cars gobble rare metals, shortage looms*, Reuters, aug 31, 2009
- Stoica, M. (2010). *Americans have made a huge discovery in Afghanistan: minerals worth of one trillion dollars*, in Adevărul, 14 June 2010
- Walet, L.(2010). *Asia Green Investment Correspondent, Rare earths crucial in drive for green gadgets*, Reuters agency from Hong Kong, 12 August;
- \*\*\*, *Comoara din Afganistan – adevăratul motiv al invaziei americane?*, on the site [www.mozilla.firefox.ro](http://www.mozilla.firefox.ro), visited on 16 September 2010
- \*\*\*, on the site <http://www.ditadifulmine.com/2010/06/scoperti-enormi-giacimenti-di-minerali.html>, visited on 24 June 2010
- \*\*\*, on the site <http://www.ditadifulmine.com/2010/06/scoperti-enormi-giacimenti-di-minerali.html>, visited on 24 June 2010
- \*\*\*, on the site [www.naturalnews.com/028028\\_rare\\_earth\\_elements\\_mining.html](http://www.naturalnews.com/028028_rare_earth_elements_mining.html), visited on 28 May 2010

---

<sup>30</sup> on the site <http://www.ditadifulmine.com/2010/06/scoperti-enormi-giacimenti-di-minerali.html>, visited on 24 June 2010.

<sup>31</sup> on the site [www.naturalnews.com/028028\\_rare\\_earth\\_elements\\_mining.html](http://www.naturalnews.com/028028_rare_earth_elements_mining.html), visited on 28 May 2010.