

# ***Mother Lode in Afghanistan: The Good, the Bad, and the Ugly***

***By Cindy Hurst & COL Robert Mathers***

*Note: The following manuscript is in its original format. It gives a comprehensive overview of the minerals in Afghanistan and an analysis of what we might expect following the withdrawal of U.S. and NATO troops. A condensed version, entitled Strategic Implications of the Afghan Mother Lode and China's Emerging Role, was previously published in the January 2014 issue of Joint Force Quarterly.*

The opinions expressed are those of the authors and do not necessarily represent those of the U.S. Army, Department of Defense, or Government

## **Introduction**

In June 2010, reports estimated that there were more than \$1 trillion in mineral deposits in Afghanistan. Having these mineral deposits at the country's fingertips could potentially change the playing field within Afghanistan and the region, especially once U.S. and NATO troops withdraw in 2014. The playing field is complex because there are critical economic, logistic, cultural, military, and geopolitical issues to resolve before access and the successful exploitation of Afghanistan's natural resources will be able to help lift the country out of its current economic state. Some of these issues include:

- Transportation infrastructure is seriously underdeveloped.
- There is limited mining infrastructure in the country.
- Rugged, mountainous terrain makes work difficult and dangerous.
- Security concerns could discourage investment.
- Exploitable trade routes are heavily dependent on surrounding countries.
- Possible environmental issues could present obstacles to development.

The planned 2014 withdrawal of U.S. and NATO forces has many observers wondering whether or not Afghanistan's newly created central government and homegrown security forces

will hold up to the challenges these issues present. Export of strategic minerals could offer Afghanistan an opportunity, for the first time in centuries, to become a successful player in the global economy. However, the country's success is contingent on the creation and maintenance of a viable, centrally-controlled police and military force, and on the central Afghan government's ability to hold sway over its interaction with bilateral partners, as well as domestic tribes, throughout the years to come. Without proper security and a strong central government,<sup>1</sup> a number of possible outcomes could occur, based on the dynamics of the country's internal makeup, tribes and their influence within the country, and ties outside of the country.

As donation amounts, foreign troops, and equipment dwindle over the coming years, Afghanistan will be inexorably drawn into the sphere of its neighbors with regards to influence and future direction. In regional and global competition, China is ahead in direct investment and having a long-term outlook in Afghanistan's natural resource sector. While the idea of a nation like China reaping the benefits afforded by the expenditure of U.S. and NATO blood and treasure may evoke viscerally negative emotions in the West, it might ironically be the best way to achieve the end state to which the West has strived.

## **Background of Minerals Research**

Despite its rich culture and history, Afghanistan lags far behind much of the rest of the world economically, in infrastructure development, and as a socially-integrated society. The country is landlocked and extremely poor, has a low literacy rate, and is heavily dependent on foreign aid. Since it was founded in 1747, Afghanistan has experienced many power struggles and upheavals. More recently, the country has been mired in war for over three decades. But it was in the latter part of the 20<sup>th</sup> century that the minerals issue slowly began to surface.

In the 1960s and early 1970s geologists from the Soviet Union, along with the Afghanistan Geological Survey (AGS), were the first to map the country's geologic strata in great detail. However, their work was subsequently disrupted by the 1979 Soviet invasion, the occupation that followed, and the civil war. After the seizure of Kabul by the Taliban in 1996, a small group of Afghan geologists hid the geological reports in their homes in an effort to protect them from being destroyed by the Taliban.

The United States invasion of Afghanistan in late 2001 ousted the Taliban, and the long process of rebuilding began. Today, as U.S. and NATO forces strive to improve the security

situation in Afghanistan, the Ministry of Mines (MoM) has been striving to kick-start the mining industry by opening up mining opportunities to foreign companies. Since the beginning of the U.S.-led campaign and creation of the International Security and Assistance Force (ISAF), the goals of the NATO coalition have been:<sup>2</sup>

- Destroy al-Qaeda and its affiliates who reside in Afghanistan and defeat or neutralize those elements posing a threat to Afghanistan and its neighbors.
- Train, equip, and enable a viable, self-sustaining Afghan National Security Force (ANSF) that can ensure Afghanistan's internal security and protect it from external and homegrown threats.
- Help create the conditions for economic recovery and development within the country by supporting those Afghan institutions that lend assistance to this effort.

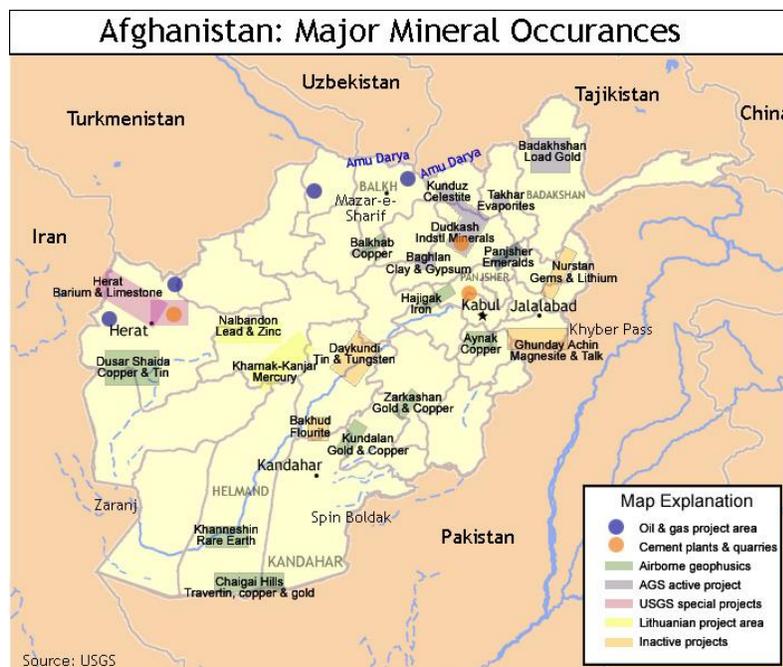
Major investment and development projects in Afghanistan are more likely to succeed if the NATO-led mission attains its goals in concord with the Kabul government. Thus far, signs point to ISAF achieving those goals. For example, the al-Qaeda network within Afghanistan has been effectively eliminated (although a Pakistani-based insurgency remains a menace), the ANSF is nowadays a well trained and equipped force that has reached its intended strength levels, and the organs of effective management of governmental programs are in place, albeit in some places still weak and/or embryonic. The ANSF, with its bureaucratic pitfalls and potential for corruption, will be the most important organization to rehabilitate and sustain, and will be crucial to successful natural resource exploitation.

### **The Evolution of Afghanistan's Mining Industry**

Afghans have been mining gemstones for centuries. Gemstones, such as lapis lazuli and emeralds, are mined the old fashioned, hard way, with pick, shovel, and a little dynamite. Today, rugged terrain mountain trails offer access to these mines. Afghan migrants will leave their families for half the year to live in windowless huts and earn up to \$10 per day.<sup>3</sup> For example, in the Panjsher snowcapped mountains, approximately 3,000 meters above sea level lies Mine Town, where hundreds of untrained Afghan miners search for some of the highest quality emeralds in the world.<sup>4</sup> These operations have continued uninterrupted, even during the fight

against the Soviet Union in the 1980s, when profits from these operations helped to fund the Mujahideen. Along with these mom-and-pop operations, larger extraction operations occurred in cooperation with the Soviet Union. In 1959 the Soviets developed a number of oil and natural gas fields and later three uranium mines and some copper mines. However, large-scale mineral extraction remained underdeveloped during this period.

The new millennium, when the AGS began its post-Taliban renovation, marked a reemergence of Afghanistan’s mining industry. During this time, the hidden geological reports began to reappear, some even punctured with bullet holes from past battles. Between 2004 and 2007 scientists from the United States Geological Survey (USGS) began working with the AGS to track down existing information about mineral deposits within the country. The information gathered originated from Afghan, German, Soviet, Polish, Czech, and other sources and was combined to create the “Preliminary Assessment of Non-Fuel Mineral Resources of Afghanistan.” The assessment indicated that the country has an abundance of non-fuel mineral resources, such as copper, iron, sulfur, bauxite, lithium, and rare earth elements. In June 2006 the revitalized AGS reoccupied the newly renovated AGS building, equipped to access and study old and new data.<sup>5</sup> In 2009 the USGS joined forces with the U.S. Department of Defense Task Force for Business and Stability Operations (TFBSO), using airborne geophysics and remote sensing – both airborne and satellite – to gather new information to validate the older existing data previously collected.



## The Competition for Mineral Resources

In early December 2011 Afghanistan began a licensing program allowing foreign companies to bid on various exploration and development programs throughout the country.<sup>6</sup> To date, Chinese companies have been the top natural resource investors in the

nation. China has earned the rights to two major projects: the oil and natural gas blocks in Amu Darya and the Aynak copper deposit.

### *Amu Darya*

Despite the dilapidated state of infrastructure and its relatively minuscule industrial base, Afghanistan's domestic requirements for petroleum, which is used for transportation, housing needs, and electric power generation, are estimated at 20,000 to 40,000 barrels per day. In the 1960s a team of Soviet engineers who first explored the area known as the Amu Darya basin, estimated that oil reserves were at 87 million barrels. In early 2012, Jack Medlin, a geologist with the USGS's international programs, pointed out that "if someone would go in and rehabilitate and restart the existing oil and gas fields, and if someone would go in and do exploratory drilling, in five to seven years there would likely be enough energy in Afghanistan, especially if you add in the coal, to meet the energy needs of the country."<sup>7</sup>

State owned China National Petroleum Corporation (CNPC) in 2011 was the first Chinese company to sign a deal with the Afghan government to allow China to exploit oil and natural gas blocks. These oil and gas blocks are located in the northeastern provinces of Sari Pul and Faryab.<sup>8</sup> During the autumn of 2011 CNPC reached an agreement with the Afghan government on the final terms of a deal to develop the Kashari, Bazarkhami and Zamarudsay oilfields in the Amu Darya basin. The deal was approved by the Afghan government on 27 December 2011. According to Jalil Jumriany, an Afghan Minister of Mines official, for the first two years CNPC's investment will be at least \$200-300 million. As part of the deal CNPC agreed to pay a 15-percent royalty on oil and a corporate tax rate of 30 percent to work in the country.<sup>9</sup> In addition, CNPC will give up to 70 percent of its profit to the Afghan government, with the project expected to bring almost \$5 billion to Afghanistan within the next ten years. Jumriany also added that the oil field development project, which will be run by a 75/25 joint venture between CNPC and local investors, could create up to 7,000 jobs for locals.

As China has forged ahead in its constant pursuit of natural resources, it has not been an easy road to travel. According to government officials in Kabul, men loyal to army chief of staff and Uzbek warlord General Abdul Rashid Dostum disrupted the CNPC venture when they intimidated Chinese engineers in the area, demanding a share of the proceeds. Drilling finally began in remote Sari Pul in October 2012. Weis Sherdel, director of the three Amu Darya oil

blocks for the mining industry believes the Amu Darya basin should be enough to supply Afghanistan with all its domestic oil needs.<sup>10</sup>

Crude oil from Amu Darya will be transported to Turkmenistan where it will be refined and sold to Afghanistan or abroad. Meanwhile, CNPC plans to complete an oil refinery within the next three years. This would be the first refinery in Afghanistan. At the end of February 2012 the Afghan government put more blocks up for bid in Balkh, a neighboring province.

### *Aynak Copper Mine*

In 2007 the Metallurgical Corporation of China (MCC) signed a \$3.5 billion contract for a 30-year lease to develop the Aynak copper mine, located approximately 15 miles south of Kabul, in Logar province. This is the largest extraction contract between Afghanistan and a foreign competitor.<sup>11</sup> The Aynak copper mine is estimated to have 11 million tons of copper, according to surveys done during the 1960s.<sup>12</sup>

In 2008, Mohammad Ibrahim Adel, the Afghan Minister for Mines at the time, told Agence France Presse that the Aynak copper mine is expected to bring the Afghan government \$400 million annually in fees and taxes. This is in addition to an \$800 million down payment from the developer. Moreover, China has committed to build a railway line, one or two power plants that will drive the mining equipment and supplement the regional power grid, and a village for workers, complete with schools, clinics, and roads. The project is also expected to create some 5,000 jobs.<sup>13</sup> Another potentially world-class copper deposit, called North Aynak, is located just north of the first one. According to the USGS, the northern deposit could be larger than the Aynak copper mine.

### **Other Resource Deposits**

#### *Hajigak*

80 miles west of Kabul lies a massive deposit of iron ore, estimated to be worth \$420 billion, in remote mountainous terrain. According to the MoM, the deposit could bring in \$400 million in government revenue each year while employing 30,000 people.<sup>14</sup> The deposit is located close to the proposed MCC railroad north of Aynak. To be financially feasible the iron

deposit at Hajigak needs access to a rail system due to the weight of iron ore and the cost-to-benefit ratio comparison between using trucks versus rail cars.

One project was awarded to the Steel Authority of India Ltd (SAIL), which is leading a consortium of Indian companies formed to explore three iron ore mines in the area.<sup>15</sup> The Afghan government earlier had estimated iron ore reserves at 1.8 billion tons (ore grade of 62 percent iron content). The consortium, which consists of state-run SAIL, National Mineral Development Corp Ltd, steelmaker Rashtriya Ispat Nigam Ltd (RINL), and private sector steelmakers JSW Steel, JSW Ispat Steel, Jindal Steel & Power, and Monnet Ispat & Energy, is planning to invest \$11 billion over eight to ten years constructing a steel plant, developing iron ore mines and creating applicable infrastructure, such as roads and rail links, within the project area. Although SAIL had originally planned to use the rail line proposed by MCC from the nearby Aynak copper mine in Logar Province, problems with MCC's commitment, discussed later in this paper, to build that line will likely push SAIL to seek alternatives, which, in turn, will require significant infrastructure funding.

In early 2012 SAIL had requested financial assistance from the Indian government for ore extraction, logistics and infrastructure at Hajigak. SAIL will likely get its requested assistance, mainly because the Hajigak mine is a benchmark of India's influence in Afghanistan.<sup>16</sup> India has a positive track record of completing such projects, as was evidenced in the construction of the Dalaram – Zananj Highway. Despite numerous casualties and increasing costs, the highway opened to the public on January 22, 2009. This type of perseverance serves as a positive testament, causing one to deduce that India's pattern of achievements will likely continue.

#### *Khanneshin Carbonatite Rare Earths, Uranium*

Helmand province possesses a world-class rare earth deposit. Rare earth elements are critical to hundreds of high-tech applications that range from everyday items, such as cell phones and computer laptops, to military-based technologies and green technologies. Currently China produces over 95 percent of the world's rare earths, and many experts fear that there might one day be a shortage, affecting the production of many critical high-tech products. Furthermore, while China is currently the largest producer, some experts believe that the country will soon become a net importer of rare earths.<sup>17</sup>

According to a study conducted by the USGS between 2009 and 2011, and funded by TFBSO, there are an estimated one million metric tons of rare earth elements within the Khanneshin carbonatite in Helmand Province, and an estimated 1.5 million metric tons in all of southern Afghanistan. The deposits are said to be of similar grade as those seen in Mountain Pass, California and Bayan Obo, in China's Inner Mongolia, two of the top light rare earth deposits in the world.<sup>18</sup>

The largest rare earth deposit is located in Helmand atop rugged, rocky volcanic terrain, which currently can only be safely accessed by helicopter. While the lack of infrastructure and difficult terrain pose a significant challenge to one day being able to mine and process these rare earth deposits, a more pressing issue is the ongoing security threat in the region. Helmand is notorious for growing poppy and is known as a hotbed of Taliban activity, being the scene of increasing militancy over the past two years.<sup>19</sup> According to an interview with Mulla Muhammad Daoud Muzzamel, Deputy Governor of Helmand Province, while "foreign occupiers" have established bases in the province, "an absolute majority of these bases have been under complete sieges for the past few years." During the interview Daoud Muzzamel described the many tactics used by the mujahideen, including establishing "surveillance strongholds against all bases – on the walls, inside the orchards, on trees, and on the farms; through which they investigate the enemy's movements. If the enemy exits the base, or raises his head, the mujahideen will immediately target and kill him with their sniper rifles."<sup>20</sup>

Despite Muzzamel's claims, Helmand Governor Golab Mangal and other sources are touting an overall improvement in the province. For example, according to Andre Hollis, a former senior adviser to the counternarcotics minister in Afghanistan, the tide is turning in the cultivation of opium poppy in the province. There was a 38 percent decrease in the production of opium between 2007, when it was at its peak, and 2011. Hollis attributes this decrease in opium cultivation to a British-run program called the Food Zone. In this program Afghan farmers are provided fertilizer, seeds, and a scheme to store various crops and transport them to markets outside of Helmand. According to Hollis, Golab Mangal has been a driving force in reducing the opium poppy trade in Helmand. He is credited with taking the steps to eradicate the crop, such as ordering the arrests of some family heads of households involved in the trade. For the Taliban the opium trade is a major source of funding. Therefore, as Senator Dianne Feinstein pointed out, replacing opium fields for legitimate crops "can ultimately help to cut off financing to the

Taliban... (and) will help to achieve the dual goal of strengthening Afghanistan's economy while weakening the Taliban.<sup>21</sup>

In addition to programs such as the Food Zone, it is conceivable that the successful mining of the Khanneshin carbonatite rare earths could also contribute to improving Afghanistan's economy and cutting off financing to the Taliban through job creation and the building of local infrastructure. Of course, the security environment has to first improve dramatically. While Afghan security forces are taking a more active role in leading stability operations in Helmand, their performance is inconsistent, being mainly determined by the caliber of individual leaders. The attainment of a stable environment in Helmand still is tenuous at best. Then, once the security situation does improve, it would likely take well over ten years to put into place all the infrastructure and logistics necessary to make such an extraction venture work. Even then, local expertise is virtually nonexistent and Afghanistan would still have to rely on foreign expertise and backing. While mining rare earth elements might be simple enough, processing them is altogether another story, because they cannot be processed like emeralds or lapis lazuli. Instead, they have to be separated through complex, multi-step processes involving a variety of often hazardous chemicals and acids. Without local expertise and the separation plants needed, the ore would have to be transported to another country willing to pay the high cost of shipping and processing. China's proximity to the country and its expertise in the industry would seem to make it an ideal candidate to direct the development of Afghanistan's rare earth elements industry. Of course, looking at the bigger picture, China has already started paving the way for increased influence and trade relations in Afghanistan.

### **China: Influence, Soft Power, and the Competitive Edge**

In September 2012 Afghanistan signed an action plan agreement with China to implement security and economic agreements.<sup>22</sup> Prior to that Afghanistan has had various long-term strategic/cooperation agreements with seven countries: the United States, India, Germany, Australia, Italy, France, and Britain.

China seeks both medium- and long-term economic benefits from its growing investment in Afghanistan and hopes to benefit from decreasing the potential for Islamic extremism born out of Afghan poverty. Since September 2001 China has taken various steps to strengthen its relationships there. In 2004 China relieved the Afghan government of all matured debts that it

owed China. In 2006, during a visit to China by the president of Afghanistan, both countries signed the “Treaty of China-Afghanistan Friendship, Cooperation, and Good Neighborly Relations.” In March 2010 the president of Afghanistan paid another visit to China, during which both parties signed a number of agreements on trade and economic development. China also applied a zero-tariff status to some products originating from Afghanistan.<sup>23</sup>

China’s approach is practically and conceptually different from that of the United States. According to Chinese author Wang Jian, the United States attempts to defeat the Taliban through large-scale attacks. As the fighting spreads, “Taliban counterattacks are bound to intensify” and “it will be impossible for Afghanistan’s future security situation to break free from arduous difficulties. The present situation has exacerbated the investment environment in Afghanistan, lowered the investment rate, and increased operational risks; security problems are becoming the biggest risk in mining investment.”<sup>24</sup> Wang’s opinion ignores the billions of dollars spent by the United States on investments to alleviate poverty and rebuild infrastructure in Afghanistan, not to mention the fight to counter the Taliban’s extremist ideology, one of the pillars of China’s professed fight against the “three isms” (terrorism, extremism, and separatism).

The most marked ideological difference between Chinese and U.S. relations with other nations is outlined in a 2008 report by the Congressional Research Service, which states that China is known to provide other nations with opportunities in foreign investment and aid projects in a “win-win” situation. While these countries provide China with natural resources or a trade market in which to operate, China provides its aid under a policy of “non-interference” in other nations’ political and economic realm, without concern for corruption or any such unethical business practices that might exist.<sup>25</sup> That is, China turns its head away from ethics and directs its attention toward self gain. On the other hand, “the U.S. emphasis on shared democratic values, considered to be a pillar of American soft power, can be perceived in other countries as an obstacle to arriving at solutions to international problems.”<sup>26</sup> Ethics and political correctness matter in the United States, whether this is a realistic line of attack or not and whether the host country accepts the principle or not. The bottom line is that China and the United States do not adhere to the same moral and legal practices.

## **The Spread of Corruption**

For any legitimate enterprise to succeed and for the creation of a civic and commercial system to function normally, it is essential to have in place transparent and trustworthy institutions. However, corruption has become a major issue in Afghanistan. According to social activist Shafiq Hamdam, corruption “feeds the unrest” and “feeds the insurgency.”<sup>27</sup> Transparency International’s Corruption Perceptions Index, 2011 ranks Afghanistan as the fourth most corrupt country in the world after Somalia, North Korea, and Myanmar.<sup>28</sup> According to the United National Office on Drugs and Crime, Afghan citizens pay twice the amount of bribes than they did two years prior. Transparency International estimates that the current level of \$158 per bribe is equivalent to 37 percent of the average annual Afghan income. Polls show that Afghans rank corruption as their top concern, over the Taliban, terrorism, or the economy.<sup>29</sup>

Some observers believe the corruption has likely already filtered down into the minerals industry. For example, MCC was accused of winning its contract for the Aynak copper mine through a \$30 million bribe paid to Mohammad Ibrahim Adel. Without “reliable evidence” and documents, however, the Afghanistan’s High Office of Oversight and Anti-Corruption refuses to investigate the allegations.

Some observers have dubbed the mineral wealth in the country the “blood diamond of Afghanistan.” There is a real risk that, as long as transparency is lacking, Afghanistan’s natural resources could easily be used to fuel further insurgencies or their revenues could easily end up in illegal coffers. History has shown that whoever controls the minerals has the capacity to control a war.

One report described the corruption in Afghanistan as daunting. The illicit opium trade makes up 30 to 50 percent of the economy. This in turn fuels criminal and insurgent elements. The report further stated that “recent presidential and parliamentary elections were characterized by a high incidence of electoral pay-offs and fraud. There was also the scandal at the Bank of Kabul, replete with phony loans to the Afghan elite... And billions in U.S. aid funds, which have been misappropriated, worsening corruption despite belated attempts by U.S. officials to track expenditures more carefully.”<sup>30</sup> The spread of corruption can weaken the rule of law, debilitate the judicial and political systems, and cause citizens to lose faith in their government officials.

In an effort to fight corruption, in October 2010 the Afghanistan government passed a law that would allow the establishment of special tribunals to investigate senior officials

suspected of corruption.<sup>31</sup> With the troop withdrawal quickly approaching, only time will tell whether or not these and other measures will be effective.

### **The Transportation Dilemma**

Being landlocked forces Afghanistan to depend on neighboring countries in order to export its mineral goods to world markets. Afghanistan is bordered by Pakistan, China, Tajikistan, Uzbekistan, Turkmenistan, and Iran. Pakistan shares, by far, the longest border. Therefore, it is critical to Afghanistan's mining industry to maintain good relations with its neighbors in order to diversify its outlets and remain flexible to market requirements. In this regard, roads and railway networks are crucial to any future export-based economic growth.

The two primary issues that pose the biggest dilemma to the successful construction of railways and roads in the country are Afghanistan's geography and security concerns. Afghanistan's rugged, mountainous terrain, remote locations, and extreme weather conditions make building any kind of transportation infrastructure more costly and challenging. Security concerns such as ongoing insurgency activity, which is more prevalent in the south, can also increase costs for shippers with added security and insurance premiums. Afghanistan runs the risk of having its infrastructure targeted and destroyed by insurgent groups. The environment in the area is tense and requires a buildup of both governmental and corporate security forces, which then would further drive up costs.

### **The Long Road Ahead/Rebuilding and Maintaining Afghanistan's Road System**

Most of Afghanistan's transport systems and power-generating facilities were built after World War II. While the first modern road over the Hindu Kush was completed in 1933, most of the roads in the country were built during the 1960s. The United States and the Soviet Union funded these projects to tie Afghanistan into each country's respective commercial and economic sphere. In the 1960s and 70s the Soviet Union was behind the construction of a number of roads linking major trade centers to its Soviet regions to the north. Meanwhile, the United States backed the construction of several southern roads going into Pakistan and Iran.<sup>32</sup>

According to a 2002 study conducted by the Infrastructure Development Institute (IDI) of Japan, "By 1975, when all the major road projects were completed, Afghanistan had 23,500 kilometers (14,603 miles) of roads, of which there are about 2,500 kilometers (1,553 miles) of

paved highways.”<sup>33</sup> Since 1978, however, most of the road network had significantly deteriorated due to war and a lack of maintenance, and by 2002 the highway system and associated projects, such as bridges and tunnels, were in dire need of almost complete reconstruction.<sup>34</sup>

### **Railway Systems: Dream or Reality?**

Building a railway system is the simplest and most economical option to ship minerals out of Afghanistan. However, there are many challenges involved. Along with complications and added costs that would arise as a result of the country’s rugged terrain, there is the problem of choosing a track gauge. The track gauge is the distance between the inside edges of the rails that make up the track. According to Piers Connor, an independent railway consultant on global railway operations, the countries surrounding Afghanistan all have different gauges. This difference is the result of the former Soviet republics using the same gauge as Russia. Russian railways use a wider gauge than the standard one (Russia uses a 1,520 mm and 1,524 mm gauge).<sup>35</sup> These wider gauge railways, which are already in place, cover the former Soviet republics, Mongolia, and Finland. Meanwhile, China and Iran use a standard gauge, (1,435 mm), and Pakistan uses the Indian gauge (1,676mm). Therefore, any newly constructed links connecting to Afghanistan’s bordering countries has to make a choice as to which gauge to use, or they must be prepared to take steps necessary to overcome the difference in gauge. The latter can be accomplished one of two ways. Either the vehicles can be changed out at the border or the wheel (bogey) setting can be changed, neither of which option is without its challenges.<sup>36</sup> Potential railway investors would likely have to factor in the added upfront costs, as well as shipping and timeline costs, for creating and using gauge-switching facilities, which are quite expensive to build and operate.

The Afghans themselves are attempting to ameliorate the dilemma of rail connectivity. In early 2012 senior Afghan government officials were mulling over a plan to use three different rail gauges and four break-of-gauge stations located in Herat, Mazar-e Sharif, Kabul, and Kandahar. Thus, the track gauges are designed to meet the transportation requirements of neighboring countries (specifically Iran, China, and India). Nevertheless, the Afghan government needs to emplace and empower a national rail authority to oversee the planning and construction

of an effective rail system, which even under ideal conditions would not be fully functional for over ten years.

As part of the Aynak copper mine contract with the Afghan government, the Metallurgical Corporation of China (MCC) agreed to fund a feasibility study for the construction of a rail line from the Afghanistan-Pakistan border to Torkham Gate, to Aynak, past the Hajigak iron deposit, then north to connect to the existing Hairatan to Mazar-e Sharif line built by Uzbekistan Railways. In June 2012 engineers from the China Railway Company began researching the technical aspects of building the railway that will connect the Aynak copper mine to Uzbekistan as part of China's deal to extract copper. The cost of the railway is estimated at approximately \$4 billion.<sup>37</sup>

The original proposal made by MCC is based upon a high-speed passenger line, with over half the length in the form of bridges and tunnels. Both the Afghan MoM and experts at the U.S. Embassy in Kabul estimated that the projected rail line would be both unprofitable and untenable in its current form. Though the results of the feasibility study by MCC will not be finalized for over two years, U.S. experts anticipate that the plan for the rail structure will not support the durability required to move heavy freight. In order for MCC's proposal to logistically work it would take 31 trains moving in a 24-hour period. The system would require 50 cars per train to move 10 million tons of freight per year, in addition to 10 passenger trains operating daily.<sup>38</sup> Moreover, it is likely that the prolonged study period will add to the already expected delays on the anticipated national rail network plan. Despite these obstacles, the Afghan MoM intends to go ahead with rail line construction, whether the MCC determines the route to be feasible or not. The implied assumption is that international donors will fund the plan if private investors back away from the project.

As an alternative to this line, the MoM in mid-2011 publicly proposed a viable alternative rail route running west to Iran, then along the Zaranj-Delaram Highway to the Iranian port of Chabahar. In late 2011 India appeared to be planning to construct this railway, thus allowing for additional export routes rather than relying on MCC's eastern rail route to Torkham. This is, above all, an effort by India to develop further alternative routes out of Afghanistan that do not cross Pakistan.

## **The New Silk Road Initiative and Regional Issues behind Trade Routes**

The New Silk Road (NSR) initiative is a U.S.-backed comprehensive development plan that envisions the expansion of transport and trade as the principal drivers of Afghanistan's economic growth. The NSR initiative envisions Afghanistan as the center of a new trade network, described by President Karzai as the "Asian roundabout," and the hub of transport and trade routes linking Central and South Asia. Conceptually, the NSR presents a positive external image to help Afghanistan gain international support for its own post-transition economic vision. As a starting point, the NSR focuses on a package of key construction projects, trade, and reform initiatives that support that vision.

The NSR concept for development builds on priority infrastructure projects already underway, including the development of roads, rail, and energy networks. To give substance to the infrastructure projects, the NSR prioritizes regional economic cooperation through trade agreements and reforms, streamlined border management, and support for private sector development. Countries such as the United States, Pakistan, Saudi Arabia, India, Japan, and China are already funding NSR-related development projects, while more countries are seeking to finalize trade agreements and negotiate future projects. However, concerns about security are affecting funding. The Asian Development Bank estimates that poor security can increase the overall cost of development projects by as much as 20 percent, owing to direct security measures, high personnel costs for security, and implementation delays. Thus, public perception of a deteriorating security situation would likely deter private investors, who must weigh the potential for returns on investment against the risk of loss should the security situation deteriorate in the post-ISAF era after the 2014 transition.

Commitment to infrastructure projects was a major theme of the July 2012 Afghanistan donor's conference in Tokyo, and Afghan officials have been enthusiastic about the NSR plan. The international community pledged \$16 billion at the Tokyo conference, partly on the condition that Afghanistan clamps down on widespread graft. Nonetheless, persistent corruption concerns, the security situation, and fiscal realities are likely to undermine Afghanistan's ability to complete many of the near-term NSR development components.

While the NSR development is crucial to the success of Afghanistan's minerals industry, there are numerous other complications. Afghanistan has historic rivalries, often fueled by third party relationships, e.g., the historic rivalry between China and India and the persistent acrimony between Pakistan and India. Meanwhile, the United States, which currently enjoys good relations

with both India and Afghanistan, has been experiencing poor relations with both Iran and Pakistan. Such rivalries and ill-feelings could impact any potential future trade system. Nevertheless, cooperation among these regional players is the central theme behind U.S. support of the NSR.

While the NSR was conceived prior to the mineral wealth discoveries, it mainly centered on having Afghanistan reap the benefits and interests of its neighbors' trade passing through it. Now, however, Afghanistan will be one of the sources of this resource transit, and the economic interests of its neighbors and designs on the mineral wealth within Afghanistan have drastically complicated the picture.

### **India - a Growing and Formidable Player.**

India and Afghanistan have a history of close cultural and political ties. India has a tremendous amount of influence within Afghan society, especially among its urban population and upper and middle classes. Afghanistan's media outlets are filled with Indian television serials and Bollywood productions. The non-Pashtun populations of Afghanistan welcome India's growing influence, perhaps partly due to the perception of India's being a counterweight to Pakistani hegemony over the southern and eastern portions of the country.

India never recognized the Taliban government. After the 9/11 attacks on the United States and the U.S.-led war in Afghanistan, Indian-Afghan relations strengthened and India provided hundreds of millions of dollars to help Afghanistan rebuild and develop. Pakistan, which has had poor relations with India for years, is threatened by the strengthening Indian-Afghan ties. Some experts believe that Afghanistan's stability could be at risk while India and Pakistan compete for influence in the country.<sup>39</sup>

The October 2011 signing of the Strategic Partnership between India and Afghanistan took many observers in the Kabul diplomatic community by surprise. Although the United States officially supported the agreement as a step toward Afghanistan's regional cooperation, many within NATO were concerned about the potential impact the agreement would have on Pakistan's support for insurgent groups within Afghanistan. The agreement stipulated training and assistance for Afghan security forces, albeit the former was to be conducted entirely in India and the latter was to be nonlethal aid. India had provided training and materiel assistance for

years since the Taliban were forced from power; thus, the agreement was a codification of already-existing programs.

While the security aspects of the Indian-Afghan agreement garnered the most attention at the time, the economic portions were significant in light of their pledge to enhance and expand India's investment in Afghanistan's infrastructure. Aside from the developmental benefits to the Afghan populace, formalizing the agreement allowed India to deal directly with NATO, with which they have no official relationship. During the months following the signing of the agreement, Indian senior defense officials met with NATO advisors in Kabul to negotiate issues such as removing explosives used in an Indian-funded dam project near Herat and obtaining assistance in getting aid shipments into Afghanistan.

This latter issue exemplified the precarious nature of regional relations in South Asia. Pakistan prohibits Indian assistance to Afghanistan from passing through its territory, irrespective of the status of the supply route from Karachi. India was forced to send its shipment from Madras to Bandar Abbas, Iran, then into western Afghanistan, and then into Kabul. Since Indian aid shipments are authorized by Parliament based on total cost, an increase in shipping costs effectively cuts the amount of aid delivered - in this case, light trucks and ambulances.

While the Indians understood the delicate balance of U.S., Iranian, and Afghan relations, the Afghan government representatives were the ones who approached NATO and requested that, due to the shipment's decreased size, perhaps NATO could lump the Indian shipment along with other NATO cargo and have it pass through Pakistan. Needless to say, such a move would have had significant regional political fallout when the Pakistanis discovered the scheme. In this single instance, rational minds were able to avert a crisis (the shipment wound up going through Iran as planned). However, it does demonstrate the complexity in dealing with cross-border transit. Such issues could multiply a hundredfold with the volume of shipments needed to support the extraction and transshipment of natural resources.

India aspires “to consolidate its presence in [Afghanistan’s] mining sector.”<sup>40</sup> Due to the ongoing rivalry between India and Pakistan, using Pakistan as a trade route would not be prudent, since it could be cut off at any time.<sup>41</sup> Therefore, the best route for natural resources to reach India would be through Iran to the Port of Chabaharas. This would offer India direct access (via the Indian Ocean) to Afghanistan.

## **Pakistan - the Intractable Neighbor**

In November 2011, after a NATO air strike killed 24 Pakistani soldiers at two Pakistani army border outposts, Islamabad stopped permitting the transit of materiel destined for NATO forces in Afghanistan. Pakistani sources called the incident a deliberate attack, saying that NATO knew about the location of the two outposts and that the attacks went on for over one hour. However, according to NATO officials, Afghan and U.S. troops operating inside Afghanistan at the Afghan-Pakistani border were fired upon from within Pakistan; therefore, they were protecting themselves during a joint Afghan-NATO exercise, and air support had to be called in.

In retaliation for the attacks, Pakistan closed its border with Afghanistan, stopping trucks transporting supplies for ISAF. There are major security concerns surrounding the trade route that passes through the Khyber Pass connecting Afghanistan to Pakistan. Militants target cargo trucks near Torkham, and as long as these attacks continue, Afghanistan will suffer losses. Afghanistan's economy could depend on Pakistan transit, which would likely be used as leverage over Afghanistan.<sup>42</sup> Therefore, the best option from an Afghan perspective is likely to avoid Pakistan if at all possible.

## **Going North and into Russia**

Another option for shipping goods is through the Northern Distribution Network (NDN), which route passes through Russia, Kazakhstan, and Uzbekistan and is more reliable, since there are fewer custom issues, more paved roads, and an existing rail system. This route became the main land-based transit route for ISAF logistics after the Pakistani route closure in late 2011. While the NDN has been adequate to meet ISAF's needs, there are a number of hurdles that Afghanistan needs to overcome before it can rely on it as a major export route. It needs to sign an agreement with several countries, the most important one being Russia. This could prove to be challenging due to a tumultuous relationship with Russia following the Soviet invasion of 1979. However, the most prohibitive factor in the near term for Afghanistan with the NDN is the cost. The overland non-rail route is prohibitively expensive due to trucking costs. The present route is made viable only due to a large U. S. subsidy to pay the large fees associated with the multiple borders, modes of transit, and tariffs. Furthermore, the regional cooperation between the participating Central Asian states is likely a temporary phenomenon as long as profits from

heavy U.S. subsidies continue.<sup>43</sup> If Afghanistan were to consider this route as a mode of export, it would need to either obtain a significant assistance package for associated transit or negotiate another method of transit entirely.

One such alternative is a rail-only route that avoids Russia entirely, moving instead more west rather than north. Such a route would still pass through Uzbekistan and Turkmenistan, but instead of going north into Kazakhstan and Russia, it would cross the Caspian to Azerbaijan, then continue on rail through Georgia, then again by rail ferry across the Black Sea to either Romania or Bulgaria. Such an infrastructure exists as a legacy of Soviet (mostly military) transit planning, complete with roll-on, roll-off rail ferries and terminals. In general, rail transport is exponentially cheaper than wheeled transit. However, rail transit passing through Georgia is ill suited to transport heavy cargo, such as minerals, due to the mountains, switchbacks, and grades in the region. In order to transport such cargo, loads would be dramatically cut back, which would drive up costs. Furthermore, Turkmenistan is not currently a player in the NDN. However its participation would be more likely if the inclusion into a logistics network was entirely for non-military purposes.

### **Iran - The Unspoken Neighbor**

Relations between Iran and Afghanistan have long been strained. In the 1990s, when the Taliban was in power, the two countries almost went to war as a result of the murder of Iranian diplomats and the growing numbers of opium shipments transiting Iran.<sup>44</sup> According to Afghan leaders, as 2014 approaches, Iran is fueling anti-American sentiment in Afghanistan, trying to counter any potential, long-term security partnership between Afghan leaders and Washington. Iran has long been striving for closer ties with Afghanistan, but these efforts have been intensifying in recent months, with Iran cultivating closer relations with the Taliban, funding politicians and media outlets, and expanding cultural ties.<sup>45</sup>

According to Shukria Barakzia, an Afghan lawmaker who chairs the parliament defense committee, “Iran is a cancer [which has] affected all the Afghan government and nongovernmental bodies.” Barakzia pointed out that Iran has spent millions of dollars expanding its influence in Afghanistan.<sup>46</sup>

Fauzia Kofi, another Afghan lawmaker, said that Iran has strengthened its influence over institutions in Afghanistan over the past year. One of those institutions is parliament. “They have

strong networks and a lot of money,” Kofi said. “They go to different parliamentarians and tell them what to do and what not to do. They have become more active to try to keep this [U.S.-Afghan] partnership from happening.”<sup>47</sup>

According to members of Afghanistan’s High Peace Council, Iran recently began allowing Taliban representatives to operate openly in Tehran and Mashhad, an Iranian city that is close to the Afghan border. According to Arsalla Rahmani, who was a Deputy Minister of the High Peace Council, members of the Taliban have told him that Iran has courted their movement in hopes of derailing its exploratory talks with Washington.<sup>48</sup> Hedging their bets with other parties, the Iranians have even signed defense cooperation agreements with the Afghan government<sup>49</sup>, but these are miniscule in scale when compared to the ones Afghanistan has signed with the larger parties.

Iran also has a certain degree of leverage over Afghanistan. The country is a main source of Afghanistan’s natural gas. According to Sebghatullah Sanjar, head of the Republican Party of Afghanistan, in recent years the Iranian government has been known to cut off fuel imports to the country during the winter. Iran has also threatened to deport tens of thousands of Afghan refugees from Iran. This is used “to pressure the Afghan government,” said Sanjar.<sup>50</sup>

Aside from the large economic and cultural influence that Iran has been exerting in the western regions of Afghanistan, the main reason the Afghan minerals industries might have to come to an agreement with Tehran is simple logistical proximity. Iranian ports offer the closest outlets to international waters other than those from Pakistan, and outside actors are undeterred in using this proximity to meet their own interests. Afghanistan's partners (NATO countries and other U.S. allies) must be prepared to deal with this geopolitical reality borne out of economic necessity.

### **The Role of Education: Will Afghans Ever Fully Own Their Mines?**

Getting the Afghans to take ownership of their own resources and thus getting an accurate assessment of their size remains a hurdle. According to Murray Hitzman, who was trained as an anthropologist and is a Charles F. Fogarty Professor of Economic Geology at the Colorado School of Mines, “The more qualified and educated professionals who might work, for example, at the MoM tend not to like to do field work. Getting out into the field and getting their hands dirty is considered demeaning and culturally a low-caste job. Instead, they prefer to don

business suits and work on computers. However, geologists, the good ones, all do field work. So, that's an inherent sort of problem."<sup>51</sup> Hitzman went on to explain that one possible solution is to train a small number – maybe two or three – of individuals, who would likely remain in Kabul, to tend to administrative issues, as well as a cadre of technicians who would spend time in the field. These technicians would not likely possess advanced degrees, but would be adequately trained in areas that could further advance Afghanistan's mining industry, primarily in small-scale mining endeavors, such as working "mom-and-pop" mines.<sup>52</sup> Afghanistan's low literacy rate will likely be a major obstacle when trying to develop a level of domestic expertise.

### **Water in Afghanistan**

Water is desperately needed in Afghanistan to sustain economic development, as well as life itself. In the mining industry access to large amounts of water is critical. Water is used throughout the mining process, from extracting the mineral to milling, washing, and flotation (bringing the target minerals to the surface after crushing and milling them). Huge amounts of water are also used for secondary oil recovery (water is injected into an existing oil reservoir to build up pressure, which allows more oil to be recovered).

Water is not abundant in Afghanistan and the infrastructure to manage the water is underdeveloped. According to a September 2008 report, due to earlier droughts, low precipitation and poor water management, the country is experiencing a water crisis.<sup>53</sup> The same report quoted Sultan Mahmood Mahmoodi, General Director of the Water Management Department at the Ministry of Water and Energy, as saying, "Our assessments indicate that due to several factors, mostly drought and excessive use, about 50 percent of groundwater sources have been lost in the past several years."<sup>54</sup> A 2010 report quoted scientists as predicting that "at least half the shallow drinking water wells [in Afghanistan] supplied by groundwater are likely to become dry or inoperative within 50 years as a result of climate change."<sup>55</sup>

According to a report put out by the World Bank, over 75 percent of the Afghan people live in rural areas where agriculture is the primary activity. However, only 40 percent of agricultural land is irrigated. Between 1978 and 2001 – the conflict period, which comprised the era of the Soviet invasion and reign of the Taliban – agricultural production grew at a rate of only 0.2 percent per year. In order to enable faster economic growth and reduce rural poverty, "agricultural needs need to grow at least five percent annually over the next decade."<sup>56</sup> However,

“the main drivers of growth – technology, roads, irrigation, and education – have all deteriorated due to conflict, lack of maintenance, and frequent droughts.”<sup>57</sup>

With so much of the population depending on agriculture, farmers have dug deeper wells, using pumps to irrigate their lands. With this problem of dwindling water supplies and high demand, the mining industry will end up competing with agriculture and other industries for Afghanistan’s water sources.<sup>58</sup> Allocating precious water resources between day-to-day vital agricultural needs and strategically important extraction needs is fraught with political risks – ones that are especially acute in Afghanistan.

### **Adequate Regulations or an Environmental Mess?**

Mining could harm water quality, and some observers believe that the mining process is likely to further pollute the ground water. Only about 27 percent of Afghans have access to sanitary water. *Tolo News* quoted the Afghan National Environmental Protection Agency as saying, “Our groundwater has already been polluted. Kabul groundwater is polluted because of septic wells and surface water. So, we will try to make sure it does not get more polluted.”<sup>59</sup>

Afghanistan has little to no history of environmental protection, which has some observers wondering if the country is capable of engaging in mining and development activities responsibly.<sup>60</sup> Projects that prove to be damaging to the environment could easily one day prompt citizen protests and unrest, which would be detrimental to the country’s new leadership.

Afghanistan can learn from its neighbor China, which, due to its extensive record of past environmental abuses, is now struggling to quell citizen protests and unrest, as well as spending millions of dollars to reverse the damaging effects of years of poor mining practices. According to one Chinese report, data from the Ministry of Environmental Protection showed that the number of mass demonstrations related to environmental concerns in China has increased at an annual rate of 30 percent. Environmental concerns are one of the top three factors resulting in social conflict in the country, the other two factors being land grabs and labor disputes. While the country is well ahead of Afghanistan in every respect and will likely be able to easily counter these demonstrations, it still serves as an example of a possible outcome to an emerging Afghan mining industry.

Dr. Cheryl Benard, president of the Bamiyan Project, pointed out in a July 2012 article that Afghanistan's vast mineral wealth "could be just what the battered nation needs as Western donors leave—but exploiting it could lead to economic and environmental disaster."<sup>61</sup>

Some of the environmental dangers of a poorly run copper mine, for example, include toxic contaminants, such as heavy metals and acid drainage, degrading the quality of ground water, surface water, soil, and air quality during mine operations and even after the mine closes.<sup>62</sup> In the case of rare earth elements, waste can include gas containing dust concentrate, various acids, and radioactive waste residue from thorium, which is generally found in trace quantities in rare earth deposits. These too can find their way into area water sources and irrigated farmlands, causing irreversible damage without proper engineering practices, environmental controls, and regulatory requirements.<sup>63</sup>

Afghanistan's MoM website states that large projects, such as the Aynak copper mine and Hajigak iron ore mine, are required to meet or exceed the minimum international norms for environment, health, and safety in the 2007 World Bank "EHS General Guidelines."<sup>64</sup> While the MoM has announced measures to protect the environment, if Afghanistan's fragile government cannot enforce this, the environmental damage could be great. A successful mining industry in Afghanistan is contingent on good environmental practices put into place up front. Without adequate governance on its mining industry, Afghanistan can easily find itself in a predicament like China, and perhaps even worse due to the current instability.

## **Conclusions:**

The Afghanistan issue is complex. While its vast mineral wealth would seem to offer an ideal solution to its economic hardships, the country's infrastructure, regional vulnerability to neighbors and outside actors, education and expertise levels, environmental fears, rugged terrain, and a lack of water provide a formidable barrier. Even smaller issues, such as differences in track gauges, can throw a monkey wrench into the equation. Yet, these obstacles may not be impossible to overcome.

The consensus among Afghanistan's own analysts is that, more important than focusing on security and building up the country's military forces, Afghanistan needs to implement steps to build up stability in the economy and social structures. Rohullah Ahmadzai, head of the media section of the Investment Support Administration in Afghanistan, said that security can now be

more effectively strengthened if more efforts go toward social and economic investment.<sup>65</sup> During a talk show Ahmadzai pointed out that since mid-2011, when discussions about the possible departure of ISAF began to surface, there have been increased anxieties regarding the economy, especially in the private sectors. Not only are Afghan investors wondering whether or not private investment opportunities will continue to exist, but so too are foreign investors.<sup>66</sup>

It is a vicious circle. The political and security stability in the country is essential for investment in the mining industry to work. However, it is equally important for investments in social and infrastructure to promote stability in the region. Without one, the other simply cannot exist.

During a debate about the progress in the Afghan mining sector, which was aired on National TV Afghanistan, Jawad Omar, a spokesman for the MoM, stated that “When an agreement is first signed, one of the conditions and standards considered while signing the contract is the fact that the minerals must be processed inside Afghanistan and the necessary infrastructures and facilities must be established by the company for the local people living in an area.”<sup>67</sup> With poverty being one of the leading problems in Afghanistan, a fully functional mining industry, which offers jobs as well as an ability to use the minerals in country, could only benefit the people.

The Sino-Afghan relationship seems to be a win-win situation. China has the technology, expertise, money, and political will to make a difference in Afghanistan. The Chinese are taking a risk putting so much into a country that is ranked so low on the corruption index. However, while the risks are high in Afghanistan, there are many potential benefits to China. For one thing, China is in desperate need of natural resources to help develop its economy; moreover, Afghanistan is ideally located to serve as a central transportation hub for supplies. China has been developing its own internal infrastructure and this infrastructure extends into neighboring countries. Some observers fear that if the United States were to remain permanently in Afghanistan, that is, more than just a partner for training and military support, it would make the country a theater of rivalries among different players and affect the indigenous and collective security system in South Asia and its surrounding areas.<sup>68</sup> Others might question the soundness of U.S. and NATO forces spending trillions of dollars, just to pull out and have countries such as China come in and reap the potential profits gained through U.S. and NATO blood and money.

Unfortunately, Chinese access to Afghanistan minerals is probably the most likely outcome and could prove to be the easiest solution.

China also understands the regional stakes involved with Afghanistan's stability. China has its own Islamic insurgency in western China. Continued instability in Afghanistan can only potentially exacerbate those risks. It is for these reasons that China is keeping a watchful eye on the Afghan National Security Force (ANSF) development. Beijing's security-related bilateral engagement with Kabul, although modest, is probably aimed at increasing its influence and bolstering security for its investments. Beijing provides training in China for a small number of ANSF officers – around 60 per year – and has supplied small quantities of assistance for security and law enforcement agencies. China has also provided the ANSF with counterterrorism and mine-clearing training, and is suspected to have agreed to fund the training and equipping of ANSF personnel responsible for guarding Chinese mining and infrastructure projects.

Of course, the idea of a successful intervention from the Chinese is not without its skeptics. Abid Amiri, who worked in the Kabul office of the American Councils for International Education, for example, believes that China will not deliver on its promises due to the current state of corruption in the country.

Amiri also points out difficulties that exist within the Afghan mining industry that could further hamper China's involvement. First, the Afghan government does not yet have the capacity to implement large contracts effectively, such as the Aynak copper deposit project given to the MCC because the MoM is lacking in expertise. Second, along with corruption, the Afghan government is suffering from a lack of transparency. Amiri suggests that while the Afghan government stands to earn hundreds of millions of dollars from its mines, if the government does not rush into its mining operations and, instead, first builds up its expertise and domestic capabilities, the earnings will be much greater and will benefit the people of Afghanistan as well as the government.<sup>69</sup>

One major counterweight to this potential Chinese hegemony is India. With U.S.-Indian relations growing ever stronger, there will be an increasing incentive among both Western firms and some Afghans to support Indian projects versus Chinese ones. For the Westerners, dealing with Indian firms might seem more palatable (and politically safer), and Western diplomats will be eager to see India act as a counterweight to Pakistan. Disenfranchised Afghans both inside and outside the government will seek Indian/Western support for their claims of Chinese

malfeasance or collusion. This could also boost Indian commercial interests and offer the country a political advantage over Pakistan. The deftness with which the government in Kabul plays both the Chinese and Indian cards against each other, keeping Western interests and Pakistani factors in mind, will need to be remarkable indeed.

There are no sure answers, and only time will tell in what direction Afghanistan will head and how its mineral wealth might, or might not, pull the country out of its current poverty and chaotic state. For now, however, the odds seem to be stacked against the country. While mining in general is not overly complex, the process inside and outside of Afghanistan's borders is yet another story. "If it were easy, it would have happened long ago because the Afghans have been desperate for money on many occasions."<sup>70</sup>

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## NOTES

<sup>1</sup> Whether or not having a strong central government is needed for success can be debated. There have been a number of attempts to create a strong central government in Afghanistan. A heavy-handed king named Abdur Rahim, the Soviet Union, and the United States all at one time or another believed that a central government was the model of the future and therefore attempted to impose a strong central government. The first two attempts had failed, while the jury is still out on the third (the United States).

<sup>2</sup> Numerous official NATO and ISAF documents. Each year, commander and election cycle seems to bring an incremental change to the official “why are we in Afghanistan?” question. Thus this list is a summarization of numerous versions of many official documents.

<sup>3</sup> Soraya Sarhaddi Nelson, “Tapping into Afghanistan’s Wealth of Gems,” National Public Radio broadcast, September 7, 2007.

<sup>4</sup> “Afghanistan’s Emerald Miners,” The Guardian, downloaded from YouTube, uploaded May 4, 2009, <http://www.youtube.com/watch?v=LaK0A082GII&feature=related>, (accessed June 6, 2012).

<sup>5</sup> Kathryn Hansen, “Afghanistan’s Mineral Resources Laid Bare,” Earth Magazine, December 2011, <<http://www.earthmagazine.org/article/afghanistans-mineral-resources-laid-bare>>.

<sup>6</sup> Robert Cutler, “Kabul Starts Race for Tenders on Afghan Resources,” Asia Times Online, December 14, 2011.

<sup>7</sup> Jack Medlin, “Telephone Interview, January 20, 2012.

<sup>8</sup> Slobodan Lekic, “Afghanistan, China Sign First Oil Contract,” USA Today, December 28, 2011.

<sup>9</sup> Daily ISAF Open Source Digest, 28 December 2011.

<sup>10</sup> Hamid Shalizi, “China’s CNPC Begins Oil Production in Afghanistan,” Reuters, October 21, 2012.

<sup>11</sup> Lekic, “Afghanistan, China Sign First Oil Contract.”

<sup>12</sup> Sardar Ahmad, “Mining Minister Says Afghanistan Sitting on Wealth of Mineral Reserves,” AFP, February 21, 2008.

<sup>13</sup> Ibid.

<sup>14</sup> Sarah Simpson, “Afghanistan’s Buried Riches,” Inside Afghanistan, September 22, 2011, <<http://www.insideafghanistan.org/>>.

<sup>15</sup> The Hajigak Iron Ore Mine tender was broken into four blocks, with three blocks awarded to SAIL and one block to the Canadian company Kilo Gold.

<sup>16</sup> Indian Defense Attaché to Kabul, discussion with author, October 2011.

<sup>17</sup> David Stanway, “China Reshapes Role in Rare Earths, Could be Importer by 2014,” Reuters, July 10, 2012.

<sup>18</sup> “USGS Releases Resource Estimate for Afghanistan Rare Earth Prospect,” United States Geological Survey Newsroom, September 9, 2011, <<http://www.usgs.gov/newsroom/article.asp?ID=2936>>.

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- <sup>19</sup> “Security to Remain Daunting Challenge for Afghan Government in 2012,” Xinhua, January 2, 2012.
- <sup>20</sup> “Interview with Deputy Governor Mulla Muhammad Daoud Muzzamel,” Taliban Voice of Jihad Online (Pashtu), March 22, 2012, <http://www.alemara1.net> (accessed June 6, 2012).
- <sup>21</sup> Rowan Scarborough, “Doubts of Victory Surface in War on Afghan Poppy Crops,” Washington Times, April 22, 2012.
- <sup>22</sup> “Afghan Leader Stresses Need for Strong Security and Economic Ties with China,” National TV Afghanistan (Dari), September 22, 2012.
- <sup>23</sup> Wang Jian, “Brief Analysis on the Environment of Investment in the Mining Industry in Afghanistan,” Natural Resource Economics of China Journal (Chinese), November 2011, pp.43-44.
- <sup>24</sup> Ibid.
- <sup>25</sup> Thomas Lum et al., “Comparing Global Influence: China’s and U.S. Diplomacy, Foreign Aid, Trade, and Investment in the Developing World, Congressional Research Service, August 15, 2008.
- <sup>26</sup> Ibid.
- <sup>27</sup> Allen Pizzey, “Corruption is Afghanistan’s Biggest Problem as Foreign Forces Prepare to Leave,” CBS Evening News, May 18, 2012.
- <sup>28</sup> “Corruption Perceptions Index 2011,” Transparency International website, accessed April 7, 2012, <<http://cpi.transparency.org/cpi2011/results/>>.
- <sup>29</sup> Maria Gili, “Corruption in Afghanistan: the Status Quo is not an Option,” Transparency International Blog, “May 22, 2011, <<http://blog.transparency.org/2011/05/11/corruption-in-afghanistan-the-status-quo-is-not-an-option/>>.
- <sup>30</sup> Ben W. Heineman Jr., “Afghanistan’s Corruptions Imperils It’s Future – And American Interests,” The Atlantic, July 23, 2012.
- <sup>31</sup> Wang, “Brief Analysis on the Environment of Investment in the Mining Industry in Afghanistan.”
- <sup>32</sup> Kiyoshi Dachiku and Azeem Tahir, “Afghanistan: Present State of Transportation Infrastructure,” Infrastructure Development Institute of Japan, August 2002.
- <sup>33</sup> Ibid.
- <sup>34</sup> Ibid.
- <sup>35</sup> Russian gauge is measured at 1,520 mm (or 4 ft 11 5/6 in) and 1,524 mm (or 5 ft).
- <sup>36</sup> Piers Connor, telephone interview, May 25, 2012.
- <sup>37</sup> “Chinese Engineers Arrive in Afghanistan to Plan Railway,” Tolonews.com, June 7, 2012.
- <sup>38</sup> U.S. Embassy Kabul, discussion with author, November 2011.
- <sup>39</sup> Jayshree Bajoria, “India-Afghanistan Relations,” Council on Foreign Relations website, July 22, 2009.
- <sup>40</sup> “India Asks PSUs to Explore Minerals in Afghanistan,” Deccan Herald, June 13, 2012.

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<sup>41</sup> An interesting anecdote on geopolitical risks, realities, and miscommunications that could easily arise in certain situations: Author Robert Mathers was telephoned by a concerned party in Kabul, in early 2012, about U.S. official statements that the United States was “using the Indian logistics network” to support operations in Afghanistan. Another concerned party in Washington had already demarched the United States for an explanation, and the Indians were surprised themselves. After looking at the map and wondering how logistics could be moved through Indian Kashmir and the Hindu Kush into Afghanistan, the author called contacts in Washington for assistance. The answer soon came, and reality was better than fiction. Apparently a senior U.S. military officer was briefing Congress on Afghan operations, when he was talking about using the Distribution Network the Central Asia and Russia. The abbreviation for the Northern Distribution Network is NDN. When pronounced with a heavy regional accent, “NDN” sounds a lot like “Indian,” hence the entry into the Congressional Record, and hence the concerned parties. With pleasant explanation, further crisis was averted.

<sup>42</sup> “What is the Best Route for Supplying Landlocked Afghanistan,” Diplomatic Courier, January 20, 2012, <<http://oilprice.com/Geopolitics/Asia/What-is-the-Best-Route-for-Supplying-Landlocked-Afghanistan.html>>.

<sup>43</sup> [Jeffrey Mankoff](#). “The United States and Central Asia after 2014,” A Report from the CSIS Russia and Eurasia Program, January 2013, p. 20. [http://csis.org/files/publication/130122\\_Mankoff\\_USCentralAsia\\_Web.pdf](http://csis.org/files/publication/130122_Mankoff_USCentralAsia_Web.pdf)

<sup>44</sup> Ernesto Londono, “Iran Intensifies Efforts to Influence Policy in Afghanistan,” Washington Post, January 4, 2012, <[http://www.washingtonpost.com/world/asia\\_pacific/iran-strives-to-play-spoiler-in-afghanistan/2012/01/01/gIQAZ6gCbP\\_story.html](http://www.washingtonpost.com/world/asia_pacific/iran-strives-to-play-spoiler-in-afghanistan/2012/01/01/gIQAZ6gCbP_story.html)>.

<sup>45</sup> Ibid.

<sup>46</sup> Ibid.

<sup>47</sup> Ibid.

<sup>48</sup> Ibid.

<sup>49</sup> In early 2012 the Iranians and Afghans signed a Defense Cooperation Agreement for the exchange of religious teaching procedures (military chaplains), commissary and military sales exchange items, and competitive military sports events. Per conversation by author with Afghan MoD officials, who provided copies of the agreement in Dari, Farsi and English.

<sup>50</sup> Ibid.

<sup>51</sup> Murray Hitzman, telephone interview, May 11, 2012.

<sup>52</sup> Ibid.

<sup>53</sup> “Afghanistan: Groundwater Overuse Could Cause Severe Water Shortage,” Irin News, September 14, 2012, <<http://www.irinnews.org/Report/80337/AFGHANISTAN-Groundwater-overuse-could-cause-severe-water-shortage>>.

<sup>54</sup> Ibid.

<sup>55</sup> “Afghanistan’s Kabul Basin Faces Dry and Thirsty Future,” Peakwater.org, June 22, 2010, <<http://peakwater.org/tag/groundwater-in-afghanistan>>.

<sup>56</sup> Ibid.

<sup>57</sup> Ibid.

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- <sup>58</sup> “Groundwater Overuse Could Cause Severe Water Shortage,” Afghanistan Online, September 14, 2008, <[http://www.afghan-web.com/environmental/ground\\_water.html](http://www.afghan-web.com/environmental/ground_water.html)>.
- <sup>59</sup> Parwiz Shamal, “Environmental Impact of Ainak Copper Mine,” Tolo News, July 3, 2012, <<http://www.tolonews.com/en/6:30-report/6745-environmental-impact-of-ainak-copper-mine>>.
- <sup>60</sup> James Risen, “U.S. Identifies Vast Mineral Riches in Afghanistan,” New York Times, June 13, 2010.
- <sup>61</sup> Cheryl Benard, “Afghanistan’s Mineral Wealth Could Be a Bonanza—or Lead to Disaster,” The Daily Beast, July 4, 2012, <<http://www.thedailybeast.com/articles/2012/07/04/afghanistan-s-mineral-wealth-could-be-a-bonanza-or-lead-to-disaster.html>>.
- <sup>62</sup> “Wastes and Other Materials Associated with Copper Extraction and Beneficiation,” Environmental Protection Agency’s Mining Industry Profile.
- <sup>63</sup> Cindy Hurst, “China’s Rare Earth Elements Industry: What Can the West Learn?” Institute for the Analysis of Global Security, March 2010.
- <sup>64</sup> “Afghanistan Environmental, Health & Safety Regime,” Ministry of Mines Website, accessed August 3, 2012, <<http://mom.gov.af/en/page/4695>>.
- <sup>65</sup> Discussion on Economic Concerns After Foreign Troops Withdraw (Dari), Tolo News, May 27, 2012.
- <sup>66</sup> Ibid.
- <sup>67</sup> “Afghan State TV Debates Progress in Afghan Mining Sector,” National TV Afghanistan, May 30, 2012.
- <sup>68</sup> “Will Signing a Strategic Pact with China Strike a Balance Between East and West?” Cheragh, June 6, 2012.
- <sup>69</sup> Abid Amiri, “Minerals: The Blood Diamond of Afghanistan,” Diplomatic Courier, 21 December 2011.
- <sup>70</sup> Les Grau, telephone interview.