

**Chapter 1 : Trump: US Must Boost Rare Earth Mineral Exploration for National Security - Sputnik International**

*Strategic Minerals: Environmentalist Cabal Environmentalists put America's vast mineral wealth off limits, ceding our future to China One egregious example is the Bureau of Land Management (BLM) proposal to protect the greater sage grouse and its sagebrush habitat.*

The United States is a treasure trove of mineral resources. Consider the recent example of environmental opposition to developing the proposed Pebble mine project in southwest Alaska. Among the most significant metallic mineral deposits ever discovered, the Pebble mine contains an estimated 6. The Pebble mine site is located on state lands that were secured in as part of a land swap with the federal government, specifically for its mineral potential. The site has since been designated through two public land-use planning processes for mineral exploration and development. Nevertheless, EPA is facing pressure to intervene preemptively in a number of similar cases. Here are a few examples: All of these mining projects are still in the initial planning stage and have not progressed through the normal NEPA consideration process used for decision making: For more than 40 years NEPA has defined a process by which a mine plan is evaluated. Under the law, every one of the concerns raised by opponents to the Wisconsin, Minnesota, and Oregon mines would be aired publicly, examined by scientists and a range of technical experts, before approval is granted or denied. Vast tracts of public lands have been withdrawn from entry to mineral exploration, leasing, mining, and other similar activities. A number of excuses have been mustered to explain this withdrawal to the public, including designation of wilderness areas, national monuments, habitat preservation, and military use. The Obama administration dramatically increased land withdrawals through an abuse of the Antiquities Act, seeking to satisfy the anti-mining and anti-drilling agenda of the environmentalist cabal. He used the act a record 29 times to establish or expand national monuments. Obama was also the first president to use the Outer Continental Shelf Lands Act to withdraw coastal areas from mineral leasing activities. The Trump administration has been confronted by major land withdrawals rushed through at the close of the previous administration and now under review. One egregious example is the Bureau of Land Management BLM proposal to protect the greater sage grouse and its sagebrush habitat. These sites would be declared off limits to exploration and mining in favor of habitat preservation. They assert it would damage mining industry jobs and revenue and further restrict access to critical minerals. This last point is crucial, considering that western states account for 75 percent of U. A final decision to enact the greater sage-grouse withdrawal will definitely increase our mineral import dependence. Blanket withdrawals of mining rights are usually irreversible. Environmentalists and government agencies fail to acknowledge cumulative effects on future access to mineral resources. In fact, the environmentalist cabal pushes for federal land withdrawals in areas where known or suspected mineral deposits are located to prevent their eventual mining! Withdrawing mega-acreages that contain important minerals can create artificial shortages and greatly increase imports, as has been the case in the domestic minerals market for at least the past three decades. Another hidden consequence plagues land withdrawals: Americans will probably never know the full extent of mineral resources located in the public domain, as detailed geologic mapping, evaluation, and exploration are usually prohibited on withdrawn lands. But what if the sum total of all U. Sadly, under current conditions, the U. They beg the question: Conservation Versus Preservation The federal government manages million acres of land, roughly 28 percent of the United States. More than 90 percent of those holdings are in 12 Western states, and contain mineral deposits of substantial economic significance—especially Alaska, Arizona, Utah, Idaho, and Nevada—where most of the land is federal. Unfortunately, approximately million acres of land is no longer accessible for mineral exploration, and million acres are not open under the mineral leasing laws of the U. The conservationist ethic of managing public lands in the U. In his memoir, Gifford Pinchot, the founding chief of the U. Strategic Minerals Ned Mamula Dr.

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Military Further Reading U. A major source for many of these minerals is Africa, a volatile region in which the possibility of a major disruption of U. A short analysis of four minerals A. Economic and political actions A. Conclusion Introduction Since World War II, the United States has become increasingly dependent on foreign sources for almost all non-fuel minerals. A major source for many of these minerals is Africa. This is a volatile region in which there is a distinct possibility of major disruption of U. Because of the internal political and economic problems in many of the African countries along with the ever present Soviet adventurism in the area, the issue of U. The purpose of this report is to examine the growing U. Reliance on African Minerals Since the Arab oil embargo of , the American public has become aware of its dependence on foreign sources of petroleum. Little known to most Americans is a second dependency, a dependency potentially more dangerous than petroleum, that has slowly risen over the past few years. This is the U. Without just a few critical minerals, such as cobalt, manganese, chromium, and platinum, it would be virtually impossible to produce many defense products such as jet engine, missile components, electronic components, iron, steel, etc. Virtually all the world's reserves of some strategic minerals lie either in the Soviet Union or in Africa. A Short Analysis of Four Minerals This section is designed to analyze these minerals to determine the impact on the U. Only four will be discussed chromium, cobalt, manganese and platinum because the majority of the free world reserves of each is located in Africa, each has a major impact on the U. Chromium is a white, crystalline, very hard metallic chemical with a very high resistance to corrosion. It is used in alloys required in stainless steel, tool steel, and high-temperature applications. It is also used in jet aircraft engines and aircraft structural members and areas of high skin friction. Major concentrations of chromium are in Africa, with the largest known reserves in the Republic of South Africa and the purest grades are in Zimbabwe. The only other significant sources of chromium are the Soviet Union, Turkey and Albania. There is no material which can adequately replace chrome in the steel industry and no substitutes exist for its aerospace industry and no substitutes exist for its aerospace applications. However, most critical industries, particularly defense, could not continue to operate without normal supplies. Due to the lack of substitutes, the limited capability of industry to operate without chromium, and the minerals concentration in South Africa and Zimbabwe, the U. The stockpile could meet domestic needs for up to three years. Cobalt is a hard, silver-grey metal which closely resembles both iron and nickel in hardness, strength and other properties. It is used as a high-temperature, high-strength alloy agent in stationary gas turbine and jet engines. It is also used in magnetic alloys in electronic equipment. Because domestic production cannot compete with the price of foreign sources, no cobalt has been mined in the U. Increases in the price of cobalt or severe reductions in its availability would be required before domestic production could be profitable. Zaire, Zambia, Morocco, and Botswana. Loss of the output from Zambia, Morocco, or Botswana would have a critical impact on the marketplace. However, 50 to 60 percent of the cobalt consumed is essential in high-temperature alloys for jet engines and steam turbines. In the event of a shortage, industry will not be able to drastically cut back on its uses of cobalt without a serious impact on U. Manganese is a prime ingredient in the production of steel and is the third most consumed mineral in the U. Many countries around the world have manganese deposits but only two dominate the world market: The Soviet Union, however, has virtually ceased exports of manganese. However, loss of South African exports would have a devastating effect on the world economy which would indirectly affect U. The steel industry could not operate without manganese and would be forced to curtail operations in the event of a loss of supplies. The key role that manganese plays in the steel industry and the absence of acceptable substitutes shows the critical nature of manganese. This problem is compounded by the lack of domestic reserves and the role that South Africa plays in the world marketplace. Platinum group metals are silvery or greyish metals. They are extremely corrosion-resistant, do not tarnish at high temperatures, and make excellent catalysts. The platinum group metals are not used in large quantities in industry but they have

a large effect on the economy including numerous military applications. No other country has reserves which could even begin to offset the loss of South African exports. In the U. In a crisis situation U. However, petro-chemical and electronic consumption would remain virtually unchanged. The status of the platinum group metals in the world marketplace is extremely critical. Virtually no flexibility exists in the event the South African supply is disrupted. Economic and Political Actions As long as the United States is dependent on the African nations for its chrome, cobalt, manganese, and platinum, it will be vulnerable to the actions of these nations. As this mineral dependence grows, the U. Therefore it is necessary to evaluate the likelihood of economic and political actions which could threaten our channels of supply or adversely effect the American economy. Economic leverage can be achieved by the actions of a single producer or through cartels. Cartels are collusive agreements among producers to increase their monopoly profits by such actions as fixing prices, dividing up markets, and restricting output. Each is characterized by a concentration of reserves and production in Southern African countries and, for manganese and platinum, the situation is aggravated by the fact that the vast majority of the remaining reserves are located in the Soviet Union. Finally, all four minerals have applications considered essential to industry for which little or no substitution is possible. There are, however, a couple of factors that tend to lessen the risk of cartels being established on these minerals. First, is the dependence of several African producers, particularly Zambia, Zaire, Gabon, and Zimbabwe, on the revenues these minerals generate and their inability to maintain financial stability if deprived of these revenues for more than a few months. The leaders of these countries are fully aware of the threat that the economic chaos would pose to their own regimes, particularly if coupled with retaliation with the Western nations. A second factor is South Africans desire to maintain good relations with the West. The government realized the need for peaceful neutrality from the major western powers to guarantee its long-term survival. Maximizing profits is considered an acceptable form of economic activity but they realize that causing economic disruptions would quickly erode what little support they now have. Until South Africa reaches stability with the countries to her north, she will not be in a position to use her potential economic leverage to win price concessions from the west. The most common form of political leverage is the embargo which is designed to harm, discipline, or influence the behavior of foreign countries. However, a reason must exist for one country to place an embargo of its goods on another country. In the case of southern Africa only one issue is considered important enough to prompt such a drastic step, the existence of the ruling white regime in South Africa. In particular, the black countries of the region are concerned with the South African refusal to surrender control of Namibia. The United States, which is dependent on both sides for strategic minerals, is in the middle of a serious dilemma. So far neither side has challenged the U. However, in the event that a crisis were to develop in which the U. Still, such an action must be considered unlikely since both sides recognize the implications of such an action. As with economic actions, the black states would risk losing needed revenues and South Africa would risk loss of political support from the West. Furthermore, political actions invite retaliation from the country being embargoed. Neither side seems willing to face the actions the U. However, this could very well change, if they were assured of the economic support from the Soviet Union. They have long recognized the link between economic vitality and military capability. They feel that they need only to gain control of the key mineral exporting countries of Africa to form a strategic cartel with the potential of endangering the security and economic well-being of the NATO countries and Japan. First, they are restricting the sale of their own minerals to the West. In recent years Soviet exports of several strategic minerals have been sharply curtailed or halted entirely. Secondly, the Soviets have moved into international markets competing with the west for their traditional sources of supply. The result is that they are conserving their own resources while limiting supplies available to the western countries. Such actions could have unfortunate consequences for the United States. They tend to restrict supplies of strategic minerals, send prices to inflated levels, and cause short term shortages. In addition, Soviet supplies become more valuable and this gives them undue influence over western economic markets. The third course of action the Soviets have embarked upon is a program of extending its influence over southern Africa. They are attempting to obtain a foothold in the region to secure mineral sources that otherwise would be used to supply the west. This can be accomplished either by supporting friendly governments or by the overthrow of pro-western

governments. However, their dispute with South Africa has given the Soviets an opportunity to gain presence in the region by portraying herself a friend of the black majority. In addition, the Soviets are attempting to undermine pro-western governments by a strategy of encirclement by which the region is surrounded by Marxist states which provide havens for anti-government activities. Both sides have close economic, political, and military ties to the west and have far too much to lose from such actions. The soviet Union, on the other hand, appears determined to use the strategic minerals of Africa as another weapon against the west. As a result of this strategy, coupled with recent Soviet successes throughout Africa, the Soviet Union is certain to expand its support of pro-leftist movements in southern Africa. Conclusion In conclusion, it can be seen that the American defense industry is highly dependent on a number of strategic minerals whose source is largely from Africa. Among these strategic minerals whose source is largely from Africa. Among these strategic minerals the four most critical are chromium, cobalt, manganese and platinum. Each is considered critical because of the major role it plays in American defense, the lack of domestic supplies, the lack of adequate substitutes, and the lack of alternate foreign sources. This dependency has given the African states which supply these minerals a substantial potential for exerting economic and political leverage against the United States. However, this potential is unlikely to be exercised to any significant degree.

**Chapter 3 : Strategic Minerals: Environmentalist Cabal - Capital Research Center**

*Developing our Nation's mineral resources is not only an integral part of an all-of-the-above energy plan but it will create long-term family wage jobs, stimulate our economy and reduce our foreign dependence on mineral resources," said Subcommittee on Energy and Mineral Resources Chairman Doug Lamborn (CO).*

Strategic minerals American industry has a voracious appetite for minerals. The manufacture of a typical automobile , for example, requires not only such familiar metals as iron, copper , lead , and aluminum , but also such less-familiar metals as manganese, platinum, molybdenum, and vanadium. For the time being, the United States has an abundant supply of many critical minerals. The country as of is essentially self-sufficient in such major metals as iron, copper, lead, and aluminum. In each case, we import less than a quarter of the metals used in industrial production. There are some minerals, however, that do not occur naturally to any considerable extent in the United States. For example, the United States has essentially no reserves of columbium niobium , strontium, manganese, tantalum, or cobalt; sheet mica; or bauxite ore. To the extent that these minerals are important in various industrial processes, they are regarded as critical or strategic minerals. Some examples of strategic minerals are tin, silver, cobalt, manganese, tungsten, zinc, titanium, platinum, chromium, bauxite, and diamonds. The United States must import at least half the amount of each of these minerals that it uses each year. Ensuring a constant and dependable supply of strategic minerals is a complex political problem. In some cases, the minerals we need can be obtained from friendly nations with whom we can negotiate relatively easily. Canada, for example, supplies a large part of the nickel , columbium, gallium, tantalum, cadmium , and cesium used by American industry. Nickel may be obtained from Norway; cobalt and antimony from Belgium; and fluorspar from Italy. Other nations on whom we depend, however, are less friendly, less dependable, or less stable. The southern African nations of Zaire, Zambia, Zimbabwe, Botswana, and South Africa , for example, are major suppliers of such strategic minerals as chromium, gold, platinum, vanadium, manganese, and diamonds. Africa also has large deposits of copper, cobalt and chromium. When these nations experience political unrest, supplies of these minerals may become scarce. Since , the United States government has tried to protect American industry, especially defense industries, from the danger of running out of strategic minerals. Some analysts have feared that political factors might result in the loss of certain minerals that are needed by industry, particularly those used in the manufacture of military hardware. Of the minerals in common use in manufacturing and industry, 80 are in abundant supply. There are, however, about 18 minerals that are expected to be in short supply around the globe by ; these include gold, silver, mercury , lead, sulfur, tin, tungsten, and zinc. Strategies for lowering present levels of use in the developed nations include recycling ; inventing new substitute materials and finding new uses for old ones; decreasing the size of products; and extending the lifespan of items made from strategic minerals. A recent report to the Canadian government from the assistant deputy minister for the minerals and metals sector of natural resources stated that competition among nations for strategic minerals has already begun to transform the manufacturing processes used by Canadian industries as of Newton and Rebecca J. Resource Geopolitics and Global Geo-Economics. John Wiley and Sons, Military Geography for Professionals and the Public. National Defense University Press, Council on Economics and National Security , The Domestic Supply of Critical Minerals. Government Printing Office, A Strategic Vision for " Department of the Interior, U.

*UNITED STATES DEPENDENCE ON IMPORTS OF FOUR STRATEGIC AND CRITICAL MINERALS: IMPLICATIONS AND POLICY ALTERNATIVES* G. Kevin Jones\* I. INTRODUCTION [O]ur survival as a leading nation depends on our mineral sup<sup>Â</sup>-.  
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Trade in all products along the cycle arises from changes between countries in terms of their resource endowment, industry structure, and consumer preferences. This chapter analyzes changes in different parts of the mineral cycle. The National Defense Stockpile NDS is an inventory of raw materials held in various forms such as ingots, pressed powders, and so on. These materials have been held and, more recently, sold against the backdrop of a global minerals market that since the s and the height of the cold war has changed dramatically on both the supply and the demand side. These changes can be considered in five categories: Increasing demand for minerals from both industrial and developing countries, Dramatic changes in where minerals come from, Volatile markets and pricing, Corporate consolidation in the global mineral industry, and Increased vulnerabilities in the mineral supply chain. Page 42 Share Cite Suggested Citation: *Managing Materials for a Twenty-first Century Military*. The National Academies Press. Economists have sought to capture these developments by positing the notion of BRIC economies, with the acronym standing for Brazil, Russia, India, and China Wilson and Purushothaman, Emerging market economies, most notably China, have become the dominant materials consumers as their industrial and consumer needs are met. China is also a major supplier of raw materials. The increasing demand has pushed mineral prices up to new highs over the last 10 years see Figure The extent to which economic growth in developing countries, especially China and India, can lead global economic growth will be of increasing significance. If China is able to continue that development to the level of Europe, Japan, and the United States and if India also continues to develop its economy, mineral consumption is likely to continue to grow for a number of years. Meanwhile, as discussed later in this chapter, mining production in the United States has seriously eroded over the past three decades. Perhaps even worse is the situation for mineral processing, with domestic processing plants and smelters having been closed. Some material mined in the United States has to be sent abroad for smelting or other processing. The result is an increasing dependence on imported minerals in both raw and processed forms. In the seven decades since the National Defense Stockpile NDS was established there have been marked changes in who is purchasing and using minerals and metals in the global market and where those minerals and metals are being obtained and processed. This is equivalent to an annual growth rate of 3. The output of mines around the world is a good indicator of these changes. During the 20th century, for instance, tin production increased threefold since , and aluminum production grew 3,fold over the same time period USGS, More recent data show that since many developing economies, such as the BRIC economies, have experienced above-average economic growth. IMF data show that annual growth in GDP in emerging market economies over the last 6 years has been two to three times greater than the growth of GDP in industrialized countries. This increasing global activity can be seen from the history of crude steel production in six countries. Since steel production is a principal user of a variety of alloying elementsâ€”such as chromium, nickel, and molybdenumâ€”crude steel production is a good indicator for the use of other materials as well. Figure shows that in , U. In the last 2 years alone, China added about MT per year to its production capacity. Economically recoverable concentrations are irregularly concentrated in discrete geologic environments around the world. Historically, the minerals industry has focused on world-class deposits Singer, , which are sizeable and high grade quality and have the greatest economic value. They include cobalt from the Congo; chromium, platinum-group metals, and manganese from South Africa; tungsten, rare earths, and antimony from China; bauxite from Jamaica; manganese from Ukraine; platinum-group metals from Russia; nickel from Canada; and molybdenum from the United States, to name but a few. Since many known, most available mineral ore deposits, especially those in Europe and North America, have already been fully utilized or cannot be brought into production owing to environmental concerns, exploration for new sources of 2 Page 45 Share Cite Suggested Citation: *International Iron and Steel Institute* ; U. There are many steps needed to bring minerals

from these undeveloped sources to the market—exploration, development, extraction, processing, refining, manufacturing, and marketing. All of these steps are expensive and—for geological, technical, economic, sociological, and political reasons—often uncertain and very risky. A mineral deposit can be developed only when the recovery and processing can be done at a profit. As the market value of a particular commodity increases, the economic incentive increases to develop deposits that are either physically or chemically more challenging. Human innovation and technology also influence which deposits can be economically recovered. For instance, the United States is mining much poorer grades of copper and iron than many other countries because a technology advantage makes the mining effort economically competitive. Figure shows the average yield of copper from U. Higher demand and higher prices continue to push mineral production into Page 46 Share Cite Suggested Citation: Yield here is defined as the recovery rate from the ore excluding overburden. Yield is used here as a first-order approximation of the average ore grade. Data show the average yield has decreased by half over the last 50 years. Bureau of Mines and the U. Overseas sourcing and production also bring new political vulnerabilities if, for example, a foreign government is able to control the export. The rarer or more valuable a particular mineral or material, the more likely it is that some sort of policy will influence its supply. The threat of export cut-offs is particularly burdensome if there is no alternative source, domestic or foreign, of the mineral at a competitive price. It is important to note another potential source of materials that is largely ignored in the current supply assessments. These is scrap material that could be recycled or reused. A longer discussion of recycling can be found in Chapter 5. The yield of copper in the United States, reflecting the grade of the copper ore, decreased from to from about 0. The decrease in the grade of an ore can have significant implications for the environment and for the mining costs since it can affect waste tailings and the energy and water used for extraction and concentration of the mineral, depending on the extraction technique used. Although the United States tends to have fairly competitive operating costs—the U. As a result, the U. The most striking indicator of this change is the increasing dependence of the United States on imported of minerals to support the domestic economy. USGS data show that in the United States depended percent on imports for 4 minerals and 30 to 99 percent on imports for 16 minerals. Twelve years later, in , the United States was percent dependent on imports for 8 minerals and 30 to 99 percent dependent on imports for 22 other minerals. In , the U. The trend is clear: We are in increasingly dependent on importing select minerals and metals to fuel domestic economic activity. Some of these countries have been major mineral sources for decades. Other countries that were previously remote and undeveloped are relatively new sources. As mentioned above, at issue here is not merely a dependence on foreign imports, but whether the foreign countries in question have a history of political instability, hostility, or volatility. The implications for the United States have been of concern for some time, as concluded by a study NRC, that noted as follows:

**Chapter 5 : Strategic Material-U.S. Vulnerability**

*dependence continue to grow at a high rate it has adopted a geopolitical strategy to secure strategic resources. China's resulting role in the mineral trade has increased Western security community concern over strategic minerals to its.*

The disruption in supply of these foreign-supplied critical strategic materials makes the U. The United States is dependent on imports of some one-hundred critical minerals. Major uses for these imports range from jet engines to computer chips. Hence, the strategic importance to the U. The United States must place greater emphasis on reducing its import vulnerability in non-fuel materials and, in particular, critical strategic minerals. Over-reliance on foreign-supplied strategic minerals can be reduced to some extent by taking appropriate action to: How dependent is the U. Generally accepted strategic materials C. The world supplier of strategic materials III. The Soviet aim to control the treasure houses B. Increased surrogate activity IV. Strategies to Reduce Dependency A. These foundations permit full exploitation of technological advances in industry, science, and commerce, and as a result, most Americans believe that the United States is a wealthy nation. When the price of petroleum products quadrupled, the fact that the United States imported oil at all finally struck home. Something had gone wrong! The United States may never achieve total fuel-energy independence. However, enough progress has been made to ensure that a disruption in the flow of foreign-supplied oil will never again so affect the American public as it did in the oil crisis. Although our oil status is moving in the right direction, the reliance on foreign sources for a number of important, non-fuel minerals, considered by some less important, is cause for alarm. Here dependency makes the U. Not well publicized is the vulnerability of the U. More sophisticated weapons and advanced component system are at the heart of most newly-developed weapon and support systems. Surprisingly many of these systems require large amounts of some rather valuable, critical, strategic minerals. Strategic minerals are often defined as minerals required to supply the military, industrial, and essential civilian needs of a country during a national emergency, and not found in or produced by that country in sufficient quantities to meet its need. Therefore, the United States must place greater emphasis on reducing its import vulnerability in non- fuel materials and, in particular, critical strategic minerals. Dependency Just how dependent is the United States on foreign-supplied minerals? The United States depends on imports of about one-hundred minerals, sixty-seven of which are used in the manufacture of defense-related equipment. The remainder are used by the private sector in medicine, scientific research, space exploration, and household service products. There are no substitutes for some half-dozen of these one hundred minerals. Click here to view image Four of these imports are generally recognized as critical strategic minerals: Of these "Big Four", the United States is ninety percent dependent on imports see table 1. Particularly ironic for the U. The Soviets have increased their presence in the world in the past two decades. The Soviet Union has dramatically increased its deep-water naval capabilities, with the introduction of the Soviet base at Cam Ranh Bays Additionally the fishing rights agreement with the Gilbert Islands in the Pacific suggests that the Soviets are pursuing a forward maritime defense strategy. This expansion has frequently been in close proximity to countries that are U. Also, this movement has not been without a noticeable relationship to present sea lines of communication. Soviet surrogates have also moved into vital areas in close proximity to U. It is believed that approximately 40, Cuban surrogates are in central and southern Africa. Their major presence is forces occupying Angola. This move would weaken already strained trade relationships between the U. A similar pattern seems to be evolving in Central America where the Cubans are now assisting the Sandinistas in Nicaragua and are believed to be in an advisory capacity in Guatemala, El Salvador, and Panama. Principal Issues The policy toward fuel energy changed drastically in response to the Arab oil embargoes. This country now stockpiles oil in larger quantities than before. The United States went to multiple-supply sourcing for oil, reducing its dependency on Arab-supplied oil. However, the United States must rely on the strategic materials provided by a small number of foreign producers, increasing its vulnerability and, under specific conditions, influencing foreign policy decisions. Demands from black African countries and American interest groups for a more aggressive form of trade sanctions have been stone-walled by what the U. What sanctions have been imposed

purposely excluded strategic minerals, for reasons of national security and economic stability. Proponents for stronger foreign policy against South Africa state "that despite inconvenience, both economic and political, the United States can distance itself from South Africa without posing a significant threat to American national interest. Resource War This paper will dismiss the notion that for the U. There were reports that the company forced workers to work to keep the mines going but finally had to give in to demands. The unrest lasted for nearly two months and is estimated to have cost the company up to a quarter of the total platinum market production. The outcome of this event was a sharp rise in the price of platinum, for which there are no viable substitutes in the majority of applications, and for which the U. The price was driven by the supply shortfall and the possibility of the strike spreading to other South African platinum mines. This was a minor skirmish, but the potential for more prolonged and more damaging labor unrest in South Africa is very evident. The resultant price increases were three hundred percent and led to a change in U. Feeling the effect of the cut-off, the United States and its allies decide to take military action to obtain badly needed materials from South Africa. The United States and its allies depend on sea and air lanes. While sea and air lanes are essential in peacetime for trade, they are critical in war. During a protracted conflict could the U. Navy keep the sea lanes open for commercial shipping? I think not; a bigger Navy and a bigger U. Of the seventy-two raw materials vital to U. Commerce Department states "that fully 69 must be imported by the sea. The Navy, now facing the possibility of limited growth, is not capable of fighting a sea battle, while at the same time keeping NATO commitments and protecting the civilian container ships loaded with critical strategic minerals. Click here to view image Should the U. The thousands of miles of open sea are not as open as one might be led to believe. A hostile power controlling any of these points could seriously affect our peacetime trade, as demonstrated by the present activities in the Straits of Hormuz, and most definitely our wartime deployment capabilities. If the Navy is not an option, the U. Strategic airlift would most likely not be able to lift much. Many air routes are less restricted by geography figure 1 than are sea routes; however, they are constrained by our flight restrictions and the need for intermediate stopping points. As an example the U. Also, it was noted that France did not allow U. The airlift of millions of tons of critical PMGs would require a large number of planes. The operation would require a well-thought-out plan that involved both naval and air assets, which, even if successful, might only yield a fraction of the strategic materials required to compensate for a long-term disruption in flow of materials. Strategies to Reduce Dependency The preceding was a simple example designed to show the many issues involved in the problem of U. Securing supplies from producer countries could be done by long-term contractual agreements supported by diplomatic and financial policies, with the threat of military intervention as a last resort. Stockpiling is an effective way to cushion dislocation caused by supply cutoff s and to provide for the defense requirements of a protracted conflict. The concept of stockpiling started in , although it was not until the end of the Korean War that any supplies were actually placed in the stockpile. Currently there are some one hundred minerals in the stockpile which is maintained at a three-year level. The defense strategic stockpile is the main U. The President has authority to draw metals from the strategic inventory if they are needed for national defense. The stockpile would help the U. Like all government programs the stockpile is subject to political, economic and budgetary pressures. Although not designed to be used to regulate the prices on the metal market, the stockpile has been sold at the metal exchange market or withdrawn from the market to accomplish this very thing. The trade demand for these strategic materials is high. The stockpile has also been used by the administrations to try to help balance the budget or offset the national deficit. Policy management of the stockpile has been seriously short-sighted. Since the formation of the stockpile, it has been misused by every government agency that has had any part in management responsibilities. However, steps to move the management from its present controlling agency, Federal Emergency Management Agency, to the Defense Department are a start toward ensuring that the stockpile remains an insurance policy against the threat and not just a commodity account used to offset the national deficit or to be used as an extra fund to solve other budgetary problems. Conservation, in the form of reduced consumption of strategic materials, recycling, and design changes where applicable, provides another alternative. Conservation is an effort that includes not only the defense industries but also requires the help of commercial industries that provide goods and services to the public. Public awareness and a full- scale

conservation program have not been engaged since the tin drives to support the war effort of WW II. The strategic minerals recycling industry is a new one. The recovery of chromium from steel making, industrial and chemical waste has been on the rise. But the most successful campaign has been in the recovery of platinum from catalytic converters for scrapped automobiles. The platinum metals removed from automobiles could be bought by the defense and electronics industries. Cartels strong enough to affect the price of minerals may cause a demand vs. Thus since the U. Finding substitutes for some strategic minerals in short supply could take years, because the motivation of both government and commercial sources seems related to three basic situations: Machine tools and construction machinery also contain cobalt, and it is expected that new this tri-metal alloy will replace most of the cobalt in these items.

## Chapter 6 : U.S. Reliance On Africa For Strategic Minerals

*In addition, GAO found that the Department of State is developing a program which considers substitution, conservation, alternative suppliers, and economic stockpiles and private inventories to reduce U.S. dependence on South African strategic minerals.*