

Asteroid Mining

By: Andrew Fairchild and Boone Vance 4A

Overview

Slide 1: Title

Slide 2: Overview

Slide 3: The History of Asteroid Mining

Slide 4: Who Asteroid Mining impacts

Slide 5: Pros of Asteroid Mining

Slide 6: Cons of Asteroid Mining

Slide 7: Summary

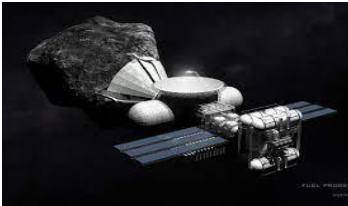
Slide 8: References

Slide 9: Charts

Slide 10: Images

History

Phil Metzger, a planetary scientist at the University of Central Florida, was the inventor of Asteroid mining. He had worked with NASA for 30 years and during that time, he co-funded a lab in order to develop the technology for space mining.



Asteroid Mining is the hypothetical exploitation of materials from asteroids and even other minor planets. Phil Metzger wanted the mining's main purpose to be bringing raw asteroidal to Earth for use. Miners on asteroids would use techniques similar to those used on Earth. The most likely method would be to scrape desired material off the asteroid, and tunnel into the veins of specific substances. Scraping, or strip mining, will pull out valuable ore that will float off the asteroid.

Who it impacts

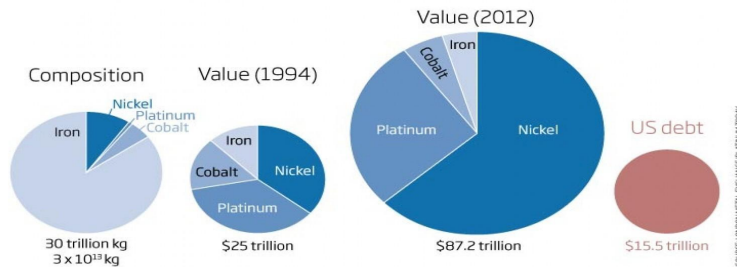
Minerals like iron, nickel, iridium, palladium, gold, and magnesium are all found in Asteroids.

Cosmic cornucopia

© NewScientist

Asteroids could be a valuable source of metals. In 1994, William Hartmann at the Planetary Science Institute estimated the value of a 2-kilometre-wide metal rich asteroid

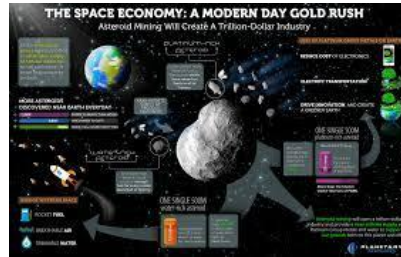
Asteroid 1986 DA



Considering the abundance of minerals in asteroids, once asteroid mining materialises, it will severely affect the precious metals market, usurp the prices of rare Earth minerals, and a whole lot more because minerals that are usually scarce on Earth will be easily accessible on asteroids.

Pros

A question that often comes up when talking about Asteroid mining is how it will benefit humanity. Water resources, metal resources, and scientific knowledge.



One thing it benefits is water resources, and it enables the large-scale exploration of the solar system. It also benefits metal resources for use in the growing Earth economy. Most importantly, it benefits scientific knowledge: via spacecrafts that are dramatically more cost effective than current systems. As a side project, space mining can grab water from the rocks and comets. Water which, with a little processing makes rocket fuel. Which in turn makes even more currently unimaginable space operations possible, including ones that could give the planet all the energy it needs to avert climate catastrophe.

Cons

Notable asteroid mining challenges include the high cost of spaceflight, unreliable identification of asteroids which are suitable for mining, and the challenges of extracting usable material in a space environment.



Space Mining Could Ruin Our Solar System If We Don't Establish Protected Places Now, Researchers Warn. While heads of state bicker over protecting Earth's most vulnerable places from the ravages of industry, a new study suggests that maybe it's not too early to start protecting other worlds from human exploitation. At present, the high start-up costs, high risk, and long timescales on investment returns make it difficult for governments to safely invest in asteroid mining.

Summary

Asteroids mining is referred to as the exploitation of raw materials from asteroids and other minor planets, which also includes near-earth objects. Minerals can be mined from an asteroid or spent comet and then used in space for construction material or can be taken back to earth. This impacts our society and our environment in many different ways including water resources, metal resources, and scientific knowledge. However, this can affect our society in a negative way because of the high cost of spaceflight and the CHALLENGES of extracting usable materials from asteroids safely for Earth. I feel good and support asteroid mining because of the large impacts it has on the environment and the society. The main reason I stand by asteroid mining is that it can grab water from the rocks and comets. Water which, with a little processing makes rocket fuel.

References

O'Leary, B - "Mining the Apollo and Amor Asteroids"

"Cost of OSIRIS-REx" - 2021-06-02

"How the asteroid-mining bubble burst" - 2021-04-16

Charts

Pricing Over Time:

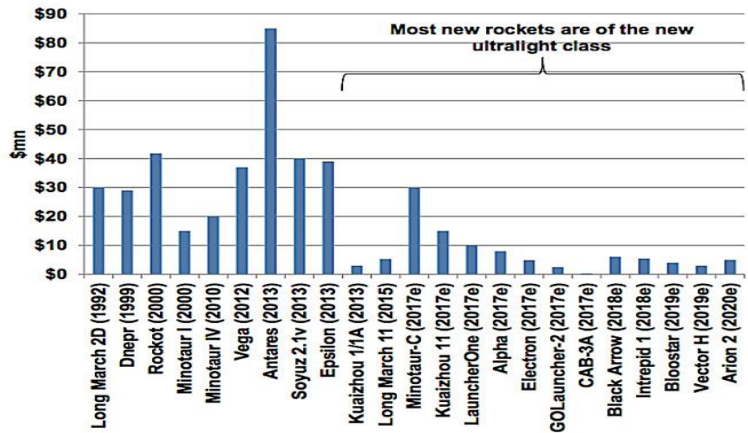
Source: Company Data

Source: FAA

Source: GIR

Exhibit 19: Light rocket pricing over time

New designs tend to focus on a new class of launcher



Source: Company data, FAA, Goldman Sachs Global Investment Research.

Images



© CanStockPhoto.com - csp61317696

