

The National Academies – Committee on Human Spaceflight – Public Input
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What are the important benefits provided to the United States and other countries by human spaceflight endeavors?

The question rather is why is human spaceflight funded at the national level far in excess of the more valuable and cost effective unmanned space exploration programs and missions. The answer of course, is that human spaceflight now funds the development of propulsion - the engines and launch vehicles, and crew capsules and habitats, for orbital space tourism. The bottom line here is that many people on this planet yearn for their chance of their own zero gravity low Earth orbital spaceflight. This fact will become the driving paradigm of human spaceflight in the very near future, where the costs of highly specialized flagship planetary and astrophysics missions are becoming ever more expensive, and their necessity and values are decreasing compared to more urgent global imperatives. Ironically, unmanned planetary and astrophysical exploration and discovery mission results are the prime motivation behind most people's desire to themselves experience zero gravity spaceflight around the planet of their origin.

However, desire is not an adequate substitute for absolute necessity. We are now faced with the specter of human overpopulation; its associated carbon crisis, widespread unregulated industrial pollution and over-development, and an epic biodiversity loss. We are confronted with the obvious meteorological, agricultural and financial ramifications of this scenario on our already 'stressed to the limit' civilization in constant and perpetual strife. It can also easily be argued that the value of human spaceflight is that the complete evacuation of the planet of its humanity and industry is now possible, leaving the Earth merely as an expensive tourist destination. Or alternatively, it makes possible the solution of mankind's energy and climate problems, by employing vast orbiting solar powered sunshades at Solar Lagrange Point 1, which is further made possible by lunar polar industrial bases and asteroid capture and mining operations. Within the emerging commercial space paradigm, with its orbital space tourism and its fully reusable, cross feed capable, booster assisted heavy lift launch vehicles, this future is possible, but not without fundamental changes in the technology of delivering human capable destinations into space.

What are the greatest challenges to sustaining a U.S. government program in human spaceflight?

In a word - cost. While the Apollo moon landing program, the Space Shuttle program and the ISS were valuable learning experiences, without modern science, technology and engineering physics applied to the known flaws of those programmatic exercises, the continuation of this paradigm is impossible. The endeavor itself must be decoupled from the obsolete goal, destination and mission paradigm of the past. The launch vehicle itself must become the destination, since we can't afford anything else at this time. I have proposed that new space rated, insulated and impact resistant upper stages may be used as basic space station modules, where their upper fuel tanks contain integrated inflatable spheres, consisting of twin, flat, cable stabilized, pressure plate docking and hatch port adapters, inflating into the empty tank. Extrapolating this technique yields six fold docking port nodes with eight hardware mounting vertices. Reusable boosters, upper and core stages as both space station modules and deep space flight vehicles, and reusable capsules providing services to docking nodes and integrated habitable spheres, absolutely closes the business case for low earth orbital space tourism and also deep space industrial exploitation.

What are the ramifications and what would the nation and world lose if the United States terminated NASA's human spaceflight program?

Nothing whatsoever. The commercial human spaceflight industry has already become self-sustainable.