Space can solve our looming resource crisis – but the space industry itself must be sustainable

Richard Matthews, *The Conversation*, October 3, 2019

Australia's space industry is set to grow into a multibillion-dollar sector that could provide tens of thousands of jobs and help replenish the dwindling stocks of precious resources on Earth. But to make sure they don't flame out prematurely, space companies need to learn some key lessons about sustainability. […]

We cannot grow without limit. In 1972, the influential report The Limits to Growth argued that if society's growth continued at projected rates, humans would experience a "sudden and uncontrollable decline in both population and industrial capacity" by 2070. Recent research from the University of Melbourne's sustainability institute updated and reinforced these conclusions.

Our insatiable hunger for resources increases as we continue to strive to improve our way of life. But how does our resource use relate to the space industry?

There are two ways we could try to avert this forecast collapse: we could change our behaviour from consumption to conservation, or we could find new sources to replenish our stocks of non-renewable resources. Space presents an opportunity to do the latter.

Asteroids provide an almost limitless opportunity to mine rare earth metals such as gold, cobalt, nickel and platinum, as well as the resources required for the future exploration of our solar system, such as water ice. Water ice is crucial to our further exploration efforts as it can be refined into liquid water, oxygen, and rocket fuel.

But for future space missions to top up our dwindling resources on Earth, our space industries themselves must be sustainable. That means building a sustainable culture in these industries as they grow. […]

While SpaceX has been innovative in designing ways to travel into space, this innovation has not been for environmental reasons. Instead, the company is focused on bringing down the cost of launches.

SpaceX also relies heavily on government contracts. Its profitability has been questioned by several analysts with the capital being raised through the use of loans and the sale of future tickets in the burgeoning space tourism industry. […]

SpaceX's culture also rates poorly for sustainability. As at many startups, employees at SpaceX are known to work more than 80 hours a week without taking their mandatory breaks. This problem was the subject of a lawsuit settled in 2017. […]

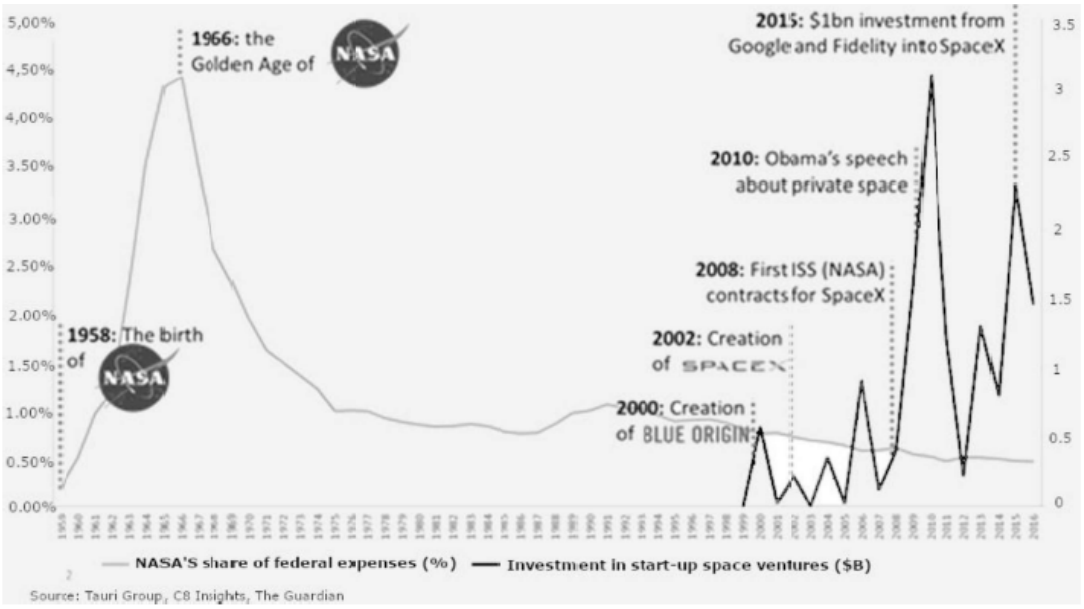
Australia is in a unique position. As the newest player in the global space industry, the investment opportunity is big. The federal government predicts that by 2030, the space sector could be a A$12 billion industry employing 20,000 people.

[The] Australian Space Agency [has] made one thing clear: regulation is coming.

By embedding sustainability principles into emerging space startups, we can avoid the economic cost of having to correct bad behaviours later. […] To ensure that the space sector can last long enough to provide real benefits for Australia and the world, its defining principle must be sustainability.

Sustainability means **meeting our own needs without compromising the ability of future generations to meet their own needs.**

In addition to natural resources, we also need social and economic resources. Sustainability is not just **environmentalism.** Embedded in most definitions of sustainability we also find concerns for **social equity and economic development.**



Nasa's share of federal expenses (%) and investment in start-up space ventures ($B), 1959-2016, aster.com, January 2017

On the x-axis: years from 1959 to 2016

Blue Origin is another American privately funded aerospace manufacturer and sub-orbital spaceflight services company, funded by Jeff Bezos, also founder and main shareholder of Amazon. Fidelity is an American multinational financial services corporation, one of the largest asset managers in the world.

1 *The Conversation – R Matthews*	2 Graph – *The Guardian*	3	4
Aus : space is a multimillion dollar market It creates tens of thousands of jobs It can provide precious resources that are depleting on earth. Future : - There could be less consumption and more conservation - Or we need to find more resources : where space exploration comes in. But the space industry has to be sustainable Space X = innovative, but not for environmental reasons → merely seeking to cut costs Aus : space industry should be sustainable right away to avoid having to fix mistakes later.	Since the 1960s = Nasa expenses have fallen significantly Since the 2000s = private startups have been created and investment has been on the rise. Not a steady growth, though		

DS DU 15/01/2025

- **AVANT LE DS**

- Revoyez la fiche méthodologique
- Revoyez le corrigé « Guns in the US"
- Revoyez les documents 1 et 2 et le cours du 08/01

- ⚠ **RAPPORTEZ LES DOCUMENTS 1 et 2** ⚠

- ⚠ **RAPPORTEZ VOTRE TABLEAU** ⚠

- **PENDANT LE DS (1h30, voire plus si besoin)**

- Lire les DOCS 3 & 4 (un article et un doc iconographique)
- Prendre des notes dans le tableau
- Trouver une problématique et faire un plan **détaillé**
- Rédiger une synthèse en 300 mots $\pm$ 10%

Pour ce devoir, l'introduction devra comporter

- Une accroche
- La présentation des documents (natures, source, date)
- Une problématique

- **A LA FIN DU DS**

Rendre

- Votre tableau
- Votre plan détaillé
- Votre synthèse