THE ARESIAN

June-July 2025

Volume 3 No. 6

Editor: Owen Louis David **Assistant Editor:** Mary Khan **Contributors:** Victor Samuels, Dougie Smith and Peter Dale. *Published by Mars Futures Forum*

THE MARS ECONOMY – THE UNSTOPPABLE BOOM THAT WILL MAKE MARS MAGNIFICENT

Owen Louis David explains why the Mars economy is going to be booming from the very beginning. Huge capital investment and billions of dollars of revenue will see to that.

But will the Mars economy be the same or very different to the world economy on Earth. Here Owen Louis David give his take – including a statement that Musk has been too downbeat in his projections for the Mars economy. Is he serious?

It's fascinating stuff. Read Owen Louis David's take on it all. ***See Page 2***

FLIGHT 10 – NOT AGAIN!

A static fire test for Flight 10 Starship 36 ends in disaster. Has the Starship development programme been totally derailed? Or can Space X somehow get the show back on the road in the next few months?

Mary Khan gives us the latest takes on where we are with Flight 10.

See Page 5YOU'RE YOUR

ALL YOUR FAVOURITES

There's plenty more in this issue of ***The Aresian.*** We have our usual weather check on conditions in Gale Crater from the Curiosity Rover and our "Pick of the Pics".

NOTES ON THE MARS ECONOMY –

THE UNSTOPPABLE BOOM

By Owen Louis David

We don't discuss Mars's economy enough. The focus is far too much on "can we get there?", "can we survive there?" and "why would we try any way?". There are a lot of misguided assumptions about - including the idea that Mars is a dead planet which cannot support a thriving economy.

We – meaning, the people who want to see a colony on Mars – need to counter the negative propaganda especially because it is absurd, unevidenced and counter-intuitive.

Firstly, let's remember what Mars has to offer – a number of critically important bonus points:

- Mars has almost the same amount of firm land as Earth (remember – Mars has no oceans).
- Mars has pretty much the same sort of range of minerals that Earth does.
- Mars receives pretty much the same sort of insolation as does Northern Europe.
- Because Mars has such benign weather, solar power arrays can simply be laid on the ground. Energy can be stored in chemical batteries, in sand batteries, as hot water, and as methane & oxygen (which can be used together to generate electricity).
- Mars has many trillions of tons of water, much of it only a metre or so below the surface.
- Mars's day-night cycle is very close to that of Earth's (at 24.7 hours) meaning humans can adapt to living on Mars very easily.
- Mars's atmosphere (nearly all CO2) can be concentrated to provide a perfect growing environment for plants.

Taking all the above into account we can see it's very misleading to dismiss Mars as a "dead" planet. You might legitimately say it needs waking from a long sleep but "dead"? – definitely not.

So how would a Mars economy work?

Of course no one can answer this question with absolute assurance until we get there but I think we can see the outline of how the economy would function. The Mars colony will essentially be the equivalent of a state on Earth. It will trade with various states on Earth but in all likelihood principally the USA if the colony is

founded by a US company such as Space X. There is no doubt a Mars colony will be able to generate billions of dollars of revenue from the very first landing. What will be some of the big revenue streams on Mars?

Sale of TV and other image rights - The Mars landing and establishment of human settlement will be an event of historic importance. Companies like NBC spend billions of dollars on events like the Olympics which they know will draw viewers to their channel. We can expect a company like Space X to negotiate different levels of TV rights with various buyers around Earth. Remember as well that these rights have earning potential into the future in perpetuity. So the value of these rights will never decline to nothing.

It should be noted that these sorts of sales won't be confined to the initial landing. Exploration to various parts of Mars – Olympus Mons, Valles Mariensis and the polar regions will generate substantial interest back on the home planet which can be converted into substantial revenues.

Sponsorship agreements – Although Space X have not shown any great interest in sponsorship, big companies like Coca Cola, Nike and Toyota – which spend billions of dollars on sponsorship and marketing each year will no doubt be interested in sponsorship of something as iconic as creating a human settlement on Mars.

Marketing and promotion agreements – There will be a cascade of investment from various bodies on Earth wishing to establish their "first-on-Mars" status. This may be something that is difficult for those who haven't thought this through to appreciate but all across Earth there will be corporations, sports bodies, research centres, and so on wishing to establish themselves on Mars in some way. Being the first bank to open a branch on Mars will bring cachet, publicity and a lasting badge of honour. All these players will be wary of their competitors beating them to it. Here's an example of what I mean: FIFA will likely want to establish a presence on Mars – perhaps they will send a delegation to view the issue of how the rules of the game of football might need to be altered to suit gravitational conditions on Mars. FIFA controls budgets of several billions of dollars. It seems to me it is quite likely they would be prepared to spend a few million dollars to extend their control of the game beyond Earth and garner the prestige (and eventually revenue) that goes with that.

The example of FIFA and football can be multiplied hundreds or thousands of time.

Services – Life support, accommodation and other services for researchers and explorers on Mars. This may well be one of the biggest earners of the lot. Space agencies across the world are already spending billions of dollars on Mars missions. They will obviously see it makes sense to trade in their slow and not always successful robots for sending teams of humans plus large rover transport systems etc to the Red Planet on exploration and science missions, But it won't just be Space Agencies who are interested in sending humans to Mars. Universities, climate change charities and other organisations will want to send scientific teams there and as we have seen with the FIFA example many other entities will have an interest in getting to Mars and establishing their connections with the planet .

Raw materials – There will be many minerals on Mars – e.g. gold and platinum – whose value per Kg is so high that they can cover the cost of transit back to Earth and leave a very healthy profit margin. Remember, mining operations will be at the surface on Mars – we will be picking the low-hanging fruit so to speak. There will be no need for deep-level mining.

Luxury goods – These could include lightweight clothing and jewelry, manufactured on Mars (probably by industrial and humanoid robots – humans will have more important jobs to do!).

Food exports - A variety of foods could be in great demand back on Earth, as novelty purchases. These might include Mars wine, Mars coffee, Mars gin, Mars beer. These would be high value goods.

Meteorite and regolith exports – There are 20,000 universities across the globe. A large proportion of them will be interested in obtaining genuine samples of Mars regolith and meteorites from the surface of Mars. Private collectors are also interested in purchasing meteorites – some realise as much as $200,000 per Kg.

Artefact exports - Artefacts from the colonisation process will have resale value back on Earth – especially museums that have a focus on science and technology. It's possible Space X might open something like the Kennedy Space Centre to generate revenues back on Earth (part of which would accrue to the colony).

Tourism - Tourism could become a huge revenue-earner. There is no doubt that Mars will have lots of iconic tourist destinations – Olympus Mons, Valles Mariensis. If the transit duraction can be reduced substantially with new rocket technologies, the growth in tourism could be phenomenal.

In addition to all the above, once there are sizeable numbers of humans on Mars, the Mars-based economy will be its own driver of growth. The urban construction project – building a million person city – will provide a huge economic stimulus.

There will be some unusual features to the Mars economy, of the type we don't often find on Earth, which will also be driving really high rates ofgrowth.

1. ***Extremely high levels of capital investment*** Capital investment per person in the USA each year is around $12,000. The level on Mars in the early stages will be at least hundreds of times and quite possibly thousands of times higher. Think of a 1000 person colony. Elon Musk has a fortune still measured in hundreds of billions of dollars .Many commentators think it quite likely he would be prepared to invest $100 billion at least in a Mars colony over maybe a 10 years period.
   So that would be $10 billion pa or on a per capita basis $10 million per person in a 1000 person colony.

Industrial 3D printers will be a key part of the Mars economy, enabling rapid replication of Earth's industrial infrastructure.

2. ***The first true robo-economy in the solar system.*** One of the consequences of the extremely high capital investment is that there are likely to tens or even hundreds of robots per capita on Mars. Suggestions are that the Tesla humanoid robot (Optimus 3) could sell at somewhere between $20,000 and $50,000 on Earth. With $10 billion investment in the Mars colony per (Earth) annum you could afford to buy maybe 10,000 robots (10 per person in a 1000 person colony) in just one year.

Of course expenditure would be spread over a number of years but that gives you an idea to what extent Mars might be "saturated" with robots working in all fields: restaurant kitchens, serving at tables, monitoring internal air quality and pressurisation, tending and harvesting crops, cleaning, collecting waste, recycling waste, staffing warehouses and so on. In other words, this is going to be the most productive economy we've ever seen in the solar system.

3. ***The drive for self-sufficiency.*** There is likely to be a huge drive for self-sufficiency that is based both on ideology and economic realism. The ideological objective of creating a potentially independent human civilisation on Mars will be one driver. But equally, the economic realities (the cost of importing goods from Earth) will be prohibitive even on some of the best assumptions about how low Space X can drive the cost per Kg. So there will be a strong economic incentive to develop Mars-based industry.

4. ***Command and capitalism.*** The 20 century saw two models of economic management: the command economy approach and the capitalist approach. This appeared to be the basis of superpower rivalry but of course when you look around the world you see that all economies have elements of command and most have elements of free market investment. My feeling is that Mars will see a very synergetic combination of the two. Of course the command economy will not necessarily be directed by a state – it could equally be a corporation like Space X or a Mars Development Corporation explicitly created for the purpose.

I am always amused to think back to the early days of Smartphones when phone apps were introduced (in the late 90s). At the time, hardly anyone saw much potential in this new development. Three decades later, there are over 2 *billion* apps! I mention that as a cautionary tale. No one can see all the avenues that the Mars colony will go down in developing its economy. There are bound to be big revenue-earners that we can't think of with our current perspective.

One thing I would like to flag up is that I think Musk is too pessimistic when it comes to the Mars economy. He seems to assume that we have to do a lot of

provisioning from Earth to get the show on the road. My view is that with the sort of huge capital investment we can expect, there will be thousands of 3D printers, plus industrial and humanoid robots ready to create an industrial infrastructure with the help of hundreds of strategically chosen and easy-to-assemble "turnkey" factories exported from Earth.

With this (relatively) small-scale industrial infrastructure in place on Mars we can envisage that Mars might be the principal manufacturing centre for Starships.

We need to get away from the idea that everything done on Mars will need to serve and satisfy a narrowly defined profit-incentive. Back in the 1950s and 1960s the Australian government used to subsidise about 99% of the cost of a migrant moving from the UK to Australia. I can certainly see that the Mars colony might wish to subsidise the migration of people from Earth with the right skills to Mars from the home planet.

PICK OF THE PICS

Credit: NASA

We liked this image taken by the Curiosity Rover in Gale Crater earlier this month. Looks like a Sleeping Giant! Maybe Sleepy Giant will become a tourist attraction at some future date!

Do send in your favourite pic from Mars! We'd love to see it

Maybe we just have overactive imaginations at ***The Aresian***!

Flight 10 – A Pre-Disaster!

By Mary Khan

Well no-one was expecting that! Flaming June indeed!! What you might call a "pre-disaster". This time the Starship didn't wait for an actual flight – it went one step back and blew up on the test stand at the Massey's site (located a few kilometres west of Starbase) in the run up to a static fire test for Flight 10. There is a precedent – something similar happened on a Falcon 9 test a few years back but, still, it was very dispiriting after all the drama on Flights 7, 8 and 9 we now find the designated Starship - No. 36 – couldn't even get to the launch pad without blowing up!

Despite the massive explosion (that took place on 18 June) the safety cordon worked and no one was injured in the blast. For that we are all thankful, not least Space X.

So what was the cause Elon Musk explained soon after the incident that a nitrogen composite overwrapped pressure vessel (commonly referred to as a COPV) located in the vehicle's payload bay had "failed below its proof pressure," so setting off the explosion(s). This was the first time the design had failed. We don't yet know what might have triggered the failure.

Intensive work is under way to clear the Massey site so that work can begin on reconstruction which will take months rather than weeks. However, the current priority has to be detailed analysis of the damage in order to determine the cause.

I'll throw my tuppence in here…Space X need to create a back-up Massey site!

WEATHER REPORT!

Here's your update for the weather on Mars provided by the Curiosity Rover in Gale Crater.

For the nearest Sol to **25 June 2025** we have a *high* of **minus 29 degrees Celsius** (minus 20 degrees Fahrenheit) – the same as in last month's figure. The low was minus 79 degrees Celsius (minus 110 degrees Celsius). Given we are now in late autumn in this part of Mars now, moving ever closer to winter, these temperatures are on the relatively warm side. In fact in recent sols the high has reached -23 degrees Celsius (-9 degrees Fahrenheit) which millions of people across the globe are familiar with.