Sunday Business Standard
Volume XI Number 16
MUMBAI | 25 JUNE 2017

Colonising Mars

Is Elon Musk being overly ambitious?

Elon Musk, the founder and chief executive officer of SpaceX and Tesla, has outlined ambitious plans to colonise Mars. The blueprint, which is due for "major changes", glosses over multiple mammoth issues. But it still sharpens the focus on what is often dismissed as science fiction. Mr Musk envisages setting up a city on Mars with a population of one million, and all amenities, including "pizza parlours and iron foundries". Mars is more suitable for habitation than any other environment we can reach. The fourth planet has a day of 24 hours and 40 minutes, it has some atmosphere, and its gravity is about one-third that of Earth.

To be sure, it has been advocated by many respected scientists that humans should attempt becoming a multi-planetary species. The rationale is simple: Earth has a history of catastrophic events, such as meteorite strikes, that have led to many mass extinctions. By building colonies on other planets, species survival may be ensured.

But how does one transport so many people, and related cargo, across space? Given that the minimum distance between Earth and Mars is 55 million km, a trip is possible only about once every 26 months. Getting there in numbers involves improving the efficiency of spaceflight. Mr Musk reckons that if costs drop to $200,000 per individual — same as the median cost of buying a house in the United States — travel could be a practical option.

His solution is to design methane-propelled spaceships, which can be re-used and are capable of ferrying 100 to 200 passengers each trip. Alongside, build orbital refuelling stations as well as tankers to store fuel. Initial trips will last 80-odd days but this time frame can gradually be reduced to 30 days. Space ships will launch with minimal fuel to get out of Earth's gravity and tank up at the orbital stations. Mr Musk also provides a lot of details on ship specifications and designs. Such futuristic vehicles could transport cargo from New York to Tokyo in about 10 minutes.

Of course, not everything has been sorted out. For instance, it is not clear how the settlers will be protected from the very high, possibly lethal, radiation in space. The plan also glosses over how settlers will live on the red planet. Mars can be very cold with night temperatures of minus 120 degrees Celsius. It has little atmosphere, no water and no magnetic field to speak of. Mr Musk does suggest "terraforming" to make Mars more Earth-like by pressurising the atmosphere to grow plants and heating the planet to liquefy ice, thickening the atmosphere and raising the oxygen content. But Mars' lack of a magnetic field might mean that atmosphere will leak away, even assuming the planet can be heated.

NASA released its own plans for going to Mars a couple of years ago. While it hopes to undertake manned missions by 2030, the US space agency is not looking at settlements. China, too, is planning experiments to grow plants on the moon. But in terms of the scale of ambition, SpaceX goes many steps further. In fact, Mr Musk says he hopes to die on Mars (and not from a spaceship crash).

The plans may be too ambitious and some of the problems insurmountable. But if SpaceX, or some competitor, delivers reusable rockets, radiation shielding, cheap methane production and orbital refuelling, it will have pushed space exploration into a new era and altered the logistics of cargo transportation irrevocably. R&D of this nature can have unpredictable but positive consequences, giving rise to discoveries across multiple domains.

Easing power plants' fuel woes

A new scheme for ensuring coal for power stations that lack firm fuel allocations could hinder competition and discourage private sector participation

Coal linkages have emerged as a key constraint for thermal power stations, in spite of ample availability of the fuel

ASHOK SREENIVAS & ASHWINI CHITNIS

On May 17, the Union Cabinet took two important decisions aimed at streamlining coal allocation to the power sector and making it more transparent and objective. How will these decisions play out and will they be able to address the needs of the fast-evolving sector? Our analysis suggests that while they address some near-term issues, they are unlikely to cater to the future needs of the sector.

The first decision was to approve the signing of fuel supply agreements (FSAs) by power plants holding letters of assurance (LoAs) and likely to be commissioned by March 31, 2022. This assures such plants of a firm supply of coal and will address the curious cases of many power plants not having a firm fuel supply in spite of "excess" coal availability. The reason for this paradoxical situation was that the extant policy only ensured FSAs for plants commissioned by March 31, 2015; plants that did not meet this deadline for whatever reason had to rely on other mechanisms, such as various kinds of e-auctions or imports, to gain access to coal.

The second decision was to approve a policy called Shakti (Scheme for Harnessing and Allocating Koyala Transparently in India) to allocate coal to power plants without LoAs. Who will Shakti be applicable to, and what will it mean to them? While firm numbers are hard to come by, estimates suggest that about 44 gigawatts (Gw) of coal-fired capacity that already has LoAs can now sign FSAs, and about 27 Gw of this may already be commissioned. Since this 44 Gw will fall under the old regime, Shakti is likely to be applicable to the roughly 50 Gw of capacity that is in the pipeline and expected to be commissioned by 2022, according to the draft National Electricity Plan (NEP) from the Central Electricity Authority.

According to the Shakti architecture, there is no change in how central- and state government-owned generators will get LoAs. They will continue to be based on recommendations from the ministry of power (MoP). When they are converted to FSAs, they will still get coal at prices notified by Coal India Ltd (CIL). Since about 70 per cent of the capacity in the pipeline is owned by state or central governments, and no additional coal-fired capacity will be required until 2027 according to the draft NEP, the changes suggested by Shakti are applicable to only about 15-18 Gw over a decade.

Shakti also appears to be in conflict with some pro-competition initiatives of the coal and power ministries. In the power sector, rapidly falling prices of renewables and changing market dynamics require that long-term open access — by which large consumers can identify their own suppliers in a competitive market — be promoted. This is in line with the policy thrust of the MoP. But Shakti mandates long- or medium-term power purchase agreements (PPAs) only with distribution utilities (discoms) for all capacity that gets LoAs, thus discouraging creation of merchant capacity. As a result, the burden of base load capacity addition will continue to fall on discoms. This is likely to saddle discoms with capacity that may be under-utilised, because large consumers may prefer to use captive renewables when possible due to the prevailing economics and tariff structure. This would leave small consumers to effectively bear this cost.

The recent decisions aimed at streamlining coal allocation to the power sector address some near-term issues, but are unlikely to cater to its future needs

On the coal side, the ministry has issued an approach paper on introducing commercial mining for coal, and has been making statements to this effect. Since most of the upcoming capacity will be owned by the public sector, which will continue to get coal at notified prices from CIL under Shakti, CIL will be shielded from competition. Indeed, the expectation that CIL will continue to "notify a price" seems to suggest that it will not be competing with commercial miners. This is at odds with the intention of introducing commercial mining.

Shakti's architecture is also skewed against private power generators, as they have to bid for coal at a premium above the CIL-notified price unless they are willing to take a chance on other routes, such as participating in tariff-based bidding against linkages earmarked for discoms, bidding to acquire a captive coal block, or buying coal from a commercial miner (if it exists). Given this distortion, discoms would find it easier to continue signing "cost-plus" PPAs with public sector generators. Since small consumers will continue to rely on discoms for their power supply, the inefficiencies of the public sector value chain shielded from competition will be passed on to their electricity tariffs. Effectively, under Shakti, the coal and power generation sectors will be fragmented along public and private sector lines, with no competition between the two.

Finally, given the built-in advantage for public sector generators, most coal linkages will continue to be allocated to public sector generators based on "recommendations from the MoP". This would go against the grain of making the allocations transparent, unless the entire process is fully transparent and backed by published objective criteria for the recommendations.

To conclude, rather than powering the future of the electricity sector, Shakti is likely to hinder competition and discourage private sector participation, thus failing to meet the future needs of the power sector, which requires efficient thermal generation and flexible electricity markets in light of increasing competition from renewables and supply and demand uncertainties.

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Gender budgeting: What next for India?

GOURAV VALLABH & SURAJ CHATRATH

Women constitute around half of the world population. All measures across the globe taken towards development, poverty alleviation and improvement of social indicators like health, education and gender equality are worthless unless policies are implemented specifically for women and girls. It goes without saying that unless the quality of life of this half of the population improves, we cannot develop as humanity.

Countries across the globe are becoming conscious of this fact and developing policies and programmes to address disparities between men and women. Global development organisations like the United Nations have also formed goals around this. For example, "achieving gender equality and empowering all women and girls" is one of the key goals under the Sustainable Development Goals set by the UN, to be achieved by all member states by 2030.

Gender budgeting is a key initiative undertaken globally to address gender equality, essentially making the resource allocation process through budgeting more gender-sensitive. It embeds gender-specific goals into fiscal policies and in general into the public financial management stream. Gender budgeting is not about making separate budgets for men and women; it is about allocating resources and assessing the budgetary allocations through a gender lens. The benefits of this budgeting technique are well documented for equitable distribution of the state's resources, thus empowering women and girls.

Time-bound goals need to be set for parameters such as female school enrolment, gender-based violence, health, labour force participation and distribution of incomes. Gender auditing must also be conducted

Though there have been various initiatives in India on this front, the first significant attempt at making gender-sensitive budgets was when, as part of the Ninth Plan (1997-2002), a "women's component plan" (WCP) was introduced. WCP earmarked 30 per cent of funds for all women-related sectors. The initiative got further institutionalised when the gender budget statement was first introduced in the Union Budget in 2005-06. The statement is divided into two parts: Part A constitutes details of all schemes where 100 per cent of the allocation is for women, while in Part B the allocation is 30 per cent of the total provisioned amount for the scheme.

According to an IMF study, there are over 16 Indian states that have adopted gender-based budgeting, which is a good achievement. But there is a long way to go before we realise the dream of an equitable society. There are gender budgeting cells formed under 56 government ministries/departments to identify gender-related goals and the approach to achieve them. The ministry of women and child development has also come up with guidelines for integrating gender budgeting into beneficiary-oriented schemes.

Despite all this, challenges remain in the implementation of gender budgeting. First, there is limited availability of disaggregated gender-specific data sets for all schemes and programmes under various ministries. In the absence of this data, it is difficult to study the impact of budgetary allocations on gender equality and hence take corrective steps. Second, the budgeting exercise is linked to schemes instead of outcomes, which is really the end goal of this entire exercise. For example, in the Budget for 2015-16 there are funds allocated for infrastructure maintenance under the ministry of health and family welfare. However, there is very little data available on the impact these funds made in reducing female mortality rates.

Third, there is an immediate need to conduct an assessment of gender-specific parameters and set goals accordingly. For example, it is important to understand time-bound goals for parameters such as female school enrolment, gender-based violence, health, labour force participation and income distribution. Fourth, a suitable authority should be created for gender auditing, to conduct an annual impact assessment of budgetary allocations for all schemes, thus bringing accountability to the process. According to Nabcons, the agency tasked with evaluating gender budgeting schemes under the Eleventh Plan, there is also a critical need for capacity building across government, corporates, public sector undertakings, NGOs and all involved agencies to apprise them of the need for gender budgeting.

While steps have been taken to mainstream the gender budgeting process at central and state government level, there is a definite need to deepen this process. Government should also consider moving some of the pro-women schemes from Part B of the Budget statement to Part A, to make them women-specific and thus increase the allocations. A national-level reporting platform should be created under the ministry of statistics and programme implementation, which will collect the disaggregated data by sex for understanding the impact and outcome of the gender budgeting initiative. The Central Statistics Office should also be engaged for better data collection and analysis techniques.

Gender budgeting is a great tool for gender mainstreaming only if it is implemented in true spirit. Various initiatives by the central and state governments are a step in the right direction but can at best be described as a good first step in a long journey. Shared responsibility between the central and state governments would accelerate this process.

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OTHER VIEWS

Give farmers better prices, not blanket loan waivers

Such schemes have huge fiscal costs and weaken credit discipline

The seeds of loan waiver sown by Prime Minister Narendra Modi, in the form of a promise made during the UP assembly elections, have now turned into a full-grown tree spreading its roots across states. What began with the UP government's announcement in April, followed by Maharashtra, yet another BJP-ruled state, has now been emulated by Punjab and Karnataka where the Congress is in power. It's true that the farming community has gone through a harrowing time, whether due to adverse weather events in 2014-15 and 2015-16 or the more recent price crash across agri-commodities following demonetisation. If at all there is anybody deserving of special support today, it is certainly farmers. But are loan waivers the right way to go about that? To the extent that they impose fiscal costs, these schemes also entail diversion of public resources that could have gone to build rural roads, hospitals, schools and irrigation works. Empirical evidence also suggests that weakened credit discipline from repeated waivers creates disincentives for further lending by banks.

A loan write-off would be worth it if it specifically targets farmers who have fallen out of the institutional credit system. These farmers, and also those who have always been dependent on borrowing from local moneylenders and traders, have every right to be able to access formal finance that makes them more productive. But farmers would be better helped if they are allowed to realise remunerative prices for their produce.

The Indian Express, June 23

The clean-up begins

Will move against defaulters succeed?

Armed with the powers, a little over a month ago, to get lenders and defaulting borrowers to sit down and address the messy task of cleaning up toxic bad debts, the Reserve Bank of India (RBI) has decided to crack the whip. The central bank's decision to act on the advice of its Internal Advisory Committee and direct lenders to initiate insolvency proceedings against 12 corporate borrowers — each owing in excess of ₹5,000 crore — has come not a day too soon. With gross non-performing assets (NPAs) at about ₹7 lakh crore, a regulatory intervention was imperative not only to safeguard the health of the banking system but also to ward off any wider impact on the economy.

The onus now shifts to the lender consortiums to expedite the insolvency process under the new Insolvency and Bankruptcy Code (IBC). The fate of this long-overdue attempt at resolving the banking sector's NPA crisis will ultimately be determined by how quickly the lender consortia are able to initiate the implementation of a resolution plan that retains the defaulting company as a going concern — there are, after all, thousands of direct and indirect jobs at stake here. Or, in the absence of approval for such a plan, start taking steps to liquidate assets.

The Hindu, June 23

Opposition for Meira Kumar

Presidential poll an ideological battle

Notwithstanding Bihar Chief Minister Nitish Kumar's defection from the Opposition ranks on the forthcoming Presidential election, the non-BJP parties have declared that they are not prepared to give the BJP nominee, Governor Ram Nath Kovind, an easy walkover. By opting for a Dalit candidate, the street-smart BJP high command had confronted the Opposition with a Hobson's choice; by plumping for Meira Kumar, the former Speaker of the Lok Sabha and a Union Cabinet minister, the Opposition has come up with a spirited challenge and a worthy challenger. The outcome of the Meira Kumar versus Ram Nath Kovind contest can be predicted — the BJP's energetic and resourceful political managers will ensure a comfortable win for their man. Win or lose, the Opposition could not possibly be expected not to pick up the obvious ideological and political gauntlet thrown at them by the ruling establishment.

The President of India is not a political office but it is not entirely without its political significance. The Constitution casts on the President — and, on the President alone — the responsibility to "preserve, protect and defend" the Constitution. The ruling party as well as the Opposition owes the nation a dignified contest — and the Republic a dignified Head.

The Tribune, June 23