

SCM FOR VIALE ENERGY SECURITY

Abstract

Risk and cost of imported fossil fuels, especially after the latest West Asia war, make the search for viable and indigenous fuels inevitable for an import dependent nation like India. In this context, there are certain macro factors which could guide suitable Strategic Cost Management (SCM) practices for evolving such viable alternatives.

Fuel for transportation and cooking needs of the world's most populous nation, mostly with low per capita income, makes these SCM factors very pertinent. Moreover, for overall improvement of RE power assets, and their better utilization, SCM methods could be vital for forming the basis of viable energy for the benefit of citizens, economic self reliance and improving the environmental factors too deteriorated by fossils.

Based on the study, certain SCM parameters seem very critical where the concerned industries and consumer groups could focus for a targeted viability level of different forms of alternate energy.

Introduction and Need:

Risks and cost of imported fossil fuel and its environmental concerns has pushed for the need of faster energy transition through viable and greener indigenous alternatives on the macro fronts which needs focused SCM practices to support the same through focused Cost Driver Analysis, Value Chain Analysis, Strategic Positioning Analysis etc. based on Benchmarking, TQM and continuous improvements by all stakeholders.

Two main segments of energy consumption, presently catered mostly through imported fossil fuel, viz. (a) Transportation and (b) cooking energy, are analyzed in details and additionally, since most of the alternatives are related to enhanced electrical capacity, part (c) covers the SCM factors for increasing the RE share in the overall electrical energy mix of the nation.

Transportation: As per the current patterns of fossil consumption, Trucks and Buses are the singular largest consumer of fossils, while the other group consist of personal 2 wheelers, 4 wheelers, and passenger/transport 3 wheelers. As EVs have started their impactful presence in the later group for last few years, *the focus of policy thrust now seems to be on the former group since e-trucks*



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and e-buses can save substantial imported fossils.

1. India Considering \$1 Billion Incentives for E-buses and E-trucks (R#1)

Bloomberg report that GOI is actively considering lifelong interest subvention scheme for private bus and truck operators up to Rs. 15 lakh on each such EV, as 95% of the road transport fleet (20 lakh buses) are run by private entities, apart from marginal transport truck owners who are big in numbers but cannot afford investing in EVs.

2. GOI Review Policy Support for Buses and Trucks (R#2)

As GOI focus on policy support for this heavy

duty segment, *project oriented companies like BHEL, under the same ministry, with heavy consumption of fossil fuel, can contribute substantially to such schemes.*

3. GreenLine Mobility to Promote Fuel Saving Trucks(R#3)

Green-Line Mobility Solutions plans to expand its LNG truck fleet to 10,000 with potential saving of nearly \$5-6 billion annually on fuel imports and offering operators better cost per ton-km compared to normal diesel trucks.

4. Amazon to Tie Up Eicher for EV Trucks (R#4)

Amazon enters a contract with Eicher Motors to hire 1000 mini EV-trucks for distribution of its customer oriented consignments in many major cities which is expected to cut its diesel consumption.

5. Data Advancements Transforming EV Battery-(R#5)

Advanced analytical tools are now being used for improving EV Battery's safety and lifespan issues for optimization of performance and cost improvement for making them adaptable and viable.

6. GOI may Incentivize Domestic Supply Chains for EVs (R#6)

Policy for fiscal support, including tax concessions and outcome linked plans, to domestic industries in the EV supply chains are in active consideration of the GOI as India aims to boost and support EVs in a big way for its energy security plans

7. Tata Power expand Charging Services on Mumbai- Delhi Highway (R#7)

This highway support huge traffic of passenger vehicles as well as commercial fleet, this initiative by Tata will prove to be a very good early bird investment having potential of very good returns.

8. Affordable New EVs from Tata Motors(R#8)

While PUNCH @6.49 Lakh (or EMI #12,500) with a 30W battery including 15 year warranty and 300 km range is really

good, it has also come out with next gen Tata Next Gen Tiago @ 4.69 lakh.

Key SCM Factors For Transportation From Above Trends:

SCM Factor	Advantage	Reasons
Battery Life time cost/ Service	Biggest cost component of EV needs gradual reduction under a Targeted cost approach.	Innovative Price strategies will decide the long term viability and mass adoption.
Emerging Options for Heavy Transport's Transition	Heavy duty trucks and buses have potential for substantial energy transition and thus the Cost and mileage advantage compared to the ICE will be a real game-changer.	Innovative EV financing and partnership will enable quick adoption of EVs. Better Possibility of CNG/ LNG supplies and import substitution.
Customer Specific Solutions	This will be really viable for Uber/Ola type of service providers or the Amazon/ flipkart type of e-commerce players.	Heavy daily mileage could result in faster payback of investments apart from huge savings on fossil fuels.
Warranty/ EMI Designs etc.	Tata's strategies are effective in giving confidence for RE adoption and invest in upfront cost.	SCM around this factor could result in long term market share
Sub 5 lakh EV Car	Tata's Next Gen Tiago @ Rs 4.69 lakh is path-breaking update in the 4 wheeler car.	Very good option for any lower middle class family to invest in this compared to even a 3 lakh ICE.
Innovative Features	Vehicle Rooftop solar chargers can be designed in innovative mode.	Parking in outside could auto charge the vehicles at nil cost.

Cooking Alternatives: Over 30 crore LPG consumers are currently facing un-certainty and innovative alternatives such as Solar cookers, DME,

Electric cooking and Syngas, apart from cleaner use of coal and bio-fuels could provide relief.

- 1. DME can Supplement/ Replace LPG(R#9):** DiMethyl Ether (DME) generated from coal and biomass can replace LPG or can be blended with LPG as confirmed by CSIR scientists in Pune.
- 2. Induction Cook-tops to Solve LPG Crisis(R#10):** These electric cook-tops are fast, energy efficient and also affordable. GOI thrust on expanding domestic capacity of induction heaters and may procure millions of such cook-tops through CPSUs like EESL for public distribution to replace LPG.
- 3. Coal Gasification & resultant synthetic gas (syngas) has the potential to replace LPG and LNG (R#11)** GOI sanctions Rs 37,500 crore for 3rd trial on this vital project, as India's rich coal reserves could potentially solve the major component of energy security concerns of the nation; also companies like the Bharat Coal Gasification and Chemicals Limited (BCGCL) a JV between Coal India and BHEL, can proceed with big exploratory projects on coal gasification for multiple energy and chemicals like the one bagged recently by L&T in Orissa (R#12).

Key SCM Factors for Emerging Cooking Alternatives:

SCM Factor	Advantage	Reasons
Solar Options	Solar cookers for day time direct cooking and induction heaters based on mini solar sets can replace LPG.	Almost nil operation cost makes it attractive once the upfront cost is subsidized under support schemes.
Electric cooking	Best alternative as electricity from any source is cheaper than LPG.	Cost and availability both are better than imported LPG.
DME etc.	This can either supplement (mix with LPG) or totally replace LPG.	Cost viability may speed up its commercial sale to replace LPG.

Syngas/ Cleaner coal	This can be with either syngas or from forms of coal in better designed coal ovens.	Cleaner use of coal can immediately be used in commercial segment.
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Need for Fossil Replacement and Greater RE Utilization:

- 1. Bloomberg Report On World Energy Security(R#13):** Oil shocks of 1970s, the Russia Ukraine war of recent times, and now the West Asia war has underlined the doubts on fossil energy security while RE, especially solar, nuclear and hydro seems to be much more reliable.
- 2. Rising Energy Cost Energy Forces Hunt for Alternatives (R#14)**
Switching to an EV, rooftop solar, or an induction cook top can protect household budget from cost and risk impacts of imported fuel but the constraint is the upfront cost and look for minimum operational cost is the key factors.
- 3. India's Import Dependence & Need for Green Transition(R#15)-** Former TCS chief opines that India needs a shift in the growth model based on green energy which can attract substantial investment and create jobs mainly under RE, Bio economy and circular economy to substantially reduce imports and support energy security.
- 4. GOI Supports 40 sub-sectors for Relaxed FDI (R#16)** India is fast-tracking FDI proposals from China etc, in 40 key manufacturing sub-sectors, including rare earth magnets and electronics, which will be cleared now within 60 days to boost domestic manufacturing.
- 5. Thermal Units Block Grid to Induce Big Waste of Solar Power(R#17)**
Thermal plants are reportedly blocking the evacuation of solar power into the grid, leading to significant RE curtailment resulting in nearly 300GWh of solar power waste in first quarter of 2026 despite a GOI order of 2023 which mandated thermal plant to cut their day time generation to 40% of their

capacity to utilize more of solar power but still being run on 55% capacity as even NTPC says running at 40% will not recover their fixed cost.

6. Viability Gap Funding (VGF) Scheme for BESS Push (R#18)

The VGF scheme is in the works for 112 GWh projects. This initiative involves an outlay of around ₹15,000 crore. The plan includes battery storage, pumped storage, and new technology systems. This will support Round the Clock (RTC) of the RE plants.

Key SCM Factors for RE Optimization:

SCM Factor	Advantage	Reason
RE's Operation cost advantages needs strategic promotion.	Innovative finance commercial interest rates induces faster payback.	Massive EV and other cooking needs could be supported by RE.
Supply chain security of the RE equipments manufacturing.	Unless this is assured it may become future bottleneck of RE.	Long term reliance RE should also factor the risk of its supply chain.
Grid Factors, RTC and optimization of energy mix.	Stand-alone solar could be focused; but once Grid restrictions, BESS and other RTC are solved, even utility based RE could prove cheaper.	Macro constraints will improve in the long run so as to utilize the installed assets with greater optimization.

Conclusion

Macro progress and constraints can be easily factored for *SCM practices on the energy transition by companies for successful business adoption along-with technological advancements, financing designs, localization capabilities, distribution networks, etc. and are vital for all stakeholders of the EV chain, cooking fuel industries and well as RE power players and agencies.*

If these factors are suitably considered by the strategic management/cost accountants under them, they can evolve suitable SCM practices linked to evolving technologies related to these new energy options. **MA**

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