CLIMATE ENERGY FINANCE

Is an accelerated Indian energy transition the silver lining to Adani's downfall?

Tim Buckley, Director, Climate Energy Finance, 16 February 2023

The Adani Group's ability to continue accessing global capital and to fund its expansion on all fronts concurrently has been stalled for now as a result of explosive allegations of fraud in the 24 January report by short selling research firm Hindenburg.

The family's gross listed company wealth comes in at US$63bn (as of end 15 February 2023), down 55% since the Hindenburg alleged the Group had pulled 'largest con in corporate history'.

While Adani is the biggest private coal developer in the world, the Adani Group had also pledged to invest US$70bn in green industries this decade, suggesting at face value that a setback for Adani is a setback to India's energy transition.

CEF would argue otherwise.

Prior to January 2023, the Adani family was, at best, walking both sides of the street. Able to deploy greenwashing to raise foreign capital, Adani had unprecedented access to global capital markets to expand its fossil fuel interests, and leveraged crony capitalism at home.

The Adani family's interests were tied to the strategic objectives of India, and vice versa. If fossil fuel vested interests' alignments with political power work half as effectively in Indian politics as they do in Australia – the third largest fossil fuel exporter in the world – it would be fair to suggest India's decisions of late are more, not less, fossil fuel aligned than 3-4 years ago. This is despite the imported fossil fuel commodity hyperinflation smashing India and the world alike.

For example, in recent years the Government of India (GoI) has:

- wholeheartedly embraced public and private coal mining expansions at the fastest rate in Indian history (in the process making Adani Enterprises Ltd the #1 private coal miner nationally);
- pivoted back to arguing for the need for massive new coal-fired power plants - the Central Electricity Authority (CEA) in September 2022 argued for 28GW of new coal plants by 2032 on top of the 25GW under construction – again making Adani Power Ltd the #1 private existing and new coal power plant developer;
- permitted multiple coal gasification proposals (coal to urea, coal to methanol, coal to petrol, coal to PVC) of dubious economic and environmental value, despite the failures in South Africa, Australia and China, the only countries to have piloted this entirely flawed environmental bomb (again, Adani Enterprises Ltd has the largest coal gasification project in the western world on its books);

- pushed for biofuel blending (despite its obscene water and agricultural land demands) to prolong India's crippling oil import dependency rather than accelerating electric vehicles (EV) to improve energy security;
- expanded oil importation tank capacity (in the process making a new Adani Ports & SEZ Ltd joint venture the #1 tank firm nationally);
- expanded LNG import capacity (where Adani Ports is the #1 private Indian firm); and
- commissioned methane gas reticulation systems throughout India (in the process making Adani Total Gas Ltd the #1 firm nationally).

Even India's world leading solar push of 5-8 years back has been curtailed of late. The GoI move to impose a 40% solar module import tariff from 1 April 2022 to encourage onshore solar module manufacturing had the immediate impact of driving up the cost of solar power purchase agreements (PPA) by ~25% to India, whilst poor implementation has caused policy uncertainty and massive delays to projects, given domestic production capacity has not been built yet. The promised are employment and supply chain security benefits are yet to materialise.

This import tariff has undermined solar investment momentum, which in turn has imposed a massive ongoing cost impost on the whole economy in the form of higher electricity prices. Pure coincidence that Adani Enterprises is India's largest solar module manufacturer and won 75% of the GoI solar module manufacturing tender back in 2020.

As the investor offering to provide the solutions being sought by the GoI, Adani is consistently close to the top of the list of beneficiaries of these strategic decisions.

As for the GoI sanctions for greenfield fossil fuel infrastructure expansions – these are utterly incompatible with the climate science. We accept the 'Common but Differentiated Responsibilities' of the Paris Agreement, and note India has only committed to Net Zero by 2070. But building out the country's addiction to imported LNG comes at a time when geostrategic factors have triggered fossil fuel hyperinflation, smashing India's current account deficit. India imports over 80% of its oil, 20% of its thermal coal, 50% of its coking coal and over 50% of its methane gas needs via LNG, and the vast majority of its fossil fuel-derived fertilizer and petrochemical supplies.

A silver lining of Hindenburg's report accusing Adani of the "largest con in world history" is that India may see the folly of pursing an expensive imported fossil fuel expansion plan that increases India's energy security risks even as it undermines both the country's current account deficit further and the climate science.

We would suggest India would be far better off doubling or trebling its domestic sourcing of zero emissions, deflationary, cheap renewable energy infrastructure.

India can leverage the enormous inbound investment interest from global capital like Ontario Teachers of Canada (buying 30% of Mahindra Susten renewables in September 2022), Sembcorp of Singapore (acquiring Vector Green in November 2022), Blackrock (acquiring a 10% stake in Tata Renewables in August 2022), the Canadian Pension Plan Investment Board (CPPIB) investing in Renew Power in September 2022 and KKR (taking a strategic stake in Serentica Renewables in November 2022). Amazon partnered with Vibrant Energy (Macquarie Group of Australia), while Brookfield of Canada was reported in September 2022 as looking to invest US$1bn in Greenko. This is literally a who's who of

global finance decarbonisation leaders investing in Indian decarbonisation. As MNRE's R.K. Singh highlights, India has a multitude of national renewable energy leaders.

Global financial capacity has been raised at unprecedented scale in support of India's grid transmission and renewable infrastructure expansion plans, building up a widening range of national Indian renewable infrastructure players with the development, management and financial strengths to treble their efforts. All that is needed is a step-up in SECI tendering.

We note by comparison China installed a world record 87GW of solar in 2022 alone, a 60% growth year-on-year, showing what can be done. India did 14GW.

The investment, environmental and trade benefits of such a strategy would better serve India's, and the world's, interests as the globe rapidly, and necessarily, decarbonises.

We note that Asia's once-again richest man, Mukesh Ambani of Reliance Industries Ltd, has committed to a net carbon zero by 2035 pledge and a green investment of US$76bn this coming decade. A key part of this is green hydrogen, and the GoI Ministry of New and Renewable Energy (MNRE) has responded by announcing a very significant National Green Hydrogen Mission in January 2023. Adani group had announced in June 2022 a US$5bn green hydrogen strategy in partnership with TotalEnergies of France, however, on 9 February 2023 TotalEnergies put this non-binding MoU on hold.

The investment opportunities in electrifying everything and driving uptake of low cost renewable energy infrastructure, including expediting deployment of behind the meter rooftop solar and storage, would benefit India's commercial and industry sector dramatically, given it pays some of the highest electricity tariffs in the country, a key subsidy to the vast rural and consumer poor of India.

Electrification of the Indian transport sector would dramatically and permanently reduce India's booming oil imports, reduce air and particulate pollution and carbon emissions, and underpin a massive investment and employment boom in manufacturing batteries and 2-,3- and 4-wheel EVs, as well as trucks, buses and trains.

In FY2022 India installed 15.4GW of variable renewable energy (VRE) and only 1.4GW of net new coal power. In the nine months year-to-date FY2023, India has installed 11GW of VRE and actually marginally reduced its on-grid net new thermal power capacity. Relative to the 600GW of new coal project proposals and the 20GW pa of new coal capacity being installed annually in India a decade ago, this is a dramatic pivot of global importance.

But we note India needs to double or treble in current VRE install rate to 30-40GW pa (plus 1-3GW pa of nuclear and hydro) to both deliver on PM Modi's 450GW RE by 2030 target, and to deliver all of India's new energy demand needs, given the economy continues to see electricity demand growth of 8% pa on the back of strong economic growth of ~7% pa. This would see coal power generation peak immediately in absolute terms, and relatively rapidly lose market share in relative terms, replicating the successful trend seen in Europe, the US and Australia over the last decade.

But rather than delivering a significant uplift in monthly PPA tendering support from the Solar Energy Corporation of India (SECI) that the VRE industry and investors have prepared for, the GoI and CEA have reverted to the narrative of a decade back, saying India needs yet more high emissions, high cost thermal power plants. And reversing the success of the CEA

strategy over 2015-2020, the new proposal is to delay the closure of end of life, subscale, expensive, high emissions, high pollution coal plants still in operation to beyond 2030.

India's Electricity Capacity and Generation (FY2021/22)

	---- Capacity ----		-- Generation --		Capacity	Increase
	GW	%	TWh	%	Utilisation	GW yoy
Coal-fired	210.7	52.7%	1,082.9	72.6%	58.9%	1.4
Gas-fired	24.9	6.2%	31.3	2.1%	14.3%	0.0
Diesel-fired	0.5	0.1%	0.5	0.0%	12.0%	0.0
Large Hydro	46.7	11.7%	151.6	10.2%	37.3%	0.5
Nuclear	6.8	1.7%	47.1	3.2%	79.2%	0.0
Renewables	109.9	27.5%	170.9	11.5%	19.1%	15.4
Bhutan (Import)	n.a	n.a	9.0	0.6%	n.a.	
Total	**399.5**	**100.0%**	**1,491.8**	**100.0%**		**17.3**

Source: CEA, CEF Calculations

India's Installed Electricity Capacity (GW) end FY2021/22 vs YTD FY2022/23

Generation Source	Mar-22	Dec-22	Change (GW)	% of new capacity
Renewables	109.9	120.9	11.0	101.4%
Large Hydro	46.7	46.9	**0.1**	**1.2%**
Nuclear	6.8	6.8	**0.0**	**0.0%**
Thermal	236.1	235.8	-0.3	-2.6%
Total Ongrid Capacity	**399.5**	**410.3**	**10.9**	**100.0%**

Source: CEA, MNRE, Climate Energy Finance calculations

The lowest cost source of new electricity generation in India is solar (at ~Rs2.50/kWh), followed by wind (at ~Rs3.00/kWh). Hydro and nuclear at Rs4-6/kWh is more than competitive versus new minemouth coal plants (at Rs5-6/kWh), and imported coal plants are the most expensive of the lot (at Rs6-10/kWh), assuming subsidised government financing via PFC/REC, given private financial institutions are increasingly unlikely to finance new coal power.

Energy security is a key national objective for India. Use of domestic resources makes economic and strategic sense. Beyond using India's existing coal mines to supply existing coal power plants to replace hyper-expensive imported coal, it would make strategic, economic and environmental sense to treble deployment of the lowest cost domestic energy sources – wind and solar, firmed by the brilliant strategic resource of India's integrated national grid (the largest in the world by population coverage), and leveraging existing gas peakers, pumped hydro storage, batteries, demand response management and adding batteries-on-wheels (aka EVs) for firming.

Note: See Tim Buckley's series of five previous reflections on the Hindenburg Adani allegations here.

Adani Family Exposures to Listed Indian Subsidiaries / Associates

	Rs 15-Feb-23	Adani Share M fpo 31/3/2022 *	Adani Share %	Rs Now	Adani Stake RsBn 15-Feb-23	Adani Stake RsBn Now	Decline
Adani Enterprises	3,435	721	65.5%	1,779	2,476	1,282	-48.2%
Adani Green	1,932	1,215	77.7%	621	2,347	754	-67.9%
Adani Transmission	2,784	824	73.9%	1,017	2,294	838	-63.5%
Adani Total Gas	3,901	411	36.9%	1,076	1,604	442	-72.4%
Adani Ports	769	1,384	65.5%	569	1,065	788	-26.0%
Adani Power	273	2,892	75.0%	141	789	408	-48.4%
Adani Wilmar	517	571	44.0%	398	295	227	-23.0%
Ambuja Cements	501	1,254	63.2%	345	628	433	-31.1%
ACC Limited	2,323	12	6.6%	1,852	29	23	-20.3%
Total Family Stake RsBn					11,526	5,195	
USD to Rs					82.87	82.87	
Total Family Stake US$Bn					139	63	-54.9%

Source: Company Accounts, Yahoo Finance, CEF estimates

*Note: Promoter shareholdings are as reported at 31 March 2022, * except for Ambjua and ACC, acquired in Sept'2022*