WHY CAPITALISM IS COSTING US THE EARTH? Part 2.

I wouldn't trust the capitalist class to organize a popcorn popping festival. They would begin by arguing about intellectual property and positioning, then buy overpriced irregularly shaped pots, only to discover that there are not enough hobs and once this is solved that they have not prepared sufficient power supplies in advance. The same applies to achieving the much more complex 'net zero'.

To get to net zero, annual investment in renewables needs to range from $5 trillion to $6 trillion. The IEA estimate puts it at $5.6 trillion. Currently the spend is just $2.1 trillion. However, if we add in the wasted spend on the military which stands at least at $2.7 trillion, the combined totals would be $4.8 trillion, approaching what is needed. But catastrophically, the capitalist class is prioritising the arms race which is why military spending exceeds what is being spent saving the planet.

Unfortunately, capitalism has both an innate as well as an adaptive inability to manage the green transition. Innate or inbred because the capitalist purpose for being is profit, and to maximise profit, cost prices must be minimised. The only costs the capitalists recognise, are the ones they must pay cash for and which forms their cost price. To reduce their cost price, they necessarily exploit labour and the planet. Thus, they inevitably end up harming the planet.

In terms of adapting, two outstanding examples illustrate how sectional interests and fragmented consciousness prevents them acting in an organised manner to execute the transition. These two examples are the failure to adopt exchangeable batteries for Electric Vehicles, and secondly, the failure to provide large scale electricity storage to take advantage of intermittent or variable solar and wind generated electricity.

There are only advantages to using exchangeable batteries. They are, (1) without batteries the cost of a basic EV could be as low as £10,000 reducing the cost barrier to purchasing these vehicles accelerating their uptake. (2) with exchangeable batteries readily available from the equivalent of a petrol station, range would no longer be an issue, the very issue the opponents of these vehicles have used to dissuade customers from buying them. (3) using the equivalent of filling stations, the infrastructure needed to charge them could be rationalised. Instead of roads being dug up to cable in individual charging stations, only these unified charging stations needs cabling in. (4) these unified charging stations can also take advantage of lower nighttime tariffs to charge their batteries instead of individual drivers using individual chargers 24 hours a day. (5) the time to exchange batteries will take no longer than filling up with petrol or diesel. (6) drivers can take advantage of newer batteries as they become available with longer range. (7) drivers will pay for the rent of the batteries only when they charge them which in any case will be cheaper than filling up with petrol. (8) the bank of batteries could be financed by the energy companies giving them an income stream thereby helping wean them off fossil fuel extraction. Thus, we see there are only advantages using exchangeable batteries.

So why has this not happened? Firstly, in the age of neo-liberalism the state no longer represents the general interest of the capitalist class. Instead, due to lobby groups and governments being stripped of their own professional decision-making departments forcing them to rely on outside consultants, governments now represent sectional interests. This has allowed individual groups

of ‘entrepreneurs’ to set policy. One of them is Musk. He refused to entertain exchangeable batteries, because at the time, Tesla cars had the longest range out of all the competitive brands due to its proprietary battery technology. The result is that the bulk, but not all EVs, have built in difficult to replace car batteries.

How different the outcome would have been had governments enforced the rule that car batteries had to be exchangeable. Most cars sold today would be EVs. A taxi driver charging his Tesla mostly at home told me he spends £1000 on electricity compared to the £8,000 per year he spends on petrol. Once again, it proves that if capitalists are left to their own devices without either being regulated by governments or pressured by workers, they end up doing what is right for them but wrong for society.

Which brings us to electricity storage. In 2025 wind and solar produced electricity exceeded 19% of global electricity production with solar slightly ahead and accelerating faster primarily due to investment in China. Renewable electricity is tripling every decade. However, the more it expands the more the need for storage increases due to the intermittent production of wind and solar power.

The two forms of storage under consideration are pumped hydro and green hydrogen, that is hydrogen produced form the hydrolysis of water. The *Royal Society* is one of the few organisations favouring hydrogen. The rest favour pumped hydro, or two dams separated by elevation pumping water from the lower to the higher dam when there is excess electricity, then allowing water to flow from the higher dam to the lower one to generate electricity during shortages. It’s why 94% of all installed electricity storage is pumped hydro (PHES).

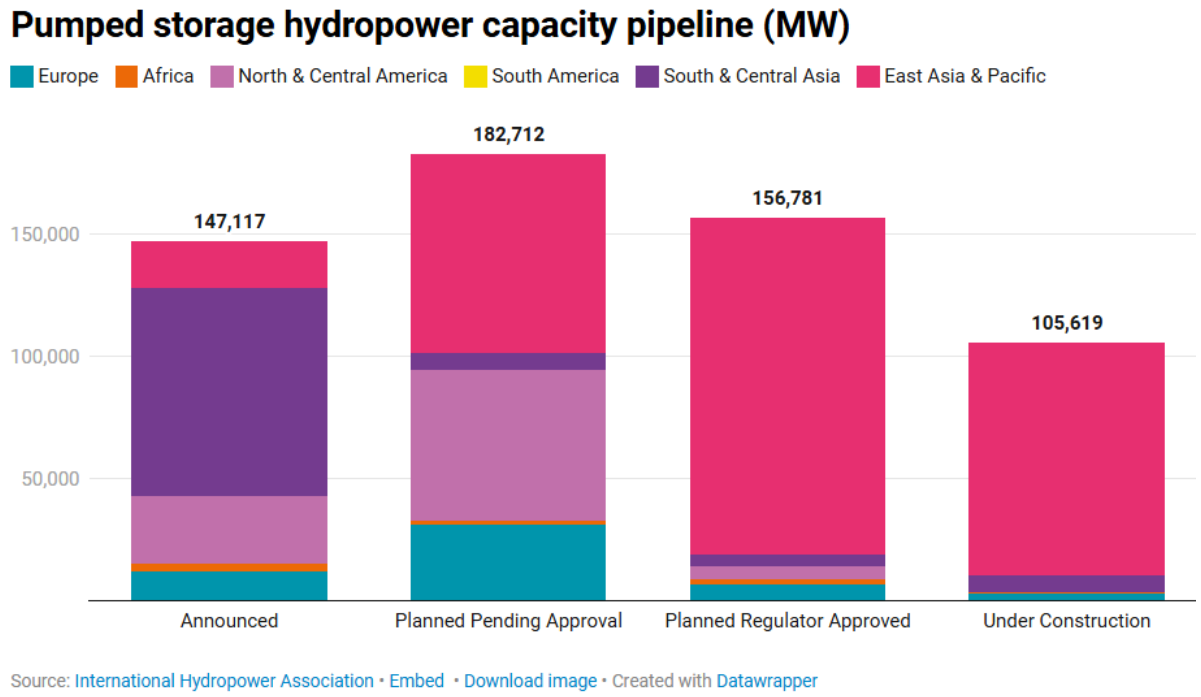
While hydrogen offers some advantages, its efficiency is low when measured over the full round-trip (which is producing hydrogen then burning it) produces electricity at an efficiency of only 28 to 52%. This would require many more solar panels and wind turbines to produce reserve electricity. “*Electrolysis is power hungry, and GPAT shows the renewable energy implications of that hunger. Take, for example, our hypothetical 250 megawatt gas plant, running 60% of the time with 30% hydrogen and 70% gas. Powering electrolysis to produce that much hydrogen could take 500,000 solar panels (500 watts each), or more than 50 wind turbines (3 megawatts each).”*

On the other hand, PHES achieves efficiencies of up to 80%. The longevity of PHES systems can be up to 100 years or double that of hydrogen-based systems. Further, the life span of a gas turbine is half that of a water driven turbine. Finally, the efficiency of a hydrogen powered turbine is only one third that of a traditional gas driven turbine. Cumulatively, the total life cycle carbon cost when comparing the carbon produced in building dams to hydrogen plants as well as their carbon emissions during use, favours PHES. “*The environmental exergy calculations for this scenario's findings show that PHS has benefits over H_2 in that it uses only 84 % of the Hydrogen alternative's total resource exergy costs and emits 23 % less CO_2.”* (Note1.)

There is one other advantage, the number of identified mountain sites which lend themselves to PHES. This can be seen in this Australian study. “*Our Atlases currently contain 820,000 non-overlapping sites with 86 million GWh of energy storage potential which is equivalent to about 2 trillion EV batteries. Most of the Atlas sites are off-river and do not require any new dams on rivers. Land and water use is very low.”* These sites could provide sufficient capacity to meet all base

loads to compensate for intermittent renewable energy production doing away with the need for fossil burning stand-by power stations.

China leads the way.



The UK is building its first PHES in 40 years, its disgraceful. "The *proposed 1.3GW (30GWh) Coire Glas scheme would double the current amount of pumped hydro storage capacity in Great Britain. This energy storage capacity is the equivalent to the power used by around 3 million homes for up to 24 hours.*"

Energy storage however needs to be part of a comprehensive network which seeks to minimise the need for storage. Here we are talking about trans-continental electrical grids. Just as PHES is a mature technology, so too is high voltage DC cables. These cables can carry electricity economically for up to 4,000 Kilometres. That means a hub in central Asia can reach 8000 Kilometres with spurs in each direction. This is sufficient to cover multiple weather systems maximising wind generated power. And it can cover multiple time zones maximising solar generated power. In the case of Asia, it could provide solar power up to 18 hours per day given the 9-time spans crossed. What Africa and the Americas lack in width (time zones) they make up in length (latitude) and therefore weather systems.

However, to implement these kinds of networks requires a transcontinental consciousness, the opposite of the superficial consciousness of the capitalist class fragmented by competition and dogged by profit driven tunnel vision. Dammit most of these capitalists cannot even organise a pro-active coherent national grid. Only emancipated workers can think this big, can truly think internationally once shorn of the national identity their capitalist masters foster for the purposes of control and conflict.

It appears this year is the year of a super El-Nino which makes a bad situation worse. Overall sea temperatures have risen faster than atmospheric temperatures. From absorbing excess heat, we are now on the threshold where the oceans are no longer cooling the atmosphere but catastrophically adding to temperatures. That is why some climatologists view the warming oceans as a single giant El Nino.

This year, 2026, could very well be the breaking point. The war in the Gulf which has held back fertilizers has resulted in less acreages being planted. It creates less of a buffer against the disruption to agriculture El Nino will inevitably cause later this year. Starvation and heat stroke will stalk humanity.

The measures proposed above are not optional, they are necessary to reverse global warming. But if we are to reverse global warming, we need to move society forward. We need a collective society which now recognises actual costs, the ones that affect us all, not only the ones that affect the pockets of the capitalist class distorting priorities.

Note 1. The resources and emissions associated with both energetic pathways were investigated using the LCA (Life Cycle Assessment) approach, together with the latest established exergy-environmental methodologies and available data. It was considered that the identical quantity of stored power is re-electrified in the Pumped Hydro Storage situation. For an accurate comparison, it was also hypothesized that the same amount of energy a PHS could pump is electrically available for the Hydrogen storage case. With regard to energy and exergy efficiency, exergy costs of non-renewable, renewable, and total resources, in addition to the emissions cost of CO_2 of both researched energy storage alternatives, numerical and comparative data were produced and presented.

Brian Green, 6th June 2026.