Perspective

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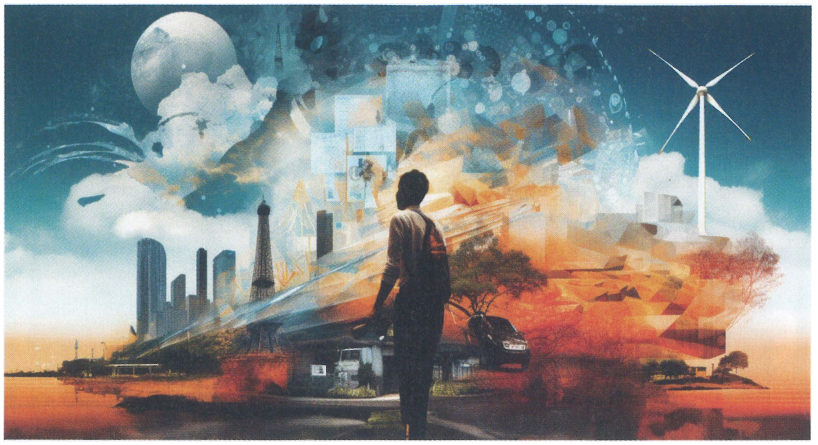
Walden

Yes, we can decarbonise

By Wade Graham



"They can't electrify everything," said the trucker, shaking his head. I was sitting with a group of friends who gather on Friday afternoons at an auto dismantling yard owned by one of them on the industrial east side of Los Angeles. Just across the street, a freight train loaded with double-stacked shipping containers slid slowly past. I'll call the speaker Frank. He is a short-haul trucker, an "owner-operator" or independent lorry driver, and a foot soldier in the trenches of the global economy. He is one of the thousands of truck drivers who ferry containers like those passing by on the train between the ships, most from Asia, that dock at the great freight ports of LA and its sister-city, Long Beach – which between them take in 40 per cent of all seaborne goods coming into the US – and the web of warehouses, distribution centres and rail yards of the metropolis, from whence they will be dispatched on further trucks and trains into the economic arteries of consumer America: to Chicago, Kansas City or New York. He may move three loads a day, back and forth along the freeways. Sometimes he earns good money, sometimes just enough to keep paying his fuel bills and the loan on his truck. Of Mexican descent, Frank and his community make a living in the "goods movement" economy of import trade that has replaced manufacturing in much of the Western world. They also live dangerously near it – close to the ports, the highways, the rail yards and the warehouses, never far from the ceaseless thrum and hydrocarbon exhaust. Their neighbourhoods are called "diesel death zones", where adults' life expectancies are well below average, and rates of childhood asthma and lung dysfunction are many times higher than the norm.

> The biggest barrier isn't technical, but the length and complexity of permit processes

From Frank's point of view, I can see it is hard to imagine the massive change that will be required to decarbonise the global economy: replacing literally everything. For myself, I find a physical shift of vantage point can help these mental leaps. One week later, I was camped beside a roaring creek in a remote canyon, 8,000 feet up in the Sierra Nevada mountain range, 300 miles north of the big city. I was awed by the moonless sky: a white sea of stars crossed by drifting satellites, with the milky way splitting the dome, its weird, glowing colour smudges enclosing fathomless dark zones – a sight so unusual to a city dweller as to seem like a hallucination or digital projection.

I sat beside a campfire, its crackling flames giving warmth against a cold October night but its smoke stinging my eyes. I was reading, not by firelight, but with the help of a small, solar-powered LED lantern weighing half an ounce. The contrast between these two light sources mirrored the contrast between human epochs: the ancient one of burning things, and the new one of turning the sun's infinite power into light, without heat or smoke. Today, many frame this shift of energy transition as a choice. But the facts argue that it is our only option, if we want to survive as a civilisation.

In the morning, high above me on the canyon walls, I saw a hopeful lesson from the past. A mile-long section of six-foot diameter metal pipe traversed the slope, bringing water diverted from higher up the creek to a point on the ridge from where the pipeline descended steeply, dropping the stream through a turbine below, producing hydroelectricity. This remote creek had first been harnessed more than a century ago, in 1905, when engineers and labourers used mule teams to drag concrete, steel, and machinery 10,000 feet up the mountainsides to build dams and dynamos; they raised poles by hand and string wire in order to send electricity 113 miles away, across more mountains and deserts, to the booming mining camps of neighbouring Nevada. When the gold and silver veins played out, new investors bought the system, added others on other creeks, and sent electrons to faraway Los Angeles, powering its meteoric rise as an industrial city despite it being far from the normally required natural resources to achieve that: coal, timber and water.

Seeing the transformations wrought by electric power, the government promoted rural electrification in 1936 during the Great Depression by lending money to farmers' cooperatives. It was among the most successful programmes in the nation's history, and within two years 1.5 million farms in 45 of the then-48 states were lit; by 1942 it included nearly half of all US farms, and nearly all by 1950. (In the UK, a similar national effort, marked by successive Electricity Supply Acts in the 1930s, funded the extension and gradual merging of systems; by 1938 a single voltage integrated the national grid.)

Even bigger investments in public hydropower projects, at a scale private industry couldn't attempt, paid even bigger dividends. On 9 October, ▸

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1936, power from Hoover Dam on the Colorado River crossed 266 miles of desert to fire arc lights that illuminated an ecstatic crowd of nearly one million people gathered in downtown Los Angeles. That power directly helped win World War II, which has been called an "electric war": from 1939 to 1944 most of the 200,000 airplanes made in California in wartime – 70 per cent of US airframes flown in the war – were made in LA with hydropower.

We are engaged in a different, but no less consequential struggle now: between those who understand the existential threat of global warming and therefore back the energy transition, and those don't: who seek to deny science and obstruct progress. A core argument of the latter group is that we cannot move fast enough. But history shows that we can, if we pull together. We put a man on the moon, as they say – and we did it not just with rocket fuel but with electricity and oxygen produced by fuel cells on board the spacecraft, with little heat and no smoke. We built the internet and a globe-girdling net of satellites in a matter of decades. When the incentives align – when public policy and money provide the stick and the carrot – we can get the job done, fast. Ask Elon Musk, whose company, SpaceX, only began launching Starlink satellites in 2019, but now has 5,000 in orbit, and aims to launch 7,000 more in short order. Today, the fate of entire countries (such as Ukraine) hangs in part from Starlink's threads.

The scale of the buildout of renewable generation, storage and distribution that will be required to decarbonise is prodigious and daunting. The US Department of Energy estimates we will need to expand the existing transmission grid by 60 per cent; other estimates say it must double, or triple. The biggest barrier isn't technical but bureaucratic – the length and complexity of permit processes, where major projects can take more than a decade to Pass Go, if they pass at all. We don't have the luxury of time, or of doubt.

Nevertheless, progress has already been quick, where the political will exists. Just fifteen years ago, Los Angeles depended on coal for 50 per cent of its power; next year the number will be zero. The state of California has already built enough solar and wind power to meet or exceed 100 per cent of demand some days of the year. Other states are not far behind. Yet, at night or on still, cloudy days, gas-fired power plants must still make up the slack, and the transportation sector – including Frank's diesel truck – remains largely fossil-fuelled. Bridging the gap will require building more, and building fast. The good news is, we have climbed this mountain before, and we can climb it again.

Wade Graham is an author, environmentalist and academic. He lives in LA