

Energy, Work and Finance

by The Corner House

March 2014

Synopsis

This report argues that effective movements seeking finance for a greener and more democratic energy future will look at energy and finance not as “things”, but as political processes in motion. How can the strongest alliances for the needed changes be made? Where are the destructive, currently-dominant energy and finance regimes most vulnerable? Both inquiries can be helped by an understanding of how energy and finance have been constructed and contested over two centuries of stormy transformations in industry, livelihood and exploitation.

The report is divided into four sections:

- Introduction: Energy, Finance and Change
- Energy as Struggle
- The Energy of Finance and the Finance of Energy
- Interlude: China as a New “Chimney of the World”
- Conclusion: Whose Side Are You On?”

The **first section** introduces the report's subject matter, energy and finance, through two stories. In one anecdote, advocates for green energy proselytising on the streets of New York City find themselves unable to explain to an inquisitive pedestrian what energy is or whose interests it most serves. In a second story, politicians and activists insist over and over that bringing about a transition to a green energy future is a matter of finding “trillions” of dollars and then using them to “replace fossil fuels”, “improve energy efficiency in the building sector”, “solve energy poverty”, and so on, seldom inquiring too deeply into what these “trillions” might consist of, what ATM they might come from, and what damage headlong attempts to mobilize them might do to the cause of equality and subsistence for all. Progressive energy campaigns, the chapter suggests, cannot succeed unless they take such issues more seriously.

The **second section**, “Energy as Struggle”, takes one step in this direction by inviting readers to look at energy not as a neutral background to history – an unchanging something that humans always need more of – but rather as a relatively recent invention shaped by an ongoing power struggle waged by industrial elites to accumulate as much as possible from the work of ordinary people. “Energy”, the chapter argues, is what cultural critic Raymond Williams called a “keyword” – a slippery abstraction that trains people into holding certain political biases without their being aware of it. The bias of “energy” is that it posits an eternal scarcity of a kind that can only be relieved by industrial production, the destruction of commons and subsistence, and the rule of experts.

Repoliticising energy means revisiting the scientific discipline that, more than anything else, gave it its

cachet of neutrality – 19th-century thermodynamics. Thermodynamics, this section shows, occupied itself above all with formulating models for commodifying, controlling and intensifying industrial labour and maximizing its benefits for factory owners following the first age of enclosure or land privatisation in Europe. Energy itself was defined as the capacity of a physical system to do work. The First Law of Thermodynamics helped untangle heat and mechanical, electromagnetic and chemical energy from their previous social and natural contexts, showing how they could be combined and exchanged with each other to form a single, liquid, commodifiable whole that could be indefinitely aggregated and subdivided. In so doing, it helped open business's eyes to the possibility of flexible production that did not need to assume, in the words of one historian, a “fixed limit on the forms of energy that could generate work”. Not only the body but all of nature itself, became a “machine capable of producing mechanical work” or “labour power”.

This vision grew out of, and was embodied in, the entrenchment of fossil fuel-based steam engines converting heat into mechanical energy, electric motors converting electricity into motion, dynamos converting mechanical energy into electricity, reactors converting nuclear energy into heat and then electricity, and so on. Each such technology contributed in different ways to business's project of mobilizing and disciplining labour and making it more abstract, calculable, manipulable and productive of surplus. The steam-coal combination enabled capital to concentrate labour at any urban location it chose, disentangle it from place and the cyclical time of days and seasons, make good on its perennial threat to discard and impoverish workers who did not come up to proper standards of obedience, and micromanage it at minimal cost according to the rhythm of the machine. Electricity, by coupling the motor more directly to the tool, made labour-power even more susceptible to detailed control, while automatic machinery rendered it still more deskilled, fragmented and abstract. The Second Law of Thermodynamics, meanwhile, helped focus industry's awareness of the dependence of growth on both efficiency and endless cheap imports of high-quality energy to replace the energy whose capacity to do work was lost in production.

Constructing the new scientific “energy” involved the work not only of engineers, business and thermodynamic theorists, but also economists, machines, colonial administrators, slave traders and bureaucrats, as well as the labour of plants and marine life over the millions of years it took to create fossil fuels. Only through the gigantic, flexible, cheaply transportable concentrations of power in coal, oil and gas could different kinds of energy have been commensurated and commodified on a world scale, a dedicated “energy sector” developed, or the wage-labour relation generalized through society to such an enormous extent. Without steam engines, conversely, neither coal nor iron mining could have grown so fast. Without colonial plantations, much of the new machine capacity would have been meaningless. The dominance of the new energy that thermodynamics defined came only about through a new regime in which political, technical, financial and fossil elements were fused inextricably in novel ways of mobilizing and appropriating surpluses.

The physical separation of energy sources from engines and other energy converters, and the rise of dedicated energy networks (coal transported by sailing ship and by railroad, oil pipelines and tankers, electricity grids) went hand in hand not only with more flexible production and the generalization of wage labour, but also with the generalization of consumption. Electricity networks made possible a world of consumer durables, and oil pipelines a world of automobiles, suburbs and plastics. The “cyborg labourer” – a fusion of human and machine maximizing productivity – was joined by the “cyborg consumer” locked into high-energy consumption guaranteeing markets for that productivity, as well as by “cyborg land”, which blended soil, machinery, oil, ores and crops to produce feedstocks for

both industry and labour.

In virtually every respect, the rise and persistence of thermodynamic energy – what was referred to in the previous two energy reports from The Corner House¹ as Big-E Energy – can be seen as a continuing, constantly-evolving struggle against commons worldwide. For example, thermodynamic or Big-E Energy helped to enclose or privatise the commons of human livelihood activity, as reflected in the way the notion of wage labour came to dominate the meaning of words for “work” in European and other language families. Big-E Energy also necessitated the enclosure of fossil fuel extraction locations, transport networks and processing sites – an enclosure that is now becoming even more extensive as land-hungry “substitutes” for fossil fuels such as wind, solar and biofuels are increasingly sought. Such processes of enclosure are powered by the continuing environmentally-destructive cycle of unequal exchange described by anthropologist Alf Hornborg, in which cheap, high-quality Big-E Energy capable of yielding large quantities of thermodynamic work is shipped from extraction zones to production sites, where it is degraded to produce more expensive goods that can then be exchanged for even greater quantities of high-quality Big-E Energy. At the same time that the holes go deeper in one place, the towers in another rise ever higher. As energy mining and energy consumption climbs, added social critic Ivan Illich, ordinary people's opportunities for provisioning themselves, getting about independently, or learning autonomously, are closed out in both extraction and production zones. A “green” or “democratic” Big-E Energy will always be a contradiction in terms.

The report's **third section**, “The Energy of Finance and the Finance of Energy”, traces the links between thermodynamic or Big-E Energy and state and corporate financial institutions, including investment banks, private equity firms, mutual funds, development banks, hedge funds, sovereign wealth funds, master limited partnerships, climate funds, oil companies and real estate investment trusts. It stresses that finance, like energy, is not a “thing” (like a pot of money) but rather a political process, a trajectory, a continuing social struggle.

The connections between finance and thermodynamic or Big-E Energy have been intimate from the time of the first emergence of energy supply networks and a distinguishable “energy sector”. Even in 1840, a quarter of the capital invested by the 20 largest firms in France went to coal mining, and large payments were made to Britain for imported coal. Today, nine of the 12 most heavily capitalized corporations in the world are energy companies. Project finance, until recently the principal means of financing oil and gas and power projects, was born in the 1930s when a Dallas bank extended a nonrecourse loan to an oil and gas company seeking an off-balance-sheet form of finance that would enable it to develop new fields without placing its core assets at risk. Finance has always been crucial for ensuring that enough profits from the exploitation of labour flow to producers of fossil fuels to keep the system going.

Early railway expansion in the US and elsewhere, moreover, was possible only through sophisticated syndicated financing. As Thomas Edison noted early on, meanwhile, easy financing is as necessary to the commercial success of electricity networks “as a good dynamo”. In the US, financial unification made possible the technical unification of regional and national electricity networks. From the outset,

¹ *Energy Security For Whom? For What?*

<http://www.thecornerhouse.org.uk/resource/energy-security-whom-what>

Energy Alternatives: Surveying the Territory

<http://www.thecornerhouse.org.uk/resource/energy-alternatives>

General Electric was a financial as well as a technical firm. Utility companies, which began as financial companies acquiring and consolidating existing mini-networks, understood, meanwhile, that the construction of a grid demanded banker-like knowledge of complementarity of demand throughout the system. Huge, centralized generating plants, most particularly nuclear power stations, have equally huge capital needs, requiring massive borrowings on the financial market. For the past half-century, in addition, only the intervention of the World Bank and other international financial institutions have made possible the global South's infrastructure for transferring high-quality Big-E Energy from hinterland to metropolis.

As the generalization of the wage relation through mechanization fuelled by seemingly limitless amounts of Big-E Energy opened up new productivity horizons, financial relations could also be scaled up, entrenching illusions of infinite economic growth and indefinitely-extendable compound interest. As political scientist Elmar Altvater argues, one result was to conjure up a “nirvana of global financial speculation”. When the product of labour power shaped by Big-E Energy appears as interest-bearing capital, the stage is set for crises in which not only finance, but all productive sectors, are pushed into exaggerated forms of plunder and cannibalism in order to attain unrealistic rates of profit. Indeed, the relationships among investment in Big-E Energy, financialization and economic crisis are especially worthy of attention at the current moment.

As in past crises, investment in energy has become directed not only at increasing productivity, but also at absorbing overaccumulations of capital. At the same time, financialization has encouraged private sector investors to look for returns of 10 to 15 per cent on big energy infrastructure projects; for Southern countries, the profits demanded are often twice that or more. That severely biases energy investment against the poor, against projects sensitive to local needs, and against a livable future climate. Key decisions relating to infrastructure investment have become the prerogative of tiny, alpha-hungry elite of a few fund managers from 120 to 150 private institutions based in a few Northern countries.

At a time of declining profit rates in the industrial economy, energy finance increasingly seeks to use infrastructure investment simply to divert public money into private hands. Private-public partnerships are on the rise everywhere, together with new financial products, tax breaks, “pension grabs”, government gifts of land, and other mechanisms aimed at guaranteeing private investors' “right to profit” at the same time that austerity measures eat into the livelihood security of the less well-off.

Energy companies themselves have meanwhile sought new subsidies from taxpayers, found new ways of stealing from energy-rich regions, skimmed on safety, cut research and development, and plunged more deeply into financial games themselves, ranging from new, derivative-based project securitized finance deals to commodity index funds, credit default swaps and plays and institutions bearing bizarre names like “equity kicker financings” and “master limited partnerships”.

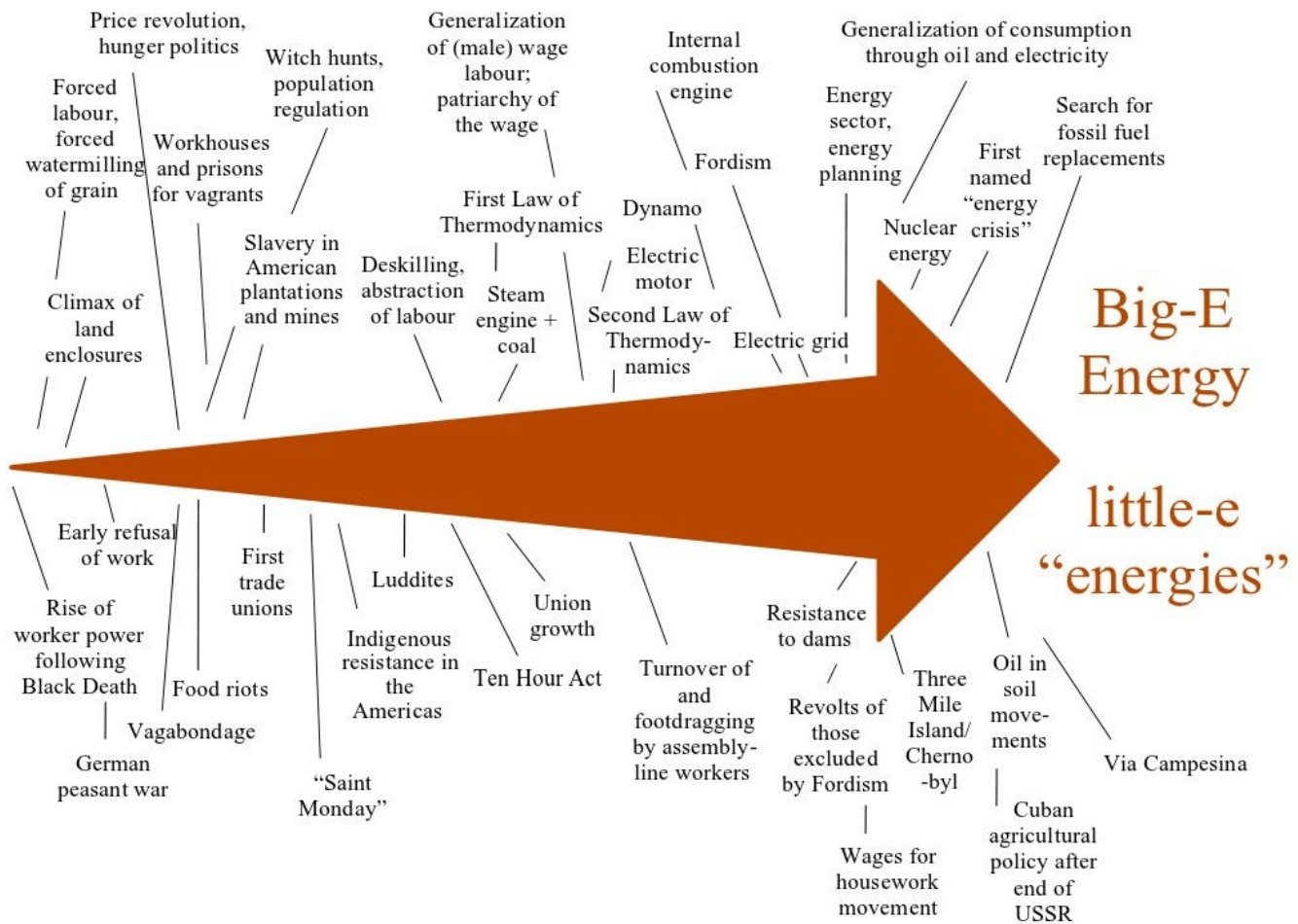
Publicly-traded debt, in which the lender has no relationship with the borrower, only with other lenders, has become crucial to the absorption of surplus capital via syndicated lending – a strategy that, by the early 2000s, was supplying one-third of all international loan financing. An oil futures market launched in the wake of the nationalization of oil extraction by exporting countries has helped shift power over energy pricing back from OPEC toward Wall Street and the international oil majors, linking Big-E Energy and financial speculation still more closely.

Structural trends in energy investment in the 2010s, in short, centre on accelerated larceny combined with a growing financialization of energy and energy infrastructure as asset classes. At the same time, due to the continuing centrality of Big-E Energy for labour productivity, investment in the so-called “green economy” is directed mainly at projects that leave fossil fuel use unaffected; the proportion of the global consumption of energy generated by coal, oil and gas, now at 83 per cent, has only increased over the past decade. Small-scale, decommodified energy projects, controlled by and for local people, are extremely unlikely in the current climate to attract the investment of pension funds and other institutional investors. The most that can be expected is that investors will try to siphon off for their own use benefits from publicly-funded contracts for off-grid village electrification, university and hospital schemes, or companies adopting off-grid technologies for commodity extraction or reduced energy costs.

Other topics explored in this third section include the importance of the 1970s oil crisis as a spur to financialization, a way of re-disciplining labour to help restore falling profits, and an instrument for the reassertion of US economic hegemony; and the integral connection between the entrenchment of an oil-based pattern of house ownership in the US and the growth of a “privatized Keynesianism” stimulating consumer demand through the provision of speculative real-estate-based credit. The section concludes with a summary case study exposing how massive foreign direct investment in China from the turn of the 21st century has been aimed primarily at bringing together masses of cheap labour with coal-fired electricity in an attempt to reboot capital accumulation.

The report's **concluding section**, “Whose Side Are You On?”, finds that adopting the previous sections’ treatment of energy and finance not as “things”, but rather as processes or trajectories, has useful implications for the strategy of campaigns for a green, democratic energy future.

For example, viewing the emergence of Big-E Energy as one elite response to the defence of commons (in the manner of the very schematic arrow drawn below) helps free campaigners from the temptation to assume that today's dominant approaches to energy derive from a misguided or short-sighted intellectual “model”. It implies that effective movements will not be organized around trying to persuade political or financial elites to adopt “alternative” intellectual models. Rather, they will join existing oppositional forces in a struggle already being waged – one that ranges over a wide variety of arenas, from science to feminism to labour rights. They will make common cause with the movements in response to which dominant interests in business and the state have always shaped their strategies.



This strategy builds on the insight that there is no “inside” and “outside” to energy institutions and energy politics – no “revolutionary paradigms” pitting themselves against a “mainstream” entirely external to themselves, no separate red arrow outside the one above, but pointing in the opposite direction. Rather, there is one connected, evolving process in which bitterly antagonistic social groups are constantly responding and adjusting to their opponents. This vision of energy activism replaces the question of how to build alliances around the implementation of elite-formulated alternative plans with a practical question that takes the persistence of social conflict as a given: whose side are you on?

By the same token, showing that scarce, thermodynamic Big-E Energy is not a human universal, but rather the result of an ongoing social process, helps make more visible practices that can, retrospectively and anachronistically, now be described, in opposition, as “little-e energies”. In so doing, it suggests that while effective advocates of environmental justice in industrialized societies necessarily must start by working with practices that Big-E Energy currently dominates, they need not postulate the impossible goal of “providing green Big-E Energy for all”, but might more fruitfully join with existing social movements to open more space in the long term for the little-e “energies” of the commons. One virtue of this vision is that it encourages promising alliances with a variety of movements that mainstream observers might dismiss as “not being about energy” but which, it turns out, have indeed always been about the struggle in which energy campaigners are also engaged.

Similar, even more complex arrows can be drawn for finance and, more specifically, energy finance – arrows that also suggest historically-grounded possibilities for future campaigning strategy. As well as displaying repeated yet varying cycles of crisis and financialization, such diagrams would emphasize, in a parallel fashion, the coevolution of dominant financial institutions and an enduring, omnipresent tradition of opposition.

This is a synopsis of a 124-page report, written by The Corner House, on *Energy, Work and Finance*, available to download on The Corner House website:

<http://www.thecornerhouse.org.uk/resource/energy-work-and-finance>

Paper copies are available; please contact The Corner House for more details:

<enquiries AT thecornerhouse.org.uk>