



RESEARCH ARTICLE

Navigating electricity dependencies in Cold War Berlin: an instructive history of urban infrastructure security

Timothy Moss 

IRI THESys, Humboldt University of Berlin, Berlin, Germany
Email: timothy.moss@hu-berlin.de

Abstract

This article explores how political division manifested itself in the electricity systems of West and East Berlin and analyses the strategies of both throughout the 40 years of the Cold War. It reveals how the goal of full energy independence propagated by both West and East proved illusory for material, geopolitical, institutional, economic and environmental reasons. Apart from vestiges of past interdependence, pressures to collaborate gained impetus from the 1970s onwards. The Berlin experience, the article concludes, generates lessons for navigating socio-technical in-/interdependencies over electricity infrastructures in geopolitically contested contexts by highlighting the material politics of urban energy history.

Introduction

On the night of 24 June 1948, the Soviet Military Administration in Germany instructed the load dispatcher in its occupied zone of Germany and sector of Berlin to cut off all electricity supplies to the Western sectors of Berlin. It simultaneously prohibited the delivery of coal to power stations in the West of the city.¹ This intervention, marking the start of the Berlin Blockade, plunged West Berlin (as it became known) into an energy crisis more serious than the city had experienced during World War II. Without access to the regional grid and without fuel to power its few remaining turbines, the West Berlin authorities and Western allies introduced draconian restrictions on electricity use in the isolated half-city, limited for households to just two hours during the day and two hours at night.²

The disruption of electricity supplies to West Berlin by the Soviet authorities in 1948 is revealing for several reasons. First, it represents early acknowledgment of the dependence of modern cities – and societies in general – on the continuous supply of electricity and, therefore, their vulnerability to its interruption. Destroying power stations or disrupting power lines has, since the Berlin Blockade, become integral to

¹Magistrat von Groß-Berlin (ed.), *Berlin 1948. Jahresbericht des Magistrats* (Berlin, 1950), 52.

²Senat von Berlin (ed.), *Berlin. Behauptung von Freiheit und Selbstverwaltung 1946–1948* (Berlin, 1959).

modern conflict, as applied by the USA in the Iraq War, Israel against Palestinian insurgency and, most recently, Russia in its attacks on Ukraine.³ Second, the interruption of power supplies to West Berlin demonstrated in sharp relief powerful connectivity between the urban and the geopolitical. These multi-scalar relations were socio-technical, manifesting themselves in complex interdependencies that were material, technological and environmental as well as political, economic and social.⁴ Third, the Berlin Blockade precipitated a long-lasting debate about urban energy security, as West and East Berlin explored how best to render their electricity systems resilient. Their strategic responses, over the 40 years of political division, veered between self-supply and cross-border co-operation. All three revelatory phenomena – on the vulnerability of energy supplies, the geopolitical entanglements of urban energy and the diverse strategies of urban energy resilience – have powerful echoes today, as cities struggle to imagine and enact energy systems that are future-proofed against climate change, supply disruptions and energy poverty.⁵ This makes the experience of Cold War Berlin a particularly instructive case of urban infrastructure security. The purpose of this article is to analyse the strategies and counterstrategies of West and East Berlin throughout the 40 years of political division to gain a better understanding of socio-technical in-/interdependencies over electricity in a geopolitically contested context.

Despite the uniqueness of Berlin's Cold War experience, the case speaks to a growing literature on urban history specializing in the infrastructure, material politics and resilience of cities. The article is positioned at the interface between these three strands of current urban research, drawing on them to generate broader academic insight around the Berlin case whilst using this case to demonstrate how historical and urban perspectives can enrich debate on these issues today. In line with recent infrastructure studies, the article posits that infrastructure is an insightful lens on the urban condition.⁶ From this perspective, energy networks do not merely reflect political or socio-economic change in a city but are co-constitutive of it. In the case of Cold War Berlin, this article argues, the electricity system was not just an object of geopolitical manipulation but itself posed limitations to political separation and co-operation. This understanding of cogenerative infrastructure–city relations and their temporal dynamics builds on an emergent body of research by historians, geographers and anthropologists placing infrastructure studies in historical context.⁷

³S. Graham (ed.), *Disrupted Cities. When Infrastructure Fails* (New York, 2009); S. Graham, *Cities under Siege. The New Military Urbanism* (London and New York, 2010); T.M. Aljohani, 'Cyberattacks on energy infrastructures: modern war weapons', *arXiv*, 2208.14225 (2022).

⁴M. de Goede and C. Westermeier, 'Infrastructural geopolitics', *International Studies Quarterly*, 66 (2022), sqac033.

⁵H. Bulkeley, V. Castán Broto, M. Hodson and S. Marvin (eds.), *Cities and Low Carbon Transitions* (London and New York, 2011).

⁶A. Amin, 'Lively infrastructure', *Theory, Culture & Society*, 31 (2014), 137–61; S. Graham and S. Marvin, *Splintering Urbanism. Networked Infrastructures, Technological Mobilities and the Urban Condition* (London and New York, 2001). For an urban history perspective, S. Gunn, R. Butler, G. De Block, M. Høghøj and M. Thelle, 'Cities, infrastructure and the making of modern citizenship: the view from north-west Europe since c. 1870', *Urban History*, 49 (2022), 1–19.

⁷M.V. Melosi, *The Sanitary City. Urban Infrastructure in America from Colonial Times to the Present* (Baltimore, 2000); M. Gandy, *The Fabric of Space. Water, Modernity, and the Urban Imagination* (Cambridge, MA, 2014); E. Swyngedouw, *Liquid Power. Contested Hydro-Modernities in Twentieth-Century*

These relations can only be fully grasped, current scholarship is arguing, if infrastructure is not reduced to the physical artefacts of popular imagination but conceived of as socio-material assemblages that stabilize, destabilize and restabilize under specific spatial and temporal conditions. Literature on the material politics of cities helps understand how materiality – in our case coal, power plants, electricity cables, pollutants and much more – becomes imbued with political meaning and effect whilst itself being instrumental in shaping (geo)political options.⁸ The article explores how the material politics of one city – Berlin – can alter sharply and repeatedly over a period of 40 years, providing historical heft to the broader literature. Finally, the article draws on, and contributes to, the literature on urban security and resilience. Here, too, recent scholarship is debunking essentialist notions of core terms, revealing how security, vulnerability and resilience are discursively (and politically) constructed.⁹ The contribution of the article to this branch of research is to demonstrate how energy (in)security was neither predetermined by physical constraints nor purely discursive in character but the product of dynamic socio-material relations around the city's energy networks.

Beyond its wider relevance to debates on urban infrastructure and energy security in past and present, the Berlin case is worth exploring in depth to challenge some common assumptions that persist in accounts of the city's Cold War experience.¹⁰ These have tended to echo the confrontational positions of West and East Berlin, each keen to emphasize the distinctiveness of its own (energy) trajectory, whether the defiant municipal self-provision of West Berlin or the subordination of East Berlin to a state-socialist national economy and planning regime.¹¹ What a closer look at the empirical evidence documented in archival sources reveals is that cross-border relations over energy were more intricate and dynamic than is widely assumed. Whilst energy policies were characterized by separation, confrontation and competition, interdependencies over electricity did not disappear and, indeed, became increasingly important as the Cold War progressed. This article explores this tension between the political rhetoric of separation and the realities of socio-material and

Spain (Cambridge, MA, 2015); S. Gunn and S.C. Townsend, *Automobility and the City in Twentieth-Century Britain and Japan* (London, 2019).

⁸C. McFarlane and J. Rutherford, 'Political infrastructures: governing and experiencing the fabric of the city', *International Journal of Urban and Regional Research*, 32 (2008), 363–74; C. Otter, 'Locating matter: the place of materiality in urban history', in T. Bennett and P. Joyce (eds.), *Material Powers: Cultural Studies, History and the Material Turn* (New York and London, 2010), 38–59; T. Soens, D. Schott, M. Toyka-Seid and B. De Munck (eds.), *Urbanizing Nature. Actors and Agency (Dis)Connecting Cities and Nature since 1500* (New York, 2019).

⁹D. Brantz and A. Sharma, 'Contesting resilience: negotiating shared urban futures', in D. Brantz and A. Sharma (eds.), *Urban Resilience in a Global Context: Actors, Narratives, and Temporalities* (Bielefeld, 2020), 11–32.

¹⁰R.L. Merritt, 'Political division and municipal services in postwar Berlin', in J.D. Montgomery and A.O. Hirschman (eds.), *Public Policy* (Cambridge, MA, 1968), 165–98; T. Moss, 'Divided city, divided infrastructures: securing energy and water services in postwar Berlin', *Journal of Urban History*, 35 (2009), 923–42.

¹¹T. Moss, *Remaking Berlin: A History of the City through Infrastructure, 1920–2020* (Cambridge, MA, 2020), emphasizes system difference in the treatment of East and West Berlin in two separate chapters, referring to co-operation over energy provision only subordinately and for the 1980s. This article, by contrast, reveals longer and more nuanced interactions between both sides of the divide throughout the Cold War, based on files of the Bewag archive not used in my book.

geopolitical entanglements to offer a novel interpretation of urban energy security in historical perspective.

Methodologically, the article draws largely on archival documentation of the electricity utilities operating in both West and East Berlin and the municipal and national authorities responsible for their regulation housed in the German Museum of Technology, Berlin (DTM) Berlin and the State Archive of Berlin (LAB). The reports, memos and correspondence documented there are supplemented with published historical sources as well as the secondary literature on Berlin. Wider secondary literature is used to contextualize the analysis and draws from the contributions to debates on urban energy security and the political history of urban infrastructures.

Separated systems

The Berlin Blockade precipitated the division of the city in late 1948 into a democratic, capitalist West Berlin and a socialist East Berlin.¹² The uneasy alliance between the Soviet and Western occupying forces following the end of World War II had steadily deteriorated by 1948, reflecting wider geopolitical tensions and the struggle by each side to shape the political future of Berlin in its own image. Initial success by the Soviet military authorities in appointing a city government sympathetic to the communist cause was undermined by democratic elections that shifted the balance of municipal power to parties supportive of Western-style democracy. Where the Soviet authorities exercised control – in the Eastern sector of the city – the democratization process was resisted with interventions sustaining communist sympathizers.¹³ When the new currency of the Western occupied zones of Germany, the *Deutschmark*, was extended to their sectors of Berlin, the Soviets responded by blocking all land access to these sectors on 24 June 1948, effectively isolating West Berlin.¹⁴

The political division of Berlin manifested itself in the city's electricity system in multiple ways.¹⁵ Physically, the power network that had supplied the whole city was disconnected along the border surrounding the three Western sectors. For the duration of the blockade, until it was lifted on 12 May 1949, West Berlin's electricity supply remained cut off from the rest of the city and the surrounding Soviet occupied zone. Organizationally, the municipal utility for electricity, Bewag, was split into separate entities for West and East Berlin. The division of Bewag in December 1948 resulted from a prolonged and acrimonious dispute over control of this key utility. It began with the dismissal of Bewag's technical director, Rudolf Wissell (a member of the Social Democratic Party), by the Soviet Military Command on 26 June 1948 – a

¹²On the Berlin Blockade, U. Wetzlaugk, *Die Alliierten in Berlin* (Berlin, 1988), 38–49; W. Ribbe, *Berlin 1945–2000: Grundzüge der Stadtgeschichte* (Berlin, 2002), 77–83. For analysis of the diplomatic wrangling and geopolitical conflict leading up to and beyond the Blockade, see D.F. Harrington, *Berlin on the Brink. The Blockade, the Airlift and the Early Cold War* (Lexington, 2012), and A. Shlaim, *The United States and the Berlin Blockade 1948–1949. A Study in Crisis Decision-Making* (Berkeley, 1983).

¹³Ribbe, *Berlin 1945–2000*, 14–30, 60–76; J. Bisky, *Berlin: Biographie einer großen Stadt* (Berlin, 2019), 633–69.

¹⁴S. McKay, *Berlin. Life and Loss in the City that Shaped the Century* (London, 2023), 316–31.

¹⁵On the following, Moss, 'Divided city', 926, and the eight-page report 'Die Spaltung der Berliner Kraft- und Licht (Bewag)-Aktiengesellschaft' compiled by Bewag for the Berlin Senate, 14 Mar. 1952, German Museum of Technology (DTM) 1.2.130 FA, no. 08870.

move declared illegal by the Western allies.¹⁶ The conflict escalated when communist union leaders in Bewag attempted to depose the utility's elected works council in November. It came to a head at a meeting of Bewag's governing board on 6 December 1948, where the company director sympathetic to the Soviets, Hans Witte, resigned his post to take up the directorship of the Bewag facilities in the Eastern sector. Henceforth, Bewag-East and Bewag-West operated as separate utilities.

The division of Berlin's energy networks and utilities during the blockade heralded highly divergent trajectories in East and West in the 1950s. Geographically and politically, each side sought to secure its own electricity system against threats – imagined and real – from its ideological opponents.¹⁷ For East Berlin, this meant exploiting its initial advantage in the local generation of electricity, turning its energy companies into socialized enterprises and reorienting electricity generation around East Germany's only source of fuel: lignite. In 1950, East Berlin's power stations boasted a capacity of 499 MW, compared with a meagre 267 MW in the larger West Berlin.¹⁸ This, together with access to the national electricity grid, enabled Bewag-East to charge lower tariffs and ensure greater supply reliability than in the West (see Figure 1).¹⁹ Indeed, Bewag-East produced so much electricity in the early 1950s that it was exporting up to a quarter to the national grid to help cover for national power shortages.²⁰ This changed, however, as the national energy policy for centralized, lignite-fired power generation took hold. In the name of nationalizing – and demunicipalizing – energy production, the proportion of locally generated electricity in East Berlin fell from 100 per cent in 1955 to 55 per cent in 1970 and just 6 per cent in 1980.²¹ Ideologically, the socialist German Democratic Republic (GDR) left its mark on its energy utilities by subordinating their investment programmes to a state planning regime that provided inadequate funding.²² The director of Bewag-East constantly complained at the low priority accorded to his enterprise.²³ In East Berlin, therefore, electricity provision became quickly embroiled in the politics of a state planning system dedicated to reducing the influence of municipal agencies and subordinating the city to national policy priorities.

¹⁶See the documentation in the Bewag archive, DTM 1.2.130 FA, no. 08871, and the Berlin Senate files in the State Archive of Berlin (LAB) B Rep. 010, no. 1333.

¹⁷The division of Berlin's energy systems is barely mentioned in general histories of Berlin that refer only to power outages: for example, most recently, McKay, *Berlin*, 324–5. Publications by infrastructure planners tend to skirt over the political dimensions to disrupted energy provision, e.g. H. Bärthel, 'Anlagen und Bauten der Elektrizitätserzeugung', in Architekten- und Ingenieur-Verein zu Berlin (ed.), *Berlin und seine Bauten. Teil X, Band A (2) Stadttechnik* (Petersberg, 2006), 187–250, and H. Tepasse, *Stadttechnik im Städtebau Berlins. 20. Jahrhundert* (Berlin, 2006).

¹⁸Statistical data on Bewag West and East (undated), LAB C Rep. 752, no. 309.

¹⁹As was flaunted in the 'Perpektivplan' of the 2nd 5-Year Plan for Bewag (East) for 1956, LAB C Rep. 752, no. 141. Cf. Tepasse, *Stadttechnik*, 206.

²⁰See statistical data in LAB C Rep. 752, no. 141, and DTM 1.2.130 FA, no. 10360. H. Shin and F. Trentmann, 'Energy shortages and the politics of time: resilience, redistribution and "normality" in Japan and East Germany, 1940s–1970s', in F.A. Jonsson, J. Brewer, N. Fromer and F. Trentmann (eds.), *Scarcity in the Modern World: History, Politics, Society and Sustainability, 1800–2075* (New York, 2019), 248–9.

²¹VEB Energiekombinat Berlin (ed.), *40 Jahre Deutsche Demokratische Republik. 40 Jahre Sozialistische Energiewirtschaft in Berlin – Hauptstadt der DDR* (Berlin, 1989), 18.

²²Moss, *Remaking Berlin*, 183–6.

²³Meeting between utility directors and the city council on 25 Nov. 1950, LAB C Rep. 752, no. 20, and meeting of the Bewag (East) board of directors on 25 Oct. 1952, LAB C Rep. 752, no. 17.



Figure 1. Poster of Bewag-East 'More electricity for building up socialism', 1952.
Source: LAB F Rep. 260-02, no. A0173.

West Berlin's geopolitically insular predicament prompted the authorities to seek energy security through urban autarky (see Figure 2). In contrast to East Berlin, where closer integration into the national generating system was the strategic response to division, West Berlin strove to build up local capacity for electricity generation, reorder the distribution network around the half-city and explore alternative fuel sources to minimize vulnerability to external disruption. A strong legacy of municipal self-government and ownership of the electricity utility from the Weimar era was instrumental to this strategy. West Berlin could build on available technical infrastructure and institutional experience. Already in November 1949, Bewag-West was predicting pre-war levels of electricity consumption in Berlin being surpassed by



Figure 2. West Berlin as an 'electricity island', 1952.

Source: Berliner Kraft- und Licht(Bewag)-Aktiengesellschaft (ed.), *100 Jahre Strom für Berlin. Ein Streifzug durch unsere Geschichte in Wort und Bild 1884–1984* (Berlin, 1984), 1952. Copyright: Bewag/Vattenfall.

1953.²⁴ It was estimated that electricity demand would rise by around 10 per cent each year over the next decade.²⁵ Given the low generation capacity of West Berlin following Soviet reparation confiscations in 1945,²⁶ massive investment in power stations was required to meet this predicted rise in demand. Substantial financial support by the United States and West Germany enabled an infrastructure expansion programme of breath-taking speed and scale.²⁷ A major new power plant, West, was opened in December 1949 in the presence of the three Western commanders. By the end of 1952, following extensions, it was providing around 82 per cent of West Berlin's electricity needs.²⁸ The capacity of other power plants was increased rapidly to meet demand growth predictions and a 17 per cent capacity reserve deemed essential for an insular urban grid. By 1956, West Berlin was fully autonomous in electricity generation and remained so for the remainder of the Cold War era, operating 12 urban power stations by the 1980s.²⁹ These power plants were

²⁴Internal report of 8 Nov. 1949 on electricity demand of Bewag, 1950–55, DTM 1.2.130 FA, no. 08887.

²⁵Presentation by Director Wissell to the Bewag governing board on 22 Apr. 1955, LAB B Rep. 011, no. 40.

²⁶Moss, *Remaking Berlin*, 156.

²⁷On the impact of the Marshall Plan, see Shlaim, *The United States and the Berlin Blockade*, 144, and Ribbe, *Berlin 1945–2000*, 84–90.

²⁸Senat von Berlin, *Berlin 1953. Jahresbericht des Senats* (Berlin, 1954), 132.

²⁹Installed generating capacity of Bewag-West rose from 232 MW to 484 MW between 1949/50 and 1956/57, report on the economic performance of Bewag (West) of 15 Apr. 1958, DTM 1.2.130 FA, no. 05005. Cf. Teppe, *Stadttechnik*, 204.

interconnected via a 110 kV power line built to reflect the new political geography of a divided and insular city. The resilience of this urban energy network was enhanced further by supportive energy storage facilities that could cover disruptions and frequency shifts in the local grid. These included a steam storage plant retained from the 1920s that could drive turbines of 40 MW for up to one hour and a huge electric battery – the world’s largest at the time – constructed in 1986 to respond to shortfalls within 10 seconds.³⁰ For the West Berlin authorities, achieving energy security meant minimizing the risk of a repeat of the Blockade by maximizing local generating capacity and enhancing system flexibility.

The remarkable achievement of creating and maintaining self-provision of electricity supply could not conceal the glaring dependence of West Berlin on imported fuels to fire its power plants. West Berlin may have celebrated its status as an ‘electricity island’, but the urban energy autarky it craved was only achievable for electricity. Until the 1970s, imported coal was the only fuel used for electricity generation. Its sheer bulk, however, made storage in West Berlin challenging and transportation through East Germany by water or rail vulnerable. In the early years after the Blockade, the East German authorities used their geographical leverage over transportation routes to interrupt supplies of coal to West Berlin. Such interventions prompted the Western Allies to insist on West Berlin storing sufficient fuel supplies to sustain the city’s electricity supply for three months. Material limitations, here in the shape of fuel storage, were to frame West Berlin’s energy strategy and wider development opportunities throughout the Cold War.

Dependencies on imported coal drove the search for alternative sources of fuel that were easier to transport and store. One option considered in the 1950s and 1960s was for a nuclear power plant in West Berlin. Discussions between Bewag-West and the Berlin Senate reveal a keen awareness of its potential benefits and drawbacks.³¹ A nuclear power station in West Berlin, it was argued, would end dependence on coal imported from the Ruhr and avoid the need for space-intensive coal storage. Significant funding by the US government was also anticipated, at least in the late 1950s. Against this, were the risks of contamination from a nuclear power plant located in a large city, the uncertain transportation of nuclear waste and the technical challenge of operating such a plant without access to the wider grid. A further obstacle – fear of opposition by the Soviet and East German authorities – proved decisive for the US government to intervene against the initial plans for a nuclear plant during the Berlin crisis of 1961.³² In 1969, the Berlin Senate was reconsidering a 40–50 MW nuclear power plant to help meet rising demand for electricity.³³ Plans took shape in 1974 for a much larger plant of 600 MW in Spandau.³⁴ These plans were dropped once it became clear that local protests were

³⁰Moss, *Remaking Berlin*, 230.

³¹See, for example, internal memos of Bewag-West of 22 May 1959, DTM 1.2.130 FA, no. 03119, and 12 Jul. 1960, DTM 1.2.130 FA, no. 03116, and the minutes of meetings between various Senate departments and Bewag-West on 20 May 1974 and 22 Oct. 1974, DTM 1.2.130 FA, no. 03118.

³²Confidential letter from the senator for federal affairs to Bewag-West Director Wissell of 29 Aug. 1961, reporting that the US State Department wanted the project dropped to avoid escalating the Berlin crisis, DTM 1.2.130 FA, no. 03119.

³³Draft concept by the senator for economics of 7 Jul. 1969, DTM 1.2.130 FA, no. 03115.

³⁴See the memos and reports of meetings between Bewag-West and the Berlin Senate in DTM 1.2.130 FA, no. 03118.

likely to derail the project. Socio-political, rather than material, limitations proved decisive in this instance.

A second option that proved more viable was to convert some of West Berlin's power stations from coal to oil. Oil-fired turbines were installed in the power plants at Moabit in 1972, Charlottenburg in 1976 and Wilmersdorf in 1978.³⁵ By 1980, around one quarter of West Berlin's electricity was generated with oil, rather than coal.³⁶ Given the concurrent global oil crisis, the partial switch in fuel source for electricity generation from coal to oil was economically inopportune. But the political rationale for reducing vulnerability of fuel delivery and the greater flexibility of oil in responding to shifts in demand in an insular grid trumped any concerns over costs, which could always be bankrolled by the West German government.

Persistent connections

The divergent paths of energy security pursued by West and East Berlin were propagated and practised with vigour. However, negotiation of the other side was not viable in practice. Too entrenched were the interdependencies – institutional and material – between their energy systems. During the early 1950s, interactions between the two sides persisted to a limited extent, revealing the limitations to the ideological symbolism of distinctive, self-dependent systems.

Once the blockade of Berlin was lifted on 12 May 1949, supplies of electricity from Bewag-East to Bewag-West were resumed at 0:02 that very morning. A week later, West Berlin was able to end electricity rationing. What appeared a return to normal electricity provision heralded, in fact, a game of retribution between West and East, with each side trying to maximize its own advantage. Whilst West Berlin sought to capitalize on East Germany's desire for its hard currency and engineering technology, the Eastern partners were keen to exploit West Berlin's geostrategic vulnerability in energy supply. Agreements for electricity transfers from East to West were reached and cross-border electricity delivered only for these to be stopped at short notice. The first contractual agreement of 18 July 1949 for the East to supply West Berlin 1 million kWh a day was rescinded a year later, when the Soviet authorities instructed all electricity transfers to cease.³⁷ For a time, between 1950 and 1952 and again between 1953 and 1955, a more stable relationship was found with a tripartite agreement that involved the Hamburg electricity utility supplying areas of East Germany close to the West German border in return for Bewag-East providing the same amount of electricity to West Berlin.³⁸ However, this arrangement also failed to survive the ideological conflict. Although technical emergencies were invariably cited as the

³⁵Tepasse, *Stadttechnik*, 206.

³⁶Presse- und Informationsamt des Landes Berlin (ed.), *Energie 1 (Grundfragen der Energiesicherung)* (Berlin, 1978), 3.

³⁷Minutes of a meeting between Bewag-West, Bewag-East and the Soviet military authority of 18 Jul. 1949, DTM 1.2.130 FA, no. 05731. Further meetings of the three parties were held between 1949 and 1953, DTM 1.2.130 FA, no. 10540.

³⁸See the lengthy negotiations over the tripartite agreement between Jun. 1949 and Oct. 1950 documented in DTM 1.2.130 FA, no. 05731. The trilateral electricity supply agreement of 1950 is in DTM 1.2.130 FA, no. 05731, and of 1953 is in DTM 1.2.130 FA, no. 04976.

reason for the sudden stoppages, internal correspondence within Bewag-East about the truncation of supplies on 5 March 1952 shows that the interventions were planned in advance and could contravene the operative interests of Bewag-East.³⁹ West Berlin's imports of electricity from the Soviet zone fell from 296 million kWh in 1950 to 167 million kWh in 1951 and only 81 million kWh in 1954.⁴⁰ On 29 March 1956, power supply to West Berlin was terminated once more, this time for good, leaving the city an 'electricity island' until the 1990s.⁴¹

Even during periods of interrupted energy supply, some forms of cross-border exchange remained, albeit on a very modest level and largely hidden from public view. One area of low-key interaction was over the supply of electricity to parts of the city that could not be readily supplied by the responsible political entity. This applied to small peripheral communities served by low-voltage mains from across the border.⁴² It also applied to curious enclaves of Cold War Berlin, such as the Soviet war memorial in West Berlin, that had to be supplied by Bewag-West. The company's archive contains monthly accounts of the electricity supplied by both sides to such enclaves, all meticulously billed.⁴³ These so-called 'border electricity transfers' – distinct from high-voltage grid connections – declined over time as each side reduced these minor infrastructural interdependencies that resisted separation for so long. In the four months between December 1948 and April 1949 – even during the blockade – Bewag-East had supplied and billed Bewag-West for 22,572,100 kWh of electricity for these services. By February 1970, the figure for the previous five months was a mere 177,885 kWh.⁴⁴ The last documented references of such cross-border electricity transfers are for 1977.

Communication was another form of continued interaction. To manage cross-border transfers and negotiate wider grid connection, at least some technical contacts were sustained during the 1950s. These included telephone exchanges between load dispatchers and power stations in East and West, written correspondence about billing transfers between the accounts departments and very occasional meetings of the utility directors.⁴⁵ Although staff at Bewag-East had been instructed in November 1952 that all communication with Bewag-West should be conducted by the utility's directors only, correspondence reveals the importance of maintaining reliable and regular technical contacts.⁴⁶ In 1957, there was intensive cross-border correspondence over exchanging staff records, planning documents and network maps.⁴⁷ Such limited contacts were further disrupted by the building of the Berlin Wall on

³⁹See the internal memos and reports of Bewag-East in DTM 1.2.130 FA, no. 10435. The director of Bewag-East, Witte, repeatedly pressed for the transfers to Bewag-West to be maintained, as on 17 Jul. 1950, DTM 1.2.130 FA, no. 05731.

⁴⁰Statistisches Landesamt Berlin (ed.), *Statistisches Jahrbuch 1959* (Berlin, 1959), 322.

⁴¹Overview of electricity supply to West Berlin of 29 May 1956, DTM 1.2.130 FA, no. 05732.

⁴²Letter of Bewag-West to the Senate of 14 Jun. 1952, DTM 1.2.130 FA, no. 08878.

⁴³See the invoices and receipts in DTM 1.2.130 FA, nos. 04974, 04975 and 05731.

⁴⁴See the invoices of 1 Apr. 1949 in DTM 1.2.130 FA, no. 05731, and of 27 Feb. 1970 in DTM 1.2.130 FA, no. 04974.

⁴⁵For details of these contacts, see DTM 1.2.130 FA, nos. 03482 and 08874.

⁴⁶Minutes of a meeting of the board of directors of Bewag-East of 10 Nov. 1952, LAB C Rep 752, no. 17; letter of Bewag-West to the senator for transport and enterprises of 6 Mar. 1956, DTM 1.2.130 FA, no. 08874.

⁴⁷See the correspondence between Bewag-West and Bewag-East of Jan. to May 1957 in DTM 1.2.130 FA, no. 08889.

13 August 1961. When representatives of Bewag (West) and the East Berlin VEB Energiekombinat met in 1988, it was heralded as the first official contact for decades.⁴⁸

A true oddity of Cold War electricity provision in Berlin was the existence for 30 years of Bewag-East as a private share company in a socialist state. While other energy utilities in East Germany were appropriated by the state in the early 1950s, Bewag-East remained a share company like its counterpart in the West. The reason for this exceptional status lay in the foreign ownership of some of Bewag's shares. In 1931, in the midst of the Great Depression, Berlin had agreed under duress to sell almost all of its 100 per cent stake in Bewag, including to many investors from outside Germany.⁴⁹ By 1948, Berlin had clawed back a 52.2 per cent shareholding, but a significant proportion of the remaining ownership was foreign.⁵⁰ This posed a major stumbling block to socializing the utility, for the GDR was under obligation by international law to respect the property of foreigners. The inability to socialize Bewag-East was more than a legal irritation or political embarrassment for East Germany. It prevented Bewag-East from becoming an integral part of the socialist planning system, thus restricting access to investments and making the utility dependent on credit.⁵¹ The company was required to pay high taxes as a private enterprise and dividends to investors abroad. It also had to operate two different budgeting systems – one socialist, one capitalist – and deal with decisions made at the company's general assembly in West Berlin not attended by representatives from the East.

The contradictions between the ownership mode and inner workings of Bewag-East were set out in a proposal of November 1953, commissioned by Bewag-East, to transform the utility into a publicly owned state enterprise (VEB), effectively dispossessing all private owners, domestic and foreign.⁵² The East Berlin city government supported the case, but at a meeting with the national government on 28 April 1954, the request was dismissed for political reasons, with the Ministry of Finance citing the country's obligation to respect foreign investments under the Potsdam Agreement of 1945.⁵³ It was only in January 1978, when most foreign shareholding had been sold, that the GDR government took the plunge and turned Bewag-East into a socialized enterprise, VEB Energieversorgung.⁵⁴ Thus ended the long-standing anomaly of a private electricity company serving the capital of a socialist state. Institutional path dependencies, this curious episode indicates, could prove just as influential as physical ones in the geopolitical context of Cold War sensitivities.

⁴⁸Bewag press statement of 4 Nov. 1988 in DTM 1.2.130 FA, no. 10108.

⁴⁹Moss, *Remaking Berlin*, 92–6.

⁵⁰Memo 'Maßnahmen zur Sicherung der Berliner Stromversorgung' of 18 Nov. 1953 commissioned by Bewag-East, DTM 1.2.130 FA, no. 10527.

⁵¹On the drawbacks for Bewag-East and the arguments for its socialization, see the documentation in DTM 1.2.130 FA, no. 10527.

⁵²Draft proposal (undated) and memo 'Maßnahmen zur Sicherung der Berliner Stromversorgung' of 18 Nov. 1953, DTM 1.2.130 FA, no. 10527. Similar arguments were cited in a letter from Bewag-East to the mayor of East Berlin, Friedrich Ebert, of 11 Dec. 1953, LAB C Rep 752, no. 157.

⁵³Memo (marked 'top secret') of the Ministry of Finance of 3 Apr. 1954 and memo of the city government of Greater Berlin of 4 May 1954, DTM 1.2.130 FA, no. 10527.

⁵⁴Letter from the senator for economics to Bewag-West of 9 Feb. 1978, DTM 1.2.130 FA, no. 10108.

Reappraising interconnectivity

Interdependencies between East and West over electricity provision were not only vestiges of past connectivity. As the Cold War progressed, limitations to full system separation became increasingly apparent on both sides of the divide. In West Berlin, the strictures of operating an insular network of power generation and provision had always been challenging. The high cost of transporting coal, the reserves needed to avoid system failure, the vulnerability to political intervention, the lower efficiency of small-scale generation plant and problems of storing sufficient coal had accompanied West Berlin's insular strategy since 1948. What was placing this strategy under additional strain from the mid-1960s onwards was the growth in demand for electricity, both real and imagined. Electricity demand had increased by 9.1 per cent each year between 1955 and 1960.⁵⁵ This figure then declined to 6.9 per cent between 1960 and 1965, reflecting the negative impact of the Berlin Wall, but bounced back to 8.6 per cent between 1965 and 1970. The Senate Department for Economics anticipated in a report of 1974 that annual electricity consumption in West Berlin would nearly double by 1981, from 6 to 11 billion kWh.⁵⁶

Put bluntly in this report, West Berlin simply did not have the space to house the power stations needed to provide such an anticipated increase in demand. Alongside the extension of existing power plants, new larger ones would be needed by 1980 at the latest. Locating these power stations within the confines of West Berlin posed a huge dilemma. The air pollution from their chimneys made them highly unsuitable for inner-city areas yet building them on the periphery meant sacrificing land or forests much valued in the insular city. Resistance to new plant was coming not only from affected residents but also from environmental groups protesting at expansionist electricity planning in West Berlin. When, in 1976, Bewag-West and the West Berlin Senate proposed a huge 1,200 MW power plant in Spandau, their plans were met with massive public opposition.⁵⁷ Months of popular protest and legal challenges resulted in the courts throwing out the plans for riding roughshod over environmental legislation and planning procedures. More damaging than the dismissal of the power plant was the challenge this posed to the expansionist logic of Bewag-West and the ideal of insular electricity supply. A combination of physical, environmental, institutional and political factors revealed with increasing intensity the limits to urban energy autarky in West Berlin, destabilizing the carefully nurtured socio-material assemblage of the 'electricity island'.

At the same time, Bewag-East was struggling to meet demand for electricity in East Berlin as the limits to East Germany's energy strategy were becoming equally apparent. Here, the problems were rooted not in a lack of suitable space or popular support for new energy infrastructure, but in serious underfunding resulting from the low priority accorded to energy utilities – and Bewag-East in particular – under the state-socialist planning system. Whilst Bewag-East was flaunting its early electricity exports to the national grid as a demonstration of socialist solidarity, it could not conceal the impact this and other inadequacies were having on the city's own power

⁵⁵The following data are from an internal report by Bewag-West 'Stromverbund für Berlin (West)' of Jul. 1977, DTM 1.2.130 FA, no. 05721.

⁵⁶Report by the Senate Department for Economics 'Probleme der Energieversorgung Berlins (West)' to a meeting of the Energy Advisory Board on 10 Jan. 1974, LAB B Rep 016, no. 461.

⁵⁷Moss, *Remaking Berlin*, 253–6.

supply. By late 1952, owing largely to transfers to the national grid, power shortages were affecting East Berlin, occurring again in 1953 and 1954.⁵⁸ In 1952, the Energy Commission of East Berlin introduced a series of measures to limit energy use in businesses and households, targeting peak demand in the early evening.⁵⁹ This was followed, in October 1953, by a decree on energy use passed by the East Berlin city council, setting up an energy inspection unit to control electricity consumption in factories.⁶⁰ Behind the scenes, directors of Bewag-East were complaining about the wholly unrealistic electricity production targets the utility was being set by the central planning commission.⁶¹ Without the financial and material means to build and maintain the necessary infrastructure, they argued, these targets were illusory.

By the early 1970s, the situation had worsened. Although East Berlin was by now importing almost half of its electricity from the grid, the national energy authorities were constantly demanding ever-increasing targets from Bewag-East strapped by underfunding and poor resources.⁶² East Berlin experienced massive shortages of electricity as Bewag-East failed to generate or import enough to meet its obligations.⁶³ In January 1971, the city's energy commission introduced stringent measures to reduce electricity consumption in factories and public spaces, including turning off all electric street lighting and advertising, shifting production to off-peak hours and prohibiting the use of electric heaters.⁶⁴ Power cuts became a regular occurrence in the winters of 1970, 1971 and 1972 – that is, even before the oil crises.⁶⁵ It is against this backdrop that the East Berlin authorities and East German government were considering unconventional ways of funding and modernizing their ailing energy infrastructure. The opportunity came after 1971, when a period of geopolitical détente between West and East created just such an opportunity.⁶⁶

These socio-material challenges to sustaining system separation prompted a rethink on both sides of the political divide. Already in the 1960s, city authorities and utilities in West and East were considering whether energy security could not be better attained by reconnecting the grids. Debates over a possible electricity deal

⁵⁸Shin and Trentmann, 'Energy shortages', 252–4. Bewag-East's Perspective Plan for 1955–60, devised in Oct. 1952, painted a bleak picture of supplying up to 50 MW to the national grid whilst expecting a shortfall for East Berlin of 40 MW by 1955 and around 150 MW by 1960, DTM 1.2.130 FA, no. 10352.

⁵⁹See the reports and correspondence of the Energiekommission Berlin in LAB C Rep 752, no. 38. A circular from the commission in this file, dated 21 Aug. 1953, instructed all Berlin's enterprises to reduce their peak demand by 30 per cent.

⁶⁰On the limited effect of these inspections of businesses and offices, see the Bewag-East report of 14 Oct. 1954 in LAB C Rep 752, no. 38.

⁶¹See the minutes of a meeting of enterprise directors on 25 Nov. 1950, LAB C Rep 752, no. 20, and of the Bewag-East board of directors on 25 Oct. 1952, LAB C Rep 752, no. 17.

⁶²See the many letters in 1972 from the director general of VVB Energieversorgung to the Bewag-East director in LAB C Rep 621, no. 73.

⁶³A brochure of the city's energy commission, dated Oct. 1970, set out the challenges of demand outstripping supply, energy losses in many factories, energy inefficiency of housing and the limited impact of appeals to save energy, LAB C Rep 101, no. 793. See the critical speeches by Bewag-East's works director to the workforce in 1968, 1973 and 1974 in DTM 1.2.130 FA, nos. 10598 and 10601.

⁶⁴Energy saving concept and measures of the city's energy commission of 6 Jan. 1971 and 11 Jan. 1971, LAB C Rep 101, no. 793.

⁶⁵See letters from the councillor for public services to the East Berlin mayor of 15 Feb. 1972 and 3 Mar. 1972, LAB C Rep 101, no. 794.

⁶⁶On the 1971 Berlin Agreement and new 'Ostpolitik', see Ribbe, *Berlin 1945–2000*, 144–7, and Wetzlaugk, *Die Alliierten in Berlin*, 86–8.

between East and West Berlin were conducted first internally and confidentially, then with friendly powers and subsequently with the opposing side. As far as possible, all exchanges were conducted behind closed doors. Indeed, whilst clandestine talks were going on, the messaging to urban and wider publics remained confrontational. West Berlin continued to sing the virtues of being an 'electricity island' to galvanize support for more power stations, while East Berlin continued to praise the superiority of socialist incentives for 'rational energy use'.

As early as 1964, Bewag-West was entertaining the idea of importing electricity from the GDR to resolve an impending supply crisis in West Berlin.⁶⁷ Two options were on the table: an ambitious one to connect the Comecon and West European grids, enabling the supply of both parts of Berlin, and a simpler one to supply West Berlin from the East German network. Both were deemed technically feasible but rejected for being politically too insecure.⁶⁸ By the early 1970s, tentative talks were being held between Bewag-West and the East German load dispatcher, responsible for the national grid, where the interest of both sides in reaching some deal became apparent.⁶⁹ However, legacies of confrontation between East and West Berlin made a bilateral agreement highly unlikely. Consequently, other parties were drawn into the exchanges: the Soviet Union, Poland and West German energy companies. Each had its own vested interest – primarily financial – in providing West Berlin with electricity but each needed the acquiescence of the GDR government for the passage of electricity across its territory. For this service, the East Germans wanted to extract maximum financial and political gain.

One plan to use a wider partnership to reduce East German leverage involved West Germany providing the financial backing and technical expertise for a nuclear power plant in Kaliningrad, on the Western perimeter of the Soviet Union, that would supply power direct to West Berlin.⁷⁰ Another plan involved electricity supplied to West Berlin from power stations in Poland.⁷¹ The logic behind both options – from a West Berlin perspective – was that East Germany would not interrupt electricity provided by its own allies who would then lose the hard currency they craved. The East Germans, however, always insisted on controlling any spur line passing through their territory.⁷² Their stubbornness frustrated the Soviet, Polish and West Berlin negotiators who, the correspondence indicates, were in unusual cross-system agreement in blaming the GDR for blocking proceedings.⁷³ Meanwhile, from

⁶⁷ Report by Bewag-West of Aug. 1964, DTM 1.2.130 FA, no. 05721.

⁶⁸ A report by Bewag-West of 28 Jun. 1967 cautioned against such electricity imports, whilst an internal exchange between two of its directors of 25 Jun. 1968 referred to grid connections with the East as 'appealing, but dangerous', DTM 1.2.130 FA, no. 05721.

⁶⁹ Memo (marked 'strictly confidential') of Bewag-West about one such meeting in East Berlin on 23 Nov. 1971, DTM 1.2.130 FA, no. 05721.

⁷⁰ On the electricity trade negotiations with the USSR, see DTM 1.2.130 FA, nos. 05721 and 05722.

⁷¹ On the negotiations with Poland, see DTM 1.2.130 FA, no. 05723.

⁷² As frequently documented in memos by Bewag-West in DTM 1.2.130 FA, nos. 05721, 05722 and 05723.

⁷³ As reported in a memo, dated 10 Mar. 1975, on talks held in Moscow in Feb. 1975 between West German and Soviet representatives, DTM 1.2.130 FA, no. 05721. Another meeting of the two sides in Moscow in Jul. 1975 saw a similar meeting of minds, see memo of 21 Jul. 1975 in DTM 1.2.130 FA, no. 05722. In talks over an electricity trade deal with Poland in 1974, the Polish negotiator was reported as being very pessimistic about the GDR's intransigence over the issue, at Poland's expense. His West German counterpart commented in a memo of 13 Mar. 1974, 'The socialist friends seem to be very hard in their dealings with each other', DTM 1.2.130 FA, no. 05723.

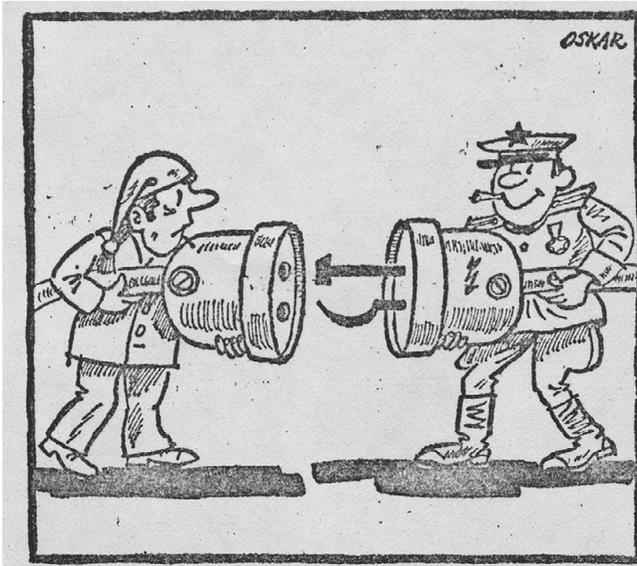


Figure 3. Newspaper cartoon of Soviet–German electricity supply negotiations, 1975.
 Source: *Berliner Morgenpost*, 30 Jul. 1975, DTM 1.2.130 FA, no. 05721.

1974 onwards, the issue of grid connection was being discussed openly in West Berlin's city parliament and the local press (see [Figure 3](#)).⁷⁴ Gone were the days when interconnectivity was dismissed out of hand for rendering the city vulnerable to blackmail by the East. Too great were the pressures to meet anticipated electricity demand with limited supply capacity. Too tempting were the opportunities to turn the recent geopolitical rapprochement between West and East Germany after 1971 into a tangible benefit of material politics for West Berlin.

By 1975, connection to the surrounding power grid had become a top priority for West Berlin and negotiations with the USSR and Poland seemed to be making progress. In October that year, however, the talks failed as the GDR government refused to allow a direct transmission line to West Berlin from either Poland or the USSR and neither partner was willing to risk a rift in the socialist bloc by insisting on a deal.⁷⁵ The GDR's counterproposal of April 1980, for electricity to be supplied to West Berlin from its own lignite-fired power stations, was rejected by the West for being too expensive and risky.⁷⁶ Only on 7 March 1988 was an agreement finally reached between the GDR, Bewag-West and the West German utility Preußen-Elektra for an electricity connection from West to East Germany and, after 1992,

⁷⁴ An illuminating example is the joint meeting of city parliamentary committees on 7 Oct. 1974 debating the pros and cons of reconnecting West Berlin to the electricity grid, LAB B Rep 016, no. 461. See local press reports in LAB B Rep 010, no. 2349 and DTM 1.2.130 FA, no. 05721.

⁷⁵ See newspaper articles reporting on the collapse of talks, dated 14 Oct. 1975, in DTM 1.2.130 FA, no. 05723.

⁷⁶ W. Tegethoff, '100 Jahre Elektrizitätswirtschaftliche Energiepolitik in Berlin', *Elektrizitätswirtschaft*, 83 (1984), 418.

from East Germany to West Berlin.⁷⁷ It was just before the fall of the Berlin Wall in November 1989, therefore, that the growing interest of both sides in restoring electricity connections came to contractual fruition. Divergent notions of energy vulnerability, framed by geopolitical contestation, ensured that the potential benefits of cross-system electricity provision were never achieved during the Cold War era.

Conclusion

One overarching finding emerges from this study of electricity provision in a divided, Cold War Berlin: separation of the energy networks was never complete. Despite the rhetoric of system divergence and the reality of truncated power grids, interrupted fuel supplies and divided electricity utilities, some interdependencies of these socio-technical networks proved persistent well into the 1950s. Emergent pressures prompted both sides, reluctantly, to explore ways of reconnecting the power networks from the 1970s onwards. West Berlin's celebrated status as an 'electricity island' was a remarkable achievement but masked continued complete dependence on fuel sources imported through the GDR, whether coal or oil. Storing sufficient fuel, building enough power stations and operating an insular grid within the confines of a half-city posed huge challenges to the reliable supply of electricity. It could only be abated with technological innovations but never overcome. Rising electricity consumption and growing popular resistance to planned power plants and the environmental damage they caused put West Berlin on a collision course only pre-empted by the fall of the Wall. East Berlin's structural and geographical advantages of greater initial generating capacity and access to the national grid soon dissipated in the face of chronic underfunding of energy infrastructure under the GDR's state-socialist planning regime. This led to the anomaly of a city supplying power to the national grid throughout the 1950s, a phenomenon rendered even more bizarre by the electricity utility, Bewag-East, remaining a share company in a state-socialist economy. To modernize its energy infrastructures, East Berlin increasingly needed the hard currency and technologies that only the West could provide.

Since political division manifested itself in Berlin's electricity systems in intricate ways, the resilience strategies and counterstrategies of West and East Berlin had to be varied and adaptable. The policy of energy security through network separation was publicly proclaimed by both sides throughout the Cold War era but proved, in practice, difficult to enact and sustain. Independence of their energy systems was compromised by a combination of material, political, economic and environmental factors that exemplify the socio-material agency of electricity networks and the interdependencies they generate. Physical barriers to transporting fuel to West Berlin or technological controls over electricity passing through the GDR became entangled with geopolitical concerns over territorial security, financial interests in the cross-system trade in electricity and environmental protests against air pollution.

This material politics of electricity in Cold War Berlin was never purely urban in scope. Given the geopolitical framing of life in Berlin after World War II, this is hardly surprising, but the spatially connective nature of electricity infrastructures made any

⁷⁷Press statement of the West Berlin Senate of 7 Mar. 1988, DTM 1.2.130 FA, no. 05735; Betriebsrat der Berliner Kraft- und Licht(Bewag)-Aktiengesellschaft (ed.), *Im Licht der Zeit. 90 Jahre Betriebsvertretung bei der Bewag* (Berlin, 1998), 143.

attempt to restrict attention to the confines of the city particularly delusory. The dependence on regional and national grids and imported fuel, the interventions of the Allied and Soviet military authorities and negotiations with national and international partners over electricity trade or nuclear technology were continuous reminders of factors beyond-the-urban. Yet, electricity was not simply a mirror of Cold War geopolitics: it was a medium through which regime contestation and co-operation were enacted on multiple scales.

It is beyond the scope of this article to explore the legacies of political division for Berlin's electricity provision after reunification in 1990. The reconnection of the physical networks, the amalgamation of the electricity utilities, the redundancies from system duplication and the modernization of the networks in the East of the city all posed major challenges in the 1990s. Today, there remain some deep-rooted legacies of the Cold War era, notably the continued dependence of Berlin's own power generation on fossil fuels that is hindering efforts to decarbonize the city and the insularity of the city's energy policy that still hampers co-operation with the surrounding state of Brandenburg.

More significant for this article are the lessons that can be drawn from Berlin's experience of urban energy (in)security for contested arenas of electricity or gas provision today. First, complete energy self-dependence is delusory for almost any territorial entity and particularly for a city, as the West Berlin experience testifies. For cities aspiring to enact their own energy transitions to a low or zero carbon economy, the lesson is to heed the diverse dependencies – whether material, institutional, political or economic – reaching beyond the city that are bound to impinge on the ability to self-govern energy provision and use. Second, the counterstrategy of building energy interdependencies between political entities to minimize the risk of future conflict can also prove illusory if due consideration of the motives of each side is not taken. Mutual dependencies are not averse to being disrupted and even reversed, revealing the need for historians to trace such shifts across time. Third, energy security is not predetermined by the material availability of infrastructures or fuels nor shaped solely by the power of discourse. They are product of socio-material entanglements that are multifarious and dynamic. Urban energy history can, the Berlin case shows, provide important pointers for navigating the material politics of energy in an uncertain and insecure world.

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