

Waiting, Acceleration, Stabilization: Polychronic Temporalities as Drivers of a Large-Scale Chinese Green Technology Project in Thuringia, Eastern Germany

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Introduction

The successful implementation of the European Union's green transition relies heavily on large-scale green technology projects and associated infrastructure. These materialize as, for example, offshore and onshore wind farms, solar photovoltaic and solar thermal technologies, green hydrogen and hydropower plants, as well as large-scale gigafactories for the manufacturing and recycling of electric vehicle (EV) battery cells. The latter, in recent years, have expanded rapidly across Europe, with research, technologies and significant portions of the global supply chain dominated by East Asian, particularly Chinese, corporations (Brown, 2022). Although the constraints of the global COVID-19 pandemic caused an abrupt decline in China's outbound investment to Europe in 2020, Chinese investments in the European EV industry have since recovered swiftly and now form the cornerstone of China's economic engagement in Europe (Kratz et al, 2023).

The proliferation of large-scale green technology and infrastructure projects across Europe, as exemplified by Chinese investments in Europe's EV sector, reflects what scholars in urban studies frame as global 'infrastructure turn', encompassing both its material and social implications (Graham and McFarlane, 2015; Dodson, 2017; Addie et al, 2020; Shatkin, 2022). While

their conceptual and methodological approaches dwell on various disciplinary roots, they mobilize infrastructure as a productive lens for the study of urban dynamics and its (trans)local effects. Approaches range from political-economic inquiries into governments' attempts of reconfiguring global flows of people, goods and capital across territories and scales (Easterling, 2014; Wiig and Silver, 2019; Schindler and Kanai, 2021; Schindler et al, 2022) to more place-sensitive explorations on questions of how infrastructures enable and constrain everyday urban practices and how social relations (re)produce urban infrastructural systems (Simone, 2004; Graham and McFarlane, 2015; Lawhon et al, 2018). Both strands have recently developed a growing interest in studying China's global infrastructure expansion, particularly focusing on its Belt and Road Initiative (BRI; Wiig and Silver, 2019; Apostolopoulou, 2021; Oakes, 2021; Zheng et al, 2021; Shin et al, 2022; Apostolopoulou et al, 2023). By conceptualizing associated large-scale projects and infrastructure as place-specific outcomes or intermediaries of globally interconnected flows, interests and politics, scholars offer critical insights into how the material and social geographies of the BRI are interconnected, disrupted, fragmented and/or bypassed worldwide (Graham, 2010; Young and Keil, 2010; Sawyer et al, 2021).

However, contemporary infrastructure scholarship on the BRI focuses predominantly on the role of space and spatiality, often neglecting infrastructures' inherent temporal aspects. Aside from a few contributions in critical urban and infrastructure studies (Besedovsky et al, 2019; Elsner et al, 2019; Walker, 2021; Addie, 2024; Addie et al, 2024; Biglieri and Keil, 2024; DiCarlo, 2024) urban research exhibits a persistent tendency to overlook the significance of time and temporalities in envisioning, planning, transforming or governing BRI-related projects and infrastructure. As Massey (1992) emphasizes, spatiality and temporality are intricately intertwined, forming an integral part of how the urban materializes. Spatial developments are deeply embedded in temporal processes of planning, construction and maintenance while also being shaped by unexpected events and interruptions. They are informed by individual and collective experiences from the past to improve how we live in the future, and at the same time they constitute new path-dependent futures. Following this, the deployment of large-scale projects and infrastructure can be understood as a 'constant state of becoming' that is composed of overlapping time frames, cycles and rhythms, such as those related to political decision-making, material flows or financialization.

This chapter develops a temporal-relational approach to examine the heterogeneous imaginations, motifs and interests behind the deployment of a large-scale Chinese green technology project in Eastern Germany. The empirical focus lies on the strategic coupling, planning and implementation processes related to a new gigafactory for the manufacturing of EV battery cells and associated research, energy and logistics infrastructure, located

on the outskirts of the small town of Arnstadt-Ichtershausen, Thuringia. Promoted as a green flagship initiative, the investment is framed by local policy makers as a long-awaited catalyst for economic development and regional competitiveness. At the same time, the project integrates the region into global networks of China's EV supply chain, transforming it into a new (geo)political arena where global-local interdependencies are continually rearticulated, entrenched and negotiated across multiple scales and time frames.

By understanding time as socially constructed and experienced diversely (Elias, 1992; Nowotny, 1992), while also acknowledging its changing conceptions across political and economic systems (Barak, 2013), this chapter views time not merely as a pre-existing backdrop to the project's deployment, but as actively shaping *and* shaped by its implementation processes. This forms the conceptual ground for a qualitative analysis building on 14 expert interviews conducted between March 2023 and June 2024. The interviewees were planning, policy and administration professionals, spanning from local municipalities and districts to state authorities and ministries to external planning agencies and Chinese corporations. The interviews were supplemented by ethnographic explorations and participatory observations (both analogue and digital) during a range of planning-related information events, town council meetings and site visits, and by analysis of textual sources such as urban development plans, architectural layouts, expert reports, approval documents, newspaper articles, local official gazettes and social media posts.

The chapter offers three conceptual lenses to convey the temporal dynamics at work: *waiting*, *acceleration* and *stabilization*. These temporalities relate to the place-specific policy and planning practices, documents and histories as well as the political and economic elites' ongoing imaginaries and speculative manoeuvres in accessing new markets. They are not limited solely to the project duration itself, but also extend far beyond it, illustrating how the region's sociopolitical development significantly influenced the deployment of the Chinese gigafactory project. I argue that the interplay of the temporal dynamics – which I refer to as 'polychronism' – creates the foundational condition for successful project implementation. Concurrently, it is precisely this polychronic interplay that fosters various forms of speculative development while reinforcing relations between dominance and dependence within the region and beyond. The findings indicate that the Thuringian federal state government has mainly shaped the project's implementation by mobilizing the diverse temporalities to govern recurring modes of uncertainty over various periods of time while also strengthening its position in shaping the future of the region. Parallel, unequal power dynamics, particularly exacerbating the marginalization of local actors in decision-making processes, have gradually been solidified over time. The

chapter thus provides a temporal-relational analysis framework that integrates the diverse temporalities involved in the project's deployment, alongside a grounded examination of (trans)local histories and power structures.

Time, temporalities and infrastructure

Enhancing the focus on time-infrastructure relations within critical urban infrastructure scholarship necessitates an examination of what [Nowotny \(1992\)](#) defines as 'social time'. This entails a transition from the predominance of 'natural time', including clock time or astronomical time, towards acknowledging time as socially constructed and experienced diversely ([Giddens, 1987](#); [Elias, 1992](#); [Nowotny, 1994](#)). In other words, time is embedded in social, political and economic systems that define a multitude of differing conceptions of time ([Barak, 2013](#)). This means that time cannot be perceived as a mere backdrop to daily life; rather, it actively shapes everyday experiences *and* is itself shaped by human practices on the ground.

The multifaceted nature of time is underscored by the notion of 'pluritemporalism' ([Nowotny, 1992](#), p 424), which encompasses the simultaneity of natural and social time, as well as of different social temporalities and various geographies of time ([Barak, 2013](#); [Ogle, 2013](#)). Following this, the plural form of temporalities particularly emphasizes the diversity of temporal experiences as well as the variety of constructions in and through which these experiences are embedded. [Besedovsky et al \(2019, p 581\)](#) even conceptualize temporalities *as* infrastructure to develop an analytic lens 'to elucidate the ways in which political, social, and economic conditions shape and exert authority over the everyday urban'. Thus, temporalities not only exhibit diversity but also possess a political dimension, influencing and perpetuating social inequalities. Understanding the ordering effects of temporalities requires considering both the power structures that shape the production of temporalities and the power effects that result through their ordering at different urban scales and in varying modalities. For instance, scholars in postcolonial studies illuminate the global dominance of Western time ([Fabian, 2002](#); [Barak, 2013](#)) and the imposition of temporal norms by nation states, impacting citizens' daily lives through the varying rhythms of political time, juridical time or bureaucratic time across different scales ([Auyero, 2012](#); [Raco, et al, 2018](#); [Baumann, 2019](#)).

In line with recent initiatives ([Besedovsky et al, 2019](#); [Addie et al, 2024](#)), I argue that examining urban infrastructure developments, such as those within the context of BRI, through the lens of temporalities facilitates the examination of complex time-infrastructure relations. This approach, in turn, unveils the (trans)local politics and practices that shape these developments. Following this, the engagement with the temporal, particularly in the context

of large-scale Chinese green technology projects, bears the potential to not only identify the key drivers and manifold interests underpinning these projects, but also uncover the inherent rhythms of the projects' deployment and their structuring effects on – for example, Sino-German cooperation and broader implementation practices on-site. It highlights the complex political, social and ecological challenges underlying green transition efforts in response to the urgency of the climate crisis (Bond, 2019; Elsner et al, 2019; Walker, 2021). Moreover, in terms of infrastructural aspirations, a temporally attuned approach also unpacks the mediatory role between societal pasts, presents and futures (Edwards, 2003) that is inherent to the deployment of large-scale projects and infrastructure, including the contradictory implications of 'infrastructure-based futuring' (Coutard, 2024; see also Enright, 2022). Moreover, delving into the temporal aspects of the projects' investments would also offer a more profound understanding of the growing disparity between short-term profit generation and long-term impacts on socio-ecological environments (Grafe and Hilbrandt, 2019; Silver, 2021; DiCarlo, 2024). Before examining the diverse structuring effects of identified temporalities, I provide a brief overview of my case study in the next section, including its development trajectory, key stakeholders and sociopolitical context.

The case of Arnstadt-Ichtershausen in Thuringia, Eastern Germany

On 18 October 2019, the groundbreaking ceremony took place for the first Chinese gigafactory for manufacturing EV battery cells in Europe (the site is shown in Figure 5.1). It was held in the western part of the 439 ha Erfurter-Kreuz industrial park, located on the northern outskirts of Arnstadt, a town of 28,000 inhabitants, 40 km southwest of Thuringia's state capital, Erfurt. However, the actual construction site was situated within the administrative boundaries of the neighbouring municipality of Ichtershausen, which was therefore the responsible local authority. It was part of the 8,000-strong municipal association of Amt Wachsenburg. With an initial cost of USD 1.8 billion, which later rose to over EUR 2 billion, the new gigafactory was built in just three years and, to date, constitutes the largest single investment in the history of the federal state of Thuringia. The facility was initially announced as a three-stage expansion project with a total manufacturing capacity of 60 gigawatt hours (GWh) per year. However, as reported in 2023, the facility was able to reach up to 14 GWh, which is equivalent to an annual output of 20 million cells, or the powering of around 350,000 mid-range EVs with a 40 kilowatt hour (kWh) battery (Waldensee, 2023). At the end of 2023, following an inaugural test phase, the site operated at a capacity of 8 GWh.

Figure 5.1: Construction noticeboard for Erfurter-Kreuz industrial site in Arnstadt-Ichtershausen. In the background is the construction site of the new gigafactory for manufacturing electric vehicle battery cells by the Chinese corporation CATL.



Source: Photograph by Marcus Glahn, 2024. Reproduced with permission.

The investor behind the gigafactory is Contemporary Amperex Technology Thuringia GmbH. Founded in 2018, it is a wholly owned subsidiary of the Chinese EV battery cell world market leader CATL (Contemporary Amperex Technology Co Limited), headquartered in Ningde, Fujian province. Established in 2011, CATL is relatively young compared to major competitors such as South Korea's LG Chem and Samsung SDI. Its rapid rise can be attributed largely to various political and financial measures implemented by the Chinese government. Between 2009 and 2018, the Chinese government invested more than EUR 50 billion to support its domestic EV industry and plans to allocate an additional EUR 40 billion by 2028 to solidify this trajectory both domestically and internationally (Huang and Rathi, 2018). In addition to government subsidies for EVs, CATL's rapid ascent was aided by the temporary state-mandated exclusion of South Korean competitors from the Chinese market in 2016 and 2017. This facilitated the signing of numerous contracts, initially with Chinese car manufacturers such as FAW and Dongfeng, followed by multi-billion-euro agreements with Hyundai, Toyota, PSA Peugeot Citroën, Mercedes-Benz Group, Volkswagen and BMW. The latter three were a decisive factor in CATL's choice of location (AR13, 2024), as the new gigafactory site was in relative proximity to BMW's operational EV manufacturing sites in

Dingolfingen and Regensburg (both in Bavaria) and Volkswagen's plant in Salzgitter (Lower Saxony).

The implementation of the CATL gigafactory included additional office buildings, research facilities and infrastructural developments across the wider region. In 2019, CATL purchased the vacant SolarWorld factory and office complex to establish its European headquarters and a bonded warehouse for the tax-free storage of commodities and battery cell modules (AR13, 2024). Furthermore, CATL co-partnered in the newly founded Battery Innovation and Technology Center together with the Fraunhofer Institute for Ceramic Technologies and Systems. The research centre was subsidized by the Thuringian state government with EUR 13.5 million (AR03, 2023). In 2021, plans were announced for the construction of a new Rail Logistics Center in collaboration with DB (Deutsche Bahn) Cargo to manage complex logistics demands. Initially, the repurposing of Arnstadt's former freight station was proposed for this purpose; however, the project was cancelled in January 2023 (AR09, 2023). At the time of writing, CATL utilizes the freight station of the former Opel car manufacturing plant in nearby Eisenach to handle essential imports and exports of raw materials, components and battery cells. Additionally, CATL rents warehouses in Erfurt-Vieselbach and Magdeburg-Sülzetal in Saxony-Anhalt.

A key institution in CATL's developments in Arnstadt-Ichtershausen and the wider region throughout the entire duration of the project's deployment is the State Development Corporation of Thuringia. As an independent, privately operated development agency, it acts directly on behalf of the Thuringian Ministry of Economic Affairs, Science and Digital Society. The corporation actively pursued CATL's investment through multiple trips to Ningde and by organizing a series of high-level meetings between the Thuringian minister of economic affairs and CATL's executive board (AR02, 2023). After a year of confidential negotiations, CATL's investment was officially announced in July 2018 during the fifth German-Chinese intergovernmental consultations (TMWWDG, 2023). The strong negotiating position of the State Development Corporation of Thuringia was closely tied to its planning authority and ownership of the relevant land (AR06, 2023). As a result, the corporation was able to swiftly provide CATL with a fully prepared 34 ha site in the Erfurter-Kreuz industrial expansion area (the construction is shown in Figure 5.2), including ready-made access to transport infrastructure and utilities such as water, wastewater treatment facilities, gas and electricity (AR03, 2023).

However, attracting CATL as a significant investor to Arnstadt-Ichtershausen was part of broader and long-term initiatives around the Erfurter-Kreuz industrial park that have been quite paradigmatic for the general socioeconomic development of Eastern Germany. Following the extensive restructuring of landownership and institutional reforms in the wake

Figure 5.2: Drone image showing the construction site of the new gigafactory for manufacturing electric vehicle battery cells by the Chinese corporation CATL in the Erfurter-Kreuz industrial park. In the background are other industries and the town of Arnstadt, Thuringia.



Source: Photography by Marcus Glahn, 2024. Reproduced with permission.

of Germany's political reunification in 1989/90, the new East German federal states were promised investments to modernize and enhance the environmental standards of the German Democratic Republic's former key industries. Instead, the anticipated economic effects failed to materialize and the transfer of a 'ready-made state' (Rose and Haerpfer, 1997) from West to East Germany led to radical deindustrialization, resulting in soaring unemployment rates and significant outmigration, particularly among younger populations. Low birth rates in the following years exacerbated population decline, plunging many regions into a downward spiral of socioeconomic deterioration, urban shrinkage and infrastructural decay (Lang, 2012).

Against this backdrop, the Thuringian state government and the newly founded Development Corporation Thuringia sought to attract new investments, focusing particularly on large-scale industries with high structural and supraregional significance. These consisted predominantly of new manufacturing facilities operating as extended workbenches for mainly West German corporations, resulting in cheap labour and outward-oriented value flows. In parallel, the developments contributed to the enduring presence of large-scale built infrastructures that persist well beyond the erratic, short-term cycles of economic upheaval and profit-making, leaving

the region constantly at risk of being burdened with under-utilized and vacant infrastructure (Carse and Kneas, 2019). Consequently, from the mid-2000s onwards, the region has become increasingly reliant on the ongoing influx of new investments to continuously maintain its local economy and infrastructure (AR06, 2023). CATL's investment in the EV sector must be understood both as a continuation of these dependencies and as an attempt to reorient and modernize industrial production towards green technologies.

Entangled temporalities driving the deployment of CATL's gigafactory

Three temporal dynamics were at work in the deployment of CATL's EV battery cell gigafactory and associated research and logistics infrastructure in Eastern Germany: *waiting*, *acceleration* and *stabilization*. These temporalities were linked to the place-specific policy and planning practices, documents and histories, the political and economic elites' imaginaries on particular future development paths and the speculative manoeuvres of Chinese investors and German car manufacturers targeting the access to emerging EV markets. Although the three temporal dynamics varied across scale and temporal spans, it was their simultaneous coexistence and interaction, which I refer to as a polychronic interplay of temporalities, that shaped the foundational conditions necessary for the project's successful implementation. At the same time, it was this 'polychronism' that has perpetuated various modes of dominance and dependence within the region and beyond.

Waiting

The first temporality spanned a period of more than two decades and refers to decisions made in the late 1990s to develop long-term strategies aimed at countering deindustrialization, outmigration and shrinkage during the post-reunification period in Eastern Germany. At the time, the State Development Corporation of Thuringia purchased large plots of land and prepared them with infrastructure for the future deployment of particularly large-scale industrial projects. To achieve this, exceptionally large plots of land were retained in local development plans and held back repeatedly over an extended period. This resulted in a form of strategic waiting, characterized by a deliberate period of active assessment and an international search for powerful 'flagship' investors, intended to bring innovative capacity and strong development prospects 'at the right time'.

The urban development plan for the Erfurter-Kreuz industrial park, along with statements from local planning authorities, indicate that the establishment of a supraregional flagship investor at the current site of CATL's gigafactory had been envisaged since the early 2000s. To this end,

exceptionally large plots of land were held back for years (AR06, 2023). The possibility of this occurring can be traced back to decisions made during the post-reunification era of the 1990s. As public funding dwindled and municipal responsibilities were reduced, the municipalities of Arnstadt and Ichtershausen began selling industrial sites to the State Development Corporation of Thuringia (AR06, 2023). In doing so, they handed over responsibility for the development of these areas, thereby weakening their negotiating power over future investment conditions. However, this arrangement provided a significant advantage for the location in Thuringia over potential sites in other German federal states, where equivalent state-level development corporations typically did not own land and acted solely as intermediaries between investors, municipalities and landowners. As a result, the State Development Corporation of Thuringia was able to deliberately reserve a substantial 70 ha site in the western expansion zone of the industrial park for large-scale new projects. Several inquiries were received from smaller investors, but these were rejected and the decision was made not to subdivide the zone (AR06, 2023). Instead, over the years, the state has actively sought large investments capable of combining strong international appeal with cutting-edge technology (AR03, 2023).

The decision to withhold land to bring a flagship project of considerable scale to the region triggered compulsive development for both the state and local governments in the following decades. Particularly in light of the ongoing transition in the domestic automotive sector towards e-mobility, the Thuringian state felt compelled to realize plans aimed at creating a decisive pull factor for other firms focused on green technologies. In this context, attempts were made to attract transnational corporations, including use of artificial intelligence to analyse stock market prices and identify firms in the global market that might be considering expansion (AR03, 2023). This was also the case with CATL, which had no plans to invest in Germany. Instead, they had already decided in favour of a new 100 GWh manufacturing site in Hungary before the State Development Corporation of Thuringia intervened and persuaded CATL to invest.

To attract CATL's investment to be localized in Arnstadt-Ichtershausen, and thus redirect the firm from its initial plans, the state made significant concessions. Central to this was the commitment to assist CATL in collaborating with leading German corporations to enhance automation in manufacturing, thereby establishing a more cost-effective workflow with reduced labour requirements that would later be transferred to other CATL manufacturing sites worldwide. In agreement with the electricity grid operators, electricity costs for CATL were negotiated down from EUR 0.18 per kWh – the already discounted price for energy-intensive industries in Germany – to EUR 0.04 per kWh (AR03, 2023). Moreover, a close partnership with all relevant planning and policy institutions was

established, which, through regular taskforce meetings, discussed the key developments and thus immediately linked CATL and its partnering with a growing network of local policy, administration and planning professionals.

The strategic and long-term waiting, coupled with the search for suitable investors, characterized the first temporal dynamic of the project's deployment. While the decision to transfer landownership in the late 1990s benefited the state government by preparing contiguous sites for large-scale projects, it significantly curtailed the agency and political participation of local municipalities. Furthermore, the state's efforts to attract CATL's gigafactory as a prominent flagship project also resulted in a departure from traditional role allocations. State-level officials acknowledged in interviews that, driven by self-interest and the desire for success, they delved much deeper into the negotiation and planning processes than they typically would have (AR03, 2023; AR05, 2023). Thus, the strategy of withholding, coupled with meticulous searching, diminished the scope of action for local planning, administration and policy professionals – a situation that had solidified until 2017 to 2018, the years of CATL's project announcement.

Acceleration

A second temporal dynamic highlights a relatively short period between 2018 and 2023 marked by an accelerated array of speculative practices and decision-making. It was stimulated by the political advocacy of the Thuringian state government to tackle the transition challenges of the Eastern German automotive industry. This was fuelled by CATL's recurring public announcements of large but unverified manufacturing capacities during initial stages of the project's implementation, combined with the unconditioned will of both the investor and the federal state government to be the first to implement an EV battery cell gigafactory in Europe, and beat competition from other global battery cell manufacturers and regions (AR03, 2023). Following this, a 'pioneering spirit' emerged that has kept a broad spectrum of collaborators, local authorities and the public in a perpetual state of excitement and uncertainty, while also amplifying the individual and collective risk-taking among the involved parties.

Despite CATL promptly acquiring a 34 ha site and publicly affirming a three-phase 60 GWh expansion plan, as of 2022, the company was yet to provide a precise commitment regarding the manufacturing volumes to be expected on-site (AR09, 2023; AR13, 2024). Instead, during the planning and approval procedures for the Rail Logistics Center, CATL revealed that this information could not be provided and no precise commitment could be made. CATL's speed-oriented urban redevelopment with a lack in guaranteeing development goals, which has been described elsewhere as characteristic of Chinese speed urbanism (Chien and Woodworth, 2018),

collided with the German planning context and led to the Rail Logistics Center's cancellation in early 2023. The project turned out to be a speculative manoeuvre for DB Cargo, as the firm had already invested a single-digit million-euro prepayment sum into the project's development (AR09, 2023).

In 2019, CATL's plans, promoted widely by the state government, garnered the attention of numerous other speculative investments and initiatives, and this continued in subsequent years. Right after the project was announced, the Thuringian tourism industry started to plan for an increasing number of Chinese tourists to come. This led to a fast-tracked initiative to launch information brochures and guidance systems in Chinese characters, such as at the Leuchtenburg Kahla, one of the region's most important sights, located close to Arnstadt (AR03, 2023). Local officials confirmed that they even sent employees of the town's tourism office to training programmes focusing on the peculiarities of an as-yet untapped Chinese tourism market (AR04, 2023). Simultaneously, the local real estate market was affected. International investors, including some Chinese investors, acquired numerous apartments in the town of Arnstadt as well as entire multifamily houses and vacant hotels in several villages within the broader region (AR04, 2023). The local real estate market underwent a huge transformation in only two years, which quickly drove up property prices. Between 2021 and 2023, the listing prices for apartments in Arnstadt increased by 47 per cent, and then fell by 38 per cent at the beginning of 2024 (Immowelt, 2025). Shortly before, CATL had announced the cancellation of the initially planned three-stage 60 GWh expansion of the gigafactory, combined with the temporary furlough of a significant portion of its workforce; at the same time, it started construction of a new 100 GWh manufacturing site in Debrecen, Hungary (MDR, 2023).

Nevertheless, CATL's speculative and publicly reiterated plans for Arnstadt-Ichtershausen radiated a pivotal signal to business partners and granted the firm increased liability. Shortly after the groundbreaking ceremony for the gigafactory in 2019, CATL signed new contracts with German car manufacturers, notably with BMW. The agreement involved an increase in the order volume of battery cells – initially set at EUR 4 billion – to EUR 7.3 billion, along with an extension of the collaboration until 2031 (Schaal, 2019). This underscores the role of car manufacturers, who not only influenced CATL's decision to establish its presence in Germany but have also been pursuing a speed-oriented implementation of the gigafactory to position themselves as forerunners in the emerging European EV market (AR013, 2024).

The temporal lens of acceleration highlights that speed becomes a crucial means of attracting multilateral investment, enhancing transnational connectivity (Schindler and Kanai, 2021) and fostering economic centrality. Simultaneously, new and perceived economic opportunities arrive with 'multiple and risky attempts to forge new global-local relations through these

networks without any assurance of success' (Wiig and Silver, 2019, p 921). Following this, the rapid influx of global capital triggers new speculative and risk-taking actions by other multilevel state and non-state actors, leading to various modes of uncertainty and forms of speculative urbanism (Leitner and Sheppard, 2023), such as a new under-utilized gargantuan gigafactory complex, a cancelled logistics terminal at the vacant local freight station and overvalued property prices and development trends in the broader region.

Stabilization

The third temporal dynamic refers to recurring intervals and has been a steady motif in Eastern Germany since the post-socialist era of the 1990s. It is characterized by the imperative stabilization of future development paths in periods of structural upheavals and related economic uncertainties. This relates to the political and economic elites' fixation on particularly large-scale transnational investments in outstanding technology and industry projects paired with grand narratives about future prosperity. Thus, a future that is not only 'flourishing' but also 'predictable' is presented, which reuses familiar development paths and at the same time neglects alternative imaginaries from below.

Grand narratives of the future that anticipate large-scale and, in particular, 'innovative' industry and technology projects with international impact and scope have been a recurring motif in the history of Eastern Germany. This applies, for instance, to the attempt of various regions in Saxony-Anhalt, Saxony and Thuringia to shape futurity around photovoltaic solar cell manufacturing in the early 2000s, which were politically designated as future 'solar valleys', only to be dismantled a mere ten years later following acquisition by East Asian firms (Dunford et al, 2012). Yet, at the core of these initiatives and their narratives lies the motif of seeking supraregional recognition, visibility and connectivity (AR02, 2023; AR06, 2023).

Another iterative moment of economic stabilization through politically motivated gestures towards future-oriented technologies was constituted by the CATL investment. This became apparent at the groundbreaking ceremony in 2019, when Wolfgang Tiefensee, Thuringia's minister of economic affairs, looked ahead and spoke of a 'gigantic investment that will push the Free State of Thuringia towards [being] the future world-leading and value-creating location for EV battery technology in the heart of Europe' (TMIL, 2019). Fuelled by CATL's extensive involvement in Thuringia and a series of recently announced investment projects – such as Intel's new EUR 30 billion semiconductor facilities in Magdeburg, Saxony-Anhalt – narratives of the future were extended, proclaiming that 'Eastern Germany is finally in the fast lane'. Against this backdrop, a competitive dynamic has emerged among Eastern German states in showcasing innovative flagship

projects. CATL's case exemplifies intense rivalry, with each entity keeping its strategies closely guarded in pursuit of individual success (AR03, 2023).

In addition, greenwashing narratives of CATL's gigafactory were of great importance to political and economic elites. Contrary to CATL's interests, who were trying to pursue a fast-tracked and pragmatic manufacturing set-up, the state government, in tandem with car manufactures, wanted to create an image that would radiate far beyond the region and thus support the goal of purchasing a 'greenest' possible end product (AR03, 2023; AR01, 2023). Therefore, they pushed the supply of renewable energies, which resulted in the installation of Germany's largest rooftop solar park. It was the state government that ensured that this anticipated image of a 'green industry' remained valid. Contrary to the EV battery valley rhetoric, certain segments preferred not to be localized next to CATL's site. Instead, they have been redirected to other, more 'hidden and polluted industrial parks' (AR03, 2023), as has been evident in the investment in EV battery recycling by the Korean firms SungEel HiTec and Samsung C&T in Gera-Cretzschwitz, Thuringia.

The rhythmic interplay of structural upheaval and grand narratives around 'innovative' and 'green' flagship projects becomes a key temporality in anticipating new developments and thus creating centrality and stabilizing economic development in Eastern Germany. However, despite their recurring fixation on grand gestures around CATL's gigafactory, political and economic elites have been shifting away more and more from actual demands at the local level, thus gradually excluding local planning, administration and policy professionals. Instead, the latter are faced with a lack of transparency and participation while managing the manifold on-ground implications that arise from the project's development. This includes, for instance, environmental safety risks or increased truck traffic and the unexpected expansion of municipal roads at the expense of the local municipalities (AR01, 2023; AR05, 2023 AR10-11, 2023). Such 'eat or die' mentality comes with an increasing state paternalism, which further drives the contentious fronts between state-level and local authorities.

Conclusion

This chapter interrogates the role of time and temporalities in the deployment of a large-scale green technology project in Eastern Germany to unveil its heterogeneous imaginations, motifs and interests. With an empirical focus on Chinese outbound investment in a new EV battery cell gigafactory and associated research, energy and logistics infrastructure in the small town of Arnstadt-Ichtershausen in Thuringia, I offer three conceptual lenses to convey the temporal dynamics at work: *waiting*, *acceleration* and *stabilization*. I argue that the coexistence and interplay of

the identified temporalities structured the conditions for anticipating and successfully implementing the large-scale project, thus enhancing the region's transnational connectivity and economic centrality. Concurrently, it was this 'polychronism' of the identified temporal registers that reinforced multi-scalar relations of dominance and dependence. This mainly refers to the hardening of local institutions' exclusion from decision-making processes and power networks.

The investigation through the temporal lens prompts me to conclude that my empirical material deviates from existing propositions in at least two significant aspects. First, contrary to the widespread perception of China approaching global activities as an orchestrated strategy of 'economic statecraft' (Easterling, 2014) with distinct Chinese characteristics, it was primarily the host-state actors that structurally prepared, actively shaped and persuasively attracted the project's implementation. Fuelled by competition with other states, the Thuringian state government and its development corporation were the driving force behind the long-term waiting and search for the right investors, the short-term acceleration of multilateral investments and the rhythmic stabilization through recurring narratives on the region's future based on large-scale industrial projects with innovative character. By mobilizing the entangled temporalities, they steered an infrastructure-based future for the region (Coutard, 2024), at the same time increasing its influence at the local level. All three temporal dynamics indicate that speculation was central in this context and became an instrument for the state to navigate economic uncertainties (Zeiderman et al, 2015). Whether it was the speculative long-term waiting for the right investor at the right time, the stimulation of a range of speculative investments shortly after the official announcement of the project or the crafting of speculative narratives about grand futures of the region, speculation was not merely a by-product but was strategically utilized by the Thuringian state to manage uncertainty across various time scales. In doing so, state-level authorities acted contrary to national and European development agendas, advancing an in-depth subnational cooperation with Chinese corporations, or made significant concessions to the Chinese investor that were negotiated opaquely and enshrined in bilateral cooperation agreements before the project's public announcement.

Second, applying the lens of temporalities highlights that the prominent role of federal state-level actors in the project's deployment was rooted in the historical developments and sociopolitical context of the region. Emerging from the post-reunification restructuring of landownership and public institutions, the State Development Corporation of Thuringia, acting directly on behalf of the Thuringian Ministry of Economic Affairs, Science and Digital Society, strategically leveraged its position to shape the region's future trajectory, at the same time gradually marginalizing

local municipal authorities and related planning, administration and policy professionals in decision-making processes and power networks (Kühn et al, 2017). Owning large plots of industrial land, they developed these areas to be fully equipped with transport and utility infrastructures, aiming to attract transnational investments, particularly focusing on the localization of large-scale industries of supraregional significance. While these efforts enhanced the region's transnational connectivity, they also entrenched a long-term development dependency on new transnational investments, which, since the mid-2000s, have repeatedly been required to counteract local economic crises and prevent job cuts as well as the under-utilization of on-site infrastructure.

Future research on the (trans)local urban effects of China's global infrastructure expansion, in relation to the BRI and beyond, should reconsider the role of host-state actors and the historically entrenched inequalities of locally situated sociopolitical contexts. This would prevent the biased perception of China's global activities being dominated by state-led initiatives of the Chinese government. Instead, as the analysis highlights, localization processes play out as a collaborative power project in which host-state actors become crucial driving forces (Lee, 2022). As I have sought to demonstrate in this contribution, focusing on time-infrastructure entanglements can deliberately expand our conventional understanding of infrastructures by effectively illuminating how global development dynamics and place-specific histories and power relations are mutually constitutive.

Appendix

All interviews were conducted by the author between March 2023 and June 2024. The interviews were semi-structured and conducted in person. They lasted an average of one hour and 30 minutes. Quotes from the interviews are presented in an anonymous and non-attributable form. [Table A.1](#) provides an overview of the interviews.

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Table A.1: Interviewees

Code	Number of interviewees	Date	Interviewee position
AR01	1	2 March 2023	Local policy, representative
AR02	1	3 April 2023	Private planning company, division manager
AR03	1	4 April 2023	Private planning company, division manager
AR04	1	2 May 2023	Local policy, representative
AR05	1	3 May 2023	District administration, division manager
AR06	1	3 May 2023	District administration, division manager
AR07	1	14 June 2023	Federal state administration, staff
AR08	1	14 July 2023	Private transport company, logistics planner
AR09	1	14 July 2023	Private transport company, logistics planner
AR10–11	2	20 July 2023	District administration, division manager and staff
AR12	1	17 April 2024	Private construction company, lead engineer
AR13	1	19 April 2024	Private battery company, logistics planner
AR14	1	17 June 2024	Private planning company, division manager
AR15	1	27 June 2024	Private construction company, division manager

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