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# **Implementing Europe's Green Transition Beyond the City**

*Drivers, Conflicts, and Impacts of Chinese Large-Scale Clean  
Technology Projects in Peripheral East Germany*

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## Summary (English)

The cumulative dissertation engages with the relatively recent phenomenon of Chinese large-scale clean technology projects in Europe's peripheries. It seeks to understand how their on-the-ground implementation unfolds and the role played by local planning, administration, and policy professionals in these processes. The inquiry originates from the assumption that local professionals involved in project implementation face growing pressure, as they have to navigate a complex landscape of diverse international and national actors, institutions, and planning cultures, while also addressing tensions arising from conflicting economic, (geo)political, and ecological interests and constraints. At the same time, they are tasked with delivering streamlined planning procedures and managing competing public interest objectives, such as land-use conflict, environmental concerns, and demands for participatory governance.

Against this backdrop, the study centres around the following gaps. First, while existing research on China's global economic and infrastructural expansion into Europe has provided valuable multidisciplinary findings, China's recent pivot towards large-scale clean technology projects remains underexplored, as do insights into the actual on-the-ground implementation and effects of such green transition projects. Second, aligning with a broader peripheral turn in urban studies, there has recently emerged a renewed scholarly interest addressing the future of peripheral regions, so called 'left-behind' places, and small-town contexts. Although these studies have already addressed the planning and implementation of large-scale green transition projects—particularly concerning local contestation and public protest—in-depth studies investigating the actual cooperation practices among local professionals and their cooperation partners in the implementation of such projects, particularly from cross-sectoral perspectives and from the inside of their institutions, are notably scarce.

The dissertation anchors itself at the interface of urban and planning studies, drawing on various conceptual grounds, including critical urban theory, qualitative policy research, and infrastructure studies. At first, it frames Chinese large-scale clean technology projects in Europe's peripheries as multi-scalar endeavours, intricately intertwined with variegated and discontinuous urban geographies under *extended* urbanisation. This enables the study to move beyond 'methodological cityism', instead accounting for the variegated and extended forms of urbanisation in peripheries. To analyse on-the-ground implementation, the study incorporates additional concepts that emphasise dynamic power relations and diverse temporalities, which are regarded as active agents shaping the implementation of large-scale projects. By adapting Institutional Ethnography to the domains of urban and planning studies, the dissertation centres the situated practices and perspectives of local professionals as its methodological starting point for qualitative inquiry. Empirically, it examines the implementation of two electric vehicle battery cell gigafactories pursued by Chinese corporations in peripheral East Germany: one successfully completed project in the town of Arnstadt-Ichtershausen, Thuringia, and one failed initiative nearby the town of Bitterfeld-Wolfen, Saxony-Anhalt.

In addition to one conceptually oriented article, the findings of the dissertation are presented across three predominantly empirical research articles. They are synthesised into three distinct yet interlinked themes. First, contrary to numerous political-economic and geopolitical perspectives that portray China as pursuing a 'grand strategy' to achieve foreign economic and political objectives through 'economic statecraft', the dissertation uncovers how emerging conflicts in Sino-German cooperation gave rise to a series of improvised, fragmented, and

often failed on-the-ground practices. These outcomes cannot be attributed solely to the presumed ignorance of Chinese investors; instead, they were equally rooted in the practices and manoeuvres of local host-state professionals. Second, employing a temporal lens, the dissertation illustrates how federal state-level professionals emerged as key drivers behind the projects, not only during their implementation but also well beyond the actual project time. Through post-reunification restructuring processes and strategic state-led development measures, deeply embedded in East Germany's specific historical context, federal state-level professionals gradually created the critical conditions necessary for successful project implementation. At the same time, these measures contributed to the re-scaling of state power, gradually marginalising local level authorities. Third, the dissertation underscores how the implementation of Chinese large-scale clean technology projects reflects a continuation of the recurring 'boom-and-bust' dynamics that have characterised East Germany's economic trajectory for over two decades. This has compelled local professionals to pledge recurring visions surrounding innovative flagship projects, resulting in a 'perpetual present' that is marked by the lingering influence of past decision and unfulfilled promises for the future.

In sum, the dissertation contributes across disciplinary boundaries on empirical, methodological, and conceptual levels. On the one hand, it advances the growing body of literature on global China's expansion into Europe, particularly from a situated, on-the-ground urban and planning studies perspective. On the other side, it also engages with the renewed interest in the future of peripheral regions and so-called 'left-behind' places. Here, in particular, it critically examines how infrastructure developments may genuinely enable such places to 'catch up' or, conversely, how they are unevenly impacted by Europe's green transition strategies. Thus, the dissertation aligns with a broader 'peripheral turn' in urban studies, emphasising the epistemological, economic, socio-spatial, and ecological significance of peripheries in the production of the contemporary urban. At both methodological and conceptual levels, it offers a qualitative approach to studying cross-sectoral professional practices from within institutions and across places and scales, while providing a fresh perspective on how temporality actively shapes spatial manifestations.

## Kurzfassung (Deutsch)

Die kumulative Dissertation adressiert das relativ neue Phänomen chinesischer Großprojekte im Kontext der Europäischen Energie- und Mobilitätswende. Mit Fokus auf periphere Regionen in Ostdeutschland untersucht sie, wie die Planung und Implementierung dieser Projekte vor Ort erfolgen und welche Rolle lokale Fachleute aus Planung, Verwaltung und Politik in diesen Prozessen spielen. Die Untersuchung geht von der Annahme aus, dass lokale Fachleute in der Projektimplementierung unter wachsendem Druck stehen, da sie eine komplexe Landschaft aus vielfältigen internationalen und nationalen AkteurInnen, Institutionen und Planungskulturen navigieren müssen. Gleichzeitig müssen sie mit Spannungen umgehen, die sich aus divergierenden wirtschaftlichen, (geo-)politischen und ökologischen Interessen ergeben. Darüber hinaus sind sie gefordert, effiziente Planungsverfahren bereitzustellen und gleichzeitig konkurrierende öffentliche Interessen, wie beispielsweise Konflikte um Flächennutzung, Umweltbelange und Forderungen nach partizipativer Governance, zu steuern.

Während bestehende Forschungen zu Chinas globaler Expansion nach Europa bereits wertvolle multidisziplinäre Erkenntnisse geliefert haben, bleibt Chinas jüngster Fokus auf Großprojekte der Europäischen Energie- und Mobilitätswende, insbesondere im Bereich der 'Clean Technologies' (*sauberen Technologien*), weitgehend unerforscht. Dies betrifft vor allem die konkrete Umsetzung und die lokalen Auswirkungen solcher Transformationsprojekte. Zeitgleich ist in den Urban Studies jüngst ein wachsendes Interesse an der Zukunft peripherer Regionen, sogenannter 'left-behind places' (*Abgehängte Orte*), sowie an Klein- und Mittelstädten zu beobachten. Obwohl diese Studien bereits die Planung und Implementierung grüner Transformationsprojekte adressiert haben, insbesondere im Zusammenhang mit lokalen Protesten und gesellschaftlichen Aushandlungsprozessen, fehlt es an vertiefenden Untersuchungen, die die konkreten Kooperationspraktiken lokaler Fachleute in der Implementierung dieser Projekte analysieren.

Die Dissertation verortet sich an der Schnittstelle zwischen Stadt- und Planungsforschung und greift auf verschiedene konzeptionelle Ansätze aus der kritischen Stadtforschung, der qualitativen Politikforschung sowie der Infrastrukturforschung zurück. Zunächst rahmt sie Chinesische Großprojekte der Energie- und Mobilitätswende in Europas Peripherien als multi-skalare, räumlich-zeitliche Entwicklungen, die eng mit den heterogenen und diskontinuierlichen Urbanisierungsprozessen einer 'extended urbanisation' (*erweiterten Urbanisierung*) verwoben sind. Damit bewegt sie sich über einen sogenannten 'methodological cityism'—dem dominanten Fokus auf städtische Untersuchungsräume und -kategorien in den Urban Studies—hinaus und trägt so den vielschichtigen Formen der erweiterten Urbanisierung in Peripherien Rechnung. Um die konkrete Analyse der Projektimplementierung möglich zu machen, greift die Arbeit ergänzende Konzepte auf, die dynamische Machtverhältnisse und unterschiedliche Zeitlichkeiten als 'agents' (*gestaltende Kräfte*) der Projektumsetzung in den Fokus rücken. Durch die Anwendung einer Institutionellen Ethnographie rückt die Dissertation die lokal-situierte Praxis und Perspektive lokaler Fachleute ins Zentrum ihrer qualitativen Forschung. Empirisch fokussiert sie sich auf die Implementierung zweier Batteriezellenfabriken, die von chinesischen Unternehmen in Ostdeutschland realisiert wurden: ein erfolgreiches Projekt in der Stadt Arnstadt-Ichtershausen (Thüringen) sowie ein gescheitertes Vorhaben nahe der Stadt Bitterfeld-Wolfen (Sachsen-Anhalt).

Neben einem konzeptionellen Artikel werden die Ergebnisse der Dissertation über drei überwiegend empirische Forschungsartikel hinweg präsentiert. Diese werden in drei thematischen Schwerpunkten zusammengefasst. Erstens: Entgegen zahlreicher Perspektiven, die in Chinesischen Großprojekten ein strategisches und staatlich-orchestriertes Mittel zur Verwirklichung außenwirtschaftlicher und außenpolitischer Ziele Chinas sehen, zeigt die

Dissertation, wie die Vor-Ort Umsetzung geprägt ist von improvisierten, fragmentierten und oft scheiternden Ansätzen. Diese lassen sich nicht allein auf eine vermeintliche Unwissenheit chinesischer Investoren zurückführen, sondern sind ebenso in den Praktiken lokaler Fachleute verwurzelt. Zweitens: Durch die Anwendung einer zeitlichen Perspektive verdeutlicht die Dissertation, wie Fachleute auf Ebene der Bundesländer als zentrale Akteure hinter den Projekten auftreten—nicht nur während der Implementierungsphase, sondern auch weit über die Projektlaufzeit hinaus. Begründet in weitreichenden Restrukturierungsprozessen im Nachgang der politischen Wiedervereinigung 1989/90, gestalteten diese Fachleute, im Fall von Thüringen, über die Zeit hinweg die entscheidenden Bedingungen für eine erfolgreiche Umsetzung. Gleichzeitig trugen diese Maßnahmen zur Neuskalierung staatlicher Machtverhältnisse bei, wodurch lokale Behörden in ihren Handlungen zunehmend eingeschränkt wurden. Drittens: Die Dissertation zeigt, dass die Implementierung Chinesischer grüner Großprojekte eine Fortsetzung der wiederkehrenden 'boom-and-bust'-Dynamiken (*Aufschwung und Niedergang*) darstellt, die die wirtschaftliche Entwicklung Ostdeutschlands rund um Großindustrien seit mehr als drei Jahrzehnten prägen. Aufgrund dieser Pfadabhängigkeit sind lokale Fachleute immer wieder darauf angewiesen, neue Zukunftsversprechen mithilfe von Großprojekten zu machen. Schließlich resultiert dies in einer 'stagnierenden Gegenwart', die fortwährend von den Entscheidungen der Vergangenheit und den unerfüllten Versprechen der Zukunft heimgesucht wird.

Zusammenfassend leistet die Dissertation auf empirischer, methodologischer und konzeptioneller Ebene disziplinübergreifende Beiträge. Während sie die wachsende Literatur zu Chinas Expansion nach Europa insbesondere aus einer situativen und praxisorientierten Stadt- und Planungsperspektive erweitert, trägt sie zugleich zur aktuellen Debatte über die Zukunft peripherer Räume und 'left-behind' places bei. Insbesondere untersucht sie kritisch, inwiefern Großprojekte in diesen Räumen wirtschaftliche und infrastrukturelle Entwicklungen ermöglichen, oder ob sie im Kontext der grünen Transformation weiterhin ungleich betroffen bleiben. Damit begehrt die Dissertation einen jüngst in den Urban Studies unternommenen 'peripheral turn' und rückt die epistemologische, wirtschaftliche, sozial-räumliche und ökologische Bedeutung von Peripherien für die Entwicklung urbaner Räume in den Vordergrund. Auf methodologischer und konzeptioneller Ebene bietet sie einen qualitativen Ansatz zur Untersuchung sektor-übergreifender Praktiken von lokalen Fachleuten innerhalb institutioneller Strukturen sowie über Orte und Maßstäbe hinweg. Zugleich eröffnet sie neue Perspektiven auf die aktiv gestaltende Rolle von Zeitlichkeit in der räumlichen Entwicklung.









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# 1. Introduction

Europe's green transition<sup>1</sup> hinges upon the implementation of a diverse range of large-scale clean technology projects. Recent EU policy measures and funding programmes, such as the Net-Zero Industry Act and Innovation Fund, have focused on the proliferation of various clean technology initiatives, aimed at accelerating climate neutrality and enhancing post-COVID supply chain resilience (European Commission, 2022, 2023). Clean technology projects include offshore and onshore wind farms, large-scale energy and carbon storage systems or battery cell manufacturing facilities, among others. Due to their sheer size, they are primarily located in Europe's inner and outer peripheries, while mainly serving the energy and mobility transitions in urban centres. Simultaneously, the implementation of Europe's green transition remains reliant on technologies, expertise, and critical resources from East Asia, particularly China (MERCIS, 2022). Despite increasing EU de-coupling initiatives (European Chamber of Commerce, 2021), this reliance has contributed to a notable shift in Chinese outbound investment patterns. Whereas previous investments primarily focused on large-scale infrastructure improvement projects, there is now a growing emphasis on clean technology initiatives, with electric vehicle battery cell gigafactories emerging as the central pillar of China's investment strategy in Europe (Rhodium Group and MERICS, 2023).

China's global economic and infrastructural expansion to Europe has, in recent years, attracted increasing multidisciplinary engagement (see Schaefer and Mohan, 2024). Largely focusing on Chinese investments and infrastructure improvement projects in Southern and Eastern Europe, research ranges from political-economic and geopolitical inquiries (e.g. Alvstam, 2020; Garlick, 2019; Henderson et al., 2021; Pavličević, 2018; Rogelja, 2020; Rogers, 2019) to studies on China's infrastructure-led development, particularly linked to the country's Belt and Road Initiative (BRI) (e.g. Apostolopoulou et al., 2023; Cheng and Apostolopoulou, 2023), to more situated and place-specific explorations of (trans)local urban, environmental, and/or institutional effects (e.g. Apostolopoulou, 2024; Grgić, 2019; Jensen, 2022; Neilson, 2019; Rekhviashvili and Lang, 2024; Szabó and Jelinek, 2023). Yet, China's recent pivot towards large-scale clean technology projects remains underexplored, as do insights into the actual on-the-ground planning and implementation processes of these projects.

The dissertation addresses this gap by investigating the implementation of two Chinese electric vehicle battery cell gigafactories in peripheral East Germany—Germany's new federal states (*Neue Länder*). In particular, the research poses questions concerning the role of federal

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<sup>1</sup> According to the official term deployed by the European Union (EU), green transition ‚foster[s] welfare and well-being through a new sustainable economic model, while ensuring socio-economic systems remain within ecological planetary boundaries‘ (European Commission, 2020). The EU's green transition is linked to the European Green Deal (EGD), which is a political initiative of the European Commission, adopted in 2019. Its primary goal is to achieve climate neutrality in Europe by 2050, with an interim target of reducing greenhouse gas emissions by 55% by 2030. The EGD aims to foster sustainable growth by integrating social, ecological, and economic factors. This initiative aligns with the implementation of the 2030 Agenda and the Paris Agreement.

state and local-level planning, administration, and policy professionals in these projects. In the context of the climate crisis and the localisation of ambitious EU climate targets, these actors face mounting pressure to deliver streamlined planning procedures for large-scale green transition projects while grappling with conflicting public interest objectives such as land-use disputes, environmental concerns, and demands for participatory governance (e.g. Eichenauer, 2018; Kühn, 2023). Amid transnational projects, particularly those involving Chinese investors, these professionals must navigate a complex web of economic, (geo)political, and ecological interests. This landscape is shaped by an array of international, national, regional, and local actors and institutions, further complicated by global crises, pandemics, and supply chain volatility. Within this challenging framework, they are tasked with safeguarding local economies, jobs, and infrastructure in the face of ongoing transformations, particularly in East Germany's pivotal automotive supply industry (see Blöcker et al., 2020). Set against this backdrop, the dissertation formulates the following overarching research question:

**How is the on-the-ground implementation of transnational Chinese large-scale clean technology projects unfolding in peripheral regions, and what role do local planning, administration, and policy professionals play in these processes?**

I approach the question through three interlinked research avenues, which resonate with my individual empirical research articles:

- What imaginations, motifs, and interests shape the project implementation, and who are key driving forces behind it?
- What conflicts arise during the project implementation, and how are they navigated?
- What are the actual impacts of the project implementation on the local and regional levels?

Building on recent scholarly initiatives (e.g. Rekhviashvili and Lang, 2024; Schaefer and Mohan, 2024), the dissertation views transnational Chinese large-scale projects in Europe as multi-scalar endeavours involving diverse actors, resources, and practices spanning sectors, borders, and temporalities. To investigate their implementation, the dissertation establishes an overarching conceptual framework that is rooted in a critical refinement of *extended* urbanisation theory (Arboleda, 2020; Castriota and Tonucci, 2018; Keil, 2018a). This enables the research to move beyond 'methodological cityism' (Wachsmuth, 2014) and its binary city-periphery perception, instead highlighting the multiple relational dynamics between 'centrality' and 'peripherality' that manifest within peripheral regions (Keil, 2018a, Keil and Wu, 2022). In doing so, it underscores the variegated dynamics of extended urbanisation processes and emphasises the epistemological, economic, socio-spatial, and ecological relevance of peripheries within the production of the contemporary urban (Phelps et al., 2022).

To adapt the concept for analysing complex spatio-temporal implementation processes on the ground, the dissertation integrates two additional lenses. First, drawing from qualitative policy research, it employs the notion of performative 'formations of the political' (Adam and Vonderau, 2014). This allows the study to examine the dynamic power relations among local professionals and their cooperation partners. Second, it incorporates a temporally attuned perspective, using the conceptual framework of 'time as infrastructure' (Besedovsky et al., 2019) to reveal how time and temporalities become active agents shaping project implementation.

In addition to one article of conceptual nature, which engages with the theoretical framework of extended urbanisation, the cumulative dissertation addresses the overarching research question through three predominantly empirical research articles. Employing a qualitative approach rooted in the methodological adaptation of Institutional Ethnography (Smith, 2006) to urban studies, the research findings are synthesised into three distinct yet interlinked themes. First, contrary to numerous political-economic and geopolitical perspectives that frame China as pursuing a 'grand strategy' (Jones and Zeng, 2019) to achieve foreign economic and political objectives through 'economic statecraft' (Easterling, 2014; Schindler and Kanai, 2021), the dissertation foregrounds the place-specific on-the-ground dynamics in implementing Chinese large-scale projects. It reveals how emerging conflicts in Sino-German cooperation give rise to a series of improvised, fragmented, and often failed practices, which cannot be attributed solely to the presumed ignorance of Chinese investors; instead, they reflect what has been stated as a 'synergy of failures' (Tsimonis et al., 2020), equally rooted in the practices and manoeuvres of host-state professionals. Second, employing its temporal lens, the dissertation demonstrates how federal state-level professionals emerge as key drivers behind the projects, not only during their implementation but also far beyond. Through restructuring processes of land ownership and strategic state-led development measures, rooted in the place-specific history of East Germany, they establish the crucial conditions for the successful project implementation in the Thuringian case. However, these measures also contribute to the re-scaling of state power at the local level, gradually marginalising local level authorities over time. Third, the dissertation highlights how the implementation of Chinese large-scale clean technology projects represents a continuation of the recurring 'boom-and-bust' dynamics that have largely characterised East Germany's economic development since more than two decades. This trajectory results in a locked-in economy that 'constrain[s] *in-situ* value retention' (Gansauer et al., 2024: 396), evolving into a 'perpetual present' that is haunted by the ghosts of the past and the unfulfilled promises of the future.

In the following section, I first introduce the recent development of Chinese outbound investments and infrastructure developments in Europe, before I provide an overview about existing conceptualisations of Chinese large-scale projects in Europe. I then extend these

perspectives by introducing a new lens from the standpoint of urban studies. In the third section, I then develop this perspective into an analytical framework that enables my examination of the on-the-ground implementation of Chinese large-scale projects in peripheral East Germany. Before presenting the synthesis of my findings in section sixth, I outline the research design underpinning the study and provide an overview about my published research articles.

## **2. State of the art**

Over the past decade, Europe has experienced a growing influx of Chinese investments, resulting in the envisioning, construction, and occasional failure of a diverse range of transnational large-scale projects. While the term ‘large-scale project’ is often used interchangeably with ‘megaproject’ in other contexts (e.g. Grabher and Thiel, 2015; Orueta and Fainstein, 2008; Priemus, 2010; Schindler et al., 2019), the dissertation frames them as multi-scalar endeavours involving a multiplicity of actors, resources, and practices, spanning sectors, borders, and temporalities. Building on recent studies of Chinese infrastructure developments in Europe (e.g. Cheng and Apostolopoulou, 2023; Rekhviashvili and Lang, 2024; Schaefer and Mohan, 2024), I view Chinese large-scale projects abroad not merely as elements of China’s global infrastructural expansion but as part of the broader array of political, economic, and cultural activities captured by the term ‘Global China’ (Franceschini and Loubere, 2022; Lee, 2022). Often described as ‘a way to get things done—creating dreams and high aspirations’ (Söderlund et al., 2017: 6), Chinese large-scale projects in Europe span infrastructure upgrades, resource extraction, and green transition initiatives like wind farms and gigafactories for electric vehicle batteries. The scholarship on these projects is equally diverse, engaging fields including political economy and geography, international relations and development studies, as well as infrastructure and urban studies.

In the following section, I first provide an overview of the relatively recent history of Chinese outbound investments in Europe. Second, I review existing conceptual perspectives on Chinese large-scale projects and infrastructure developments in Europe. Third, I introduce standpoints from economic geography and critical urban theory into the discussion, arguing that these perspectives have the potential to advance the predominantly political-economic and geopolitical lenses by offering a more spatially informed approach. I then further develop this perspective by outlining my analytical framework in the third section.

### **2.1 Chinese investments in Europe: From infrastructure improvement to green transition technology**

Chinese outbound investments in large-scale projects and infrastructure developments in Europe are a relatively recent phenomenon, gaining prominence over the past decade. While Chinese investments in other world regions, such as Africa, have already been observed in the

early 2000s, attracting considerable scholarly attention (e.g. Ayers, 2013; Brautigam, 2009; Lee, 2017; Power et al., 2012), the same period in Europe saw only a few isolated investments by Chinese corporations, particularly in the real estate sector of major capitals like London (Raco et al., 2023). It was instead in the years following the 2008 financial crisis that major policy measures and monetary stimulus packages were introduced by the Chinese central government. These have aimed to boost both domestic and foreign investments (Tooze, 2018), leading to a significant influx of Chinese capital into Europe, from \$6 billion in 2010 to \$55 billion in 2014 (Le Corre and Sepulchre, 2016: 2). Key targeted sectors included energy, automotive and transport, real estate, agriculture, and industrial equipment (Rhodium Group and McKenzie, 2015), with a particular focus on heavily indebted and infrastructure-deficient regions in Europe's peripheries. Notable examples include multi-billion-dollar share acquisitions by Chinese state-owned enterprises such as the Three Gorges Corporation and State Grid Corporation in the energy sectors of Portugal and Italy (Pareja-Alcaraz, 2017); share takeovers and investments in port infrastructure in Greece and Spain by COSCO (Apostolopoulou, 2021; Jensen, 2022); and several road infrastructure improvement projects, coal mining ventures, and power plant developments in the Balkans, involving countries such as Bosnia-Herzegovina, Montenegro, Georgia, and Serbia (Grgić, 2019; Rekhviashvili and Lang, 2024; Rogelja, 2020).

The investment wave of the 2010s aligns with a broader 'infrastructure turn' (Dodson, 2017) during that period, which—while not exclusively so—was significantly driven by China to enhance its transnational connectivity (Furlong, 2022). This is exemplified by China's Belt and Road Initiative (BRI), launched in 2013 and hailed as the 'project of the century' (Dunford and Liu, 2019), with estimated costs of US\$1 trillion between 2017 and 2027 (Apostolopoulou, 2021: 831). Framed as a globally encompassing initiative of unprecedented ambition and scope, the BRI now involves 145 countries that have signed a Memorandum of Understanding (MoU) with the Chinese government, including 17 EU member states (EFSAS, 2024). As of 2021, China had 'invested in 1,000 projects in European countries under the BRI, amounting to a total investment volume of over \$226 billion' (ibid.), primarily concentrated along two transnational routes: the Silk Road Economic Belt and the 21st Century Maritime Silk Road. A notable recent example is COSCO's 2023 acquisition of a 24.99% stake in the Tollerort Container Terminal (CTT) of Hamburg port logistics company HHLA, highlighting the growing ambiguity in German and European positions regarding security concerns about China.

However, while BRI-related infrastructure projects in Europe were initially promoted by many European countries as a local development promise, recent years have witnessed the emergence of a 'two-speed' Europe (Casarini, 2024). On one side, many Western and Southern European states have 'slowed down' their agreements with China, imposing limits on BRI-related developments and the acquisition of European corporations (Meijer, 2022), with some, such as Italy, even withdrawing from their BRI agreements (Insisa, 2023). On the other side, Chinese investments in Central and Eastern European countries have significantly increased in 2023, as these countries continue to attract BRI-related infrastructure developments. Hungary, for instance, aims to become a leading Chinese investment destination for the

manufacturing of electric vehicles and related battery cells (Rhodium Group and MERICS, 2023), while Montenegro recently signed a \$1 billion Chinese-funded highway project near its capital (Casarini, 2024).

As a result, after peaking in 2016, Chinese investments in large-scale projects and infrastructures have declined in recent years due to a combination of heightened ‘China-as-Threat’ perceptions (Rogelja and Tsimonis, 2020), stricter EU security policies towards China (Meijer, 2022), and tighter regulations on outward investment imposed by the Chinese government (Yin et al., 2021). This trend was further accelerated by the COVID-19 restrictions (Liu and Xia, 2021) and escalating EU-China geopolitical tensions, including EU decoupling initiatives (European Chamber of Commerce, 2021). Since 2020, Chinese investments have stabilised at an average level of \$11 billion per year, focusing primarily on selective key technologies, such as the European automotive sector, with electric vehicle battery-cell technology becoming the main investment pillar of Chinese corporations in recent years (Rhodium Group and MERICS, 2023). While Chinese corporations already supply a large portion of components (e.g. photovoltaic cells and critical resources) for Europe’s green transition, Chinese state-owned banks are increasingly acting as lenders for large-scale renewable energy systems (ibid.).

The pivot in Chinese investments towards clean technology projects reflects China’s ambition to advance the Sustainable Development Goals (SDGs) under the Agenda 2030 framework, as emphasised in its 2021 Global Development Initiative (GDI) (Mulakala, 2022). At the same time, Chinese corporations’ focus on these projects is closely tied to the European industry’s dependency on key Chinese components, such as photovoltaic panels and electric vehicle battery cells. This dependency has been reinforced by China’s domestic policies, including government subsidies for new electric vehicles and the rapid expansion of charging infrastructure, which have given Chinese corporations a significant competitive edge (Rathi, 2019). Additionally, in Europe, Chinese clean technology investments have been spurred by post-COVID-19 pressures on car manufacturers to strengthen domestic production capacities (Langguth, 2025a; MERICS, 2022). Although comparatively low—particularly in contrast to the \$121.1 billion invested by the US in the EU in 2023 (Muschter, 2024)—Chinese investments in large-scale projects in Europe continue to attract scholarly attention due to their novelty, connections to China’s state-led initiatives, and significance within shifting geopolitical contexts and evolving EU-China relations. The following section provides a brief review of existing literature and its conceptual approaches to Chinese large-scale projects and infrastructure developments in Europe.

## **2.2 Fragmented perspectives: Multi-disciplinary conceptualisations of Chinese large-scale projects in Europe**

Some existing studies on Chinese large-scale projects and infrastructures in Europe interpret them as the primary outcome of strategic objectives set by the Chinese state, thereby tending to overestimate the political-economic power of China’s central government. Such studies are mostly rooted in the perception of China’s outbound investments being linked to its broader

'infrastructure push' (Ougaard, 2018) following the 2008 financial crisis. Linked to China's far-reaching state-led development programmes (e.g. BRI, GDI), such foreign investment projects have mainly been interpreted as a means to advance China's strategic state interests in target countries, boldly framed as the 21st-century restructuring of the global geopolitical order through, for instance, Chinese port control in Southern Europe (Noorali et al., 2022; Putten, 2016), maritime transport supremacy in the Mediterranean Sea (Alvstam, 2020) or China's creation of a global 'supply chain empire' (Khanna, 2016). Others view these developments as an expression of 21st-century 'Cold War' rivalry with the US (Schindler et al., 2022), determined not by spatial borders but by expanding transnational connectivity, strategic dependencies, and economic integration of subordinate countries. Such centrally managed infrastructural governance manifests in various 'zones of exception' (Ong, 2006), including free trade zones, export manufacturing areas, or construction sites staffed by Chinese workers. These zones operate as key tools of Chinese 'extrastatecraft' (Easterling, 2016), bypassing national, regional, or local regulations (e.g. taxes, labour rights) to favour Chinese investments, such as state banks providing credit, state construction companies building infrastructure, and state corporations accessing local resources. Such 'extraterritoriality' (Nyri, 2009) is also evident in Europe, as seen in Hungary's recent attempt to designate the area around the small town of Göd as its first Special Economic Zone, removing it from local jurisdiction. What unites all the above mentioned approaches is their framing of the Chinese central government as pursuing a 'grand strategy' (Jones and Zheng, 2019). However, in doing so, they partly overlook China's scattered and variegated political-economy (Flint and Zhu, 2019), including its various forms of Chinese capital and different types of Chinese state and private actors involved in the deployment of large-scale projects and infrastructure developments abroad (see Schaefer and Mohan, 2024, for a comprehensive account). This is by no means to suggest that the Chinese central government lacks strategic objectives in its infrastructure investments in Europe. On the contrary, such efforts should be understood as driven by a multiplicity of interests and tensions among multi-level Chinese state and private actors, where strategic Chinese state actions are not simply implemented but continuously contested and renegotiated across multiple scales, in diverse ways, and over varying temporalities.

Other works acknowledge the multi-faceted nature of the Chinese state but adopt a perspective of 'Chinese exceptionalism' (Chalmers and Mocker, 2017). These accounts often frame Chinese investments, projects, and/or actors as 'distinct others' compared to 'non-Chinese' activities. Some analyses undoubtedly provide a nuanced understanding of, for instance, Chinese financing models entering the European economy (e.g. Henderson et al., 2021) and shaping large-scale infrastructure projects in Central and Eastern Europe (Karásková et al., 2020). Simultaneously, they partly tend to downplay the multiple entanglements and/or interactions with other non-Chinese funding schemes, institutions, and actors that shape the same economies, sectors, and projects (Bohle and Greskovits, 2012). In parallel, some works interpret Chinese outbound investments as the result of an individual Chinese overaccumulation crisis (Apostolopoulou, 2021; Furlong, 2022), which, following the conceptual account of the 'spatial-fix' (Harvey, 2001), materialises in large-scale projects and

infrastructures across Europe. However, Chinese investments decisively shape and are shaped by global circuits of capital, deeply entangled with, for instance, Western development institutions like the OECD and World Bank (Hung, 2016). Other, more place-specific studies focus on Chinese characteristics in the implementation of large-scale initiatives on the ground, including particularities in addressing labour standards and environmental regulations (e.g. Grgić, 2019; Neilson, 2019; Rogers, 2019; Tracy et al., 2017). Nevertheless, such accounts—some more, some less—imply the tendency of ‘singling out and essentialising’ (Lee, 2022) Chinese capital, investment models, and practices, thereby reasserting reductionist ‘China-as-threat’ (Rogelia and Tsimonis, 2020) narratives that perceive China primarily as a rival actor to Western institutions and states, ‘locking up’ key European infrastructures and sectors (Zweig and Jianhai, 2005) and threatening liberal values and interests (Bremmer, 2008). This is not to deny the existence of Chinese particularities; rather, these should be studied as place-specific phenomena that involve ‘multiple [Chinese and non-Chinese] agents pursuing different goals with different motivations’ (Blanchard and Flint, 2017: 238), which may differ from, or resemble, those found in other locations and projects across Europe and beyond.

Apart from essentialising certain aspects of Chinese large-scale projects, a third body of literature can be identified that focusses either on a single country, a specific sector, and/or an individual project when examining Chinese infrastructure developments in Europe (e.g. Grgić, 2019; Jensen, 2022; Neilson, 2019; Pareja-Alcaraz, 2017; Rogers, 2019). Launched as a promise for future development and progress (Appel et al., 2018), large-scale projects are infamous for their extreme complexity and lengthy implementation periods (Brookes, 2014), as well as their chronic underperformance alongside high cost spillovers (Flyvbjerg, 2011). Looking to the context of project management studies, we can learn much from singular project approaches, as they provide valuable insights into, for instance, large-scale projects impacts on local planning procedures and policies (e.g. Swyngedouw et al., 2002); various facets of project temporalities (e.g. Thiel and Grabher, 2021; Söderlund et al., 2017); or the evolution of ‘project ecologies’ (Grabher and Ibert, 2011), which highlight the relational interplay of personal, organisational, and institutional resources in the deployment of projects. However, by focusing solely on ‘project time’ (including all its ambiguities and facets), these approaches tend to overlook cross-temporal connections that extend further into the future and/or past, decisively influencing project implementation (Appel, 2018; Joniak-Lüthi, 2019; Langguth, 2025a). Additionally, many single-case approaches to Chinese large-scale projects specifically focus on motivations, benefits, and challenges faced by host states (Garlick, 2019). In doing so, they often adopt a nation-centric perspective that equates host states with national-level politicians, neglecting the multi-scalar contestations and interests of various lower-level state actors and/or non-state initiatives that play a pivotal role in shaping or resisting project implementation (Apostolopoulou, 2021; Langguth, 2024; Rekhviashvili and Lang, 2024). And, while singular approaches can enhance our understanding of place-specific cases, they frequently fall short in their efforts to generalise findings—a limitation that recent comparative research initiatives have sought to address (e.g. Apostolopoulou, 2021; Pareja-Alcaraz, 2017; Rogelja, 2020).

In sum, existing conceptual accounts of Chinese large-scale projects in Europe often prioritise geopolitical and political-economic interpretations. These approaches frequently overemphasise the strategic-functional role of the Chinese central government, frame aspects through a binary lens of ‘distinctly Chinese’ versus ‘non-Chinese’, or focus narrowly on specific investment streams, national interests, and project workflows. Despite some recent initiatives (e.g. Shin et al., 2022; Apostolopoulou et al., 2023), urban and spatial dimensions remain largely underexplored, with qualitative, locally grounded studies of planning and implementation processes entirely absent. However, analysing the implementation of transnational large-scale projects as inherently multi-scalar—spanning sectors, borders, and temporalities—while acknowledging their predominant localisation in Europe’s inner and outer peripheries, requires an adequate understanding of the emerging extended geographies. To address this, in the next subsection I introduce concepts from economic geography and urban studies to provide a better basis for examining large-scale projects and their global interdependencies from an interdisciplinary urban research perspective.

### **2.3 Adding an urban perspective: Transnational large-scale projects and emerging geographies of global production**

Based on scholarly engagement in economic geography and urban studies, numerous efforts have explored the interrelation between globally interconnected flows, networks, and metabolisms, and their spatial embeddedness. Dwelling on the Global Production Networks (GPN) framework (Henderson et al., 2002), for instance, Coe (2020: 2) addresses the relational dynamics of corporations and their global production by advocating the term ‘logistical geographies’, which highlights ‘a system or “field” that integrates and coordinates multiple actors and modes of transport, often across multiple jurisdictions. [...] not only [referring] to the underlying geographies of the logistics system and the places it interconnects but also, in a more active sense, to how logistics *produces* new geographical landscapes at a range of spatial scales’. Here, he draws on De Lara’s (2013) definition of ‘the field’, encompassing both material (e.g. trucks, containers) and immaterial (e.g. data, knowledge) flows that drive logistical geographies. Other scholars emphasise that understanding how urban and regional spaces are made to facilitate (im)material flows is key to comprehending how relationships between cities, city-regions, and global production networks are formed and reshaped (Hall and Hesse, 2013). This focus on the forces behind the transnational reconfiguration of global production networks emphasises their spatial and territorial embeddedness (Coe and Yeung, 2015; Kleibert and Horner, 2018). In-depth empirical research into the entanglement of global production and its local spatial formations further supports this view (e.g. Hagemann and Beyer, 2020; Kleibert, 2015). While global city centres are often seen as political and financial hubs that facilitate these flows, they are also recognised as sites of congestion and issues (e.g. safety concerns, labour costs), which hinder the creation of efficient flows, sometimes even rendering them ‘deadly’ (Cowen, 2014). Consequently, emerging geographies of global production networks tend to ‘bypass’ city centres, connecting distant places and actors in new relations of interaction and interdependence (Sawyer et al., 2021; Danyluk, 2021). GPN-related approaches thus turn into a similar direction to recent urban studies initiatives, aimed at

exploring new urban epistemologies of 'extended' urbanisation (Brenner and Schmid, 2015). However, with their relational interpretation of 'cities' as centres of innovation, power, and finance versus wider 'urban regions' as functional hubs and nodes of logistics and industrial production, GPN-related studies often remain trapped within 'methodological cityism' (Wachsmuth, 2014)—an overwhelming bias on traditional analytical categories and vocabularies (city, city-region, rural) with assumedly rigid 'borders'.

A spatially more discontinuous interpretation of emerging geographies of global production 'beyond the city' has been introduced through the term 'hinterland' (Arabindoo, 2020). The term signifies 'a territorial form of urbanisation whose new economic geography of extraction, production, and circulation can no longer be seen through the idiom of twentieth-century agglomeration processes' (Arabindoo, 2020: 2015). Instead, hinterlands reject the nearby city centre and metropolitan core as their reference points<sup>2</sup>, instead constituting a globally encompassing network of spatial formations (e.g. sites of resource extraction, industrial and agricultural production) shaped through mutual interdependence with various (im)material flows, supply chains, and logistics networks. Other urban scholars pursue a similar direction, referring to the 'hinterlands of the capitalocene' (Brenner and Katsikis, 2020), which include discontinuous but interrelated 'operational landscapes' of extraction and exploitation (e.g. resources, labour, data) on 'planetary' scale. This interpretation dwells on the notion of the 'urban fabric', introduced by Lefebvre (2003 [1970]), to describe the exhaustive commodification of spaces beyond cities as drivers of global urbanisation processes. It necessitates a shift in analysis from urban form to the underlying (im)material flows and metabolisms that constitute the 'interwoven veins and arteries of a fully urbanised society' (Lefebvre, 2016: 121). Consequently, 'the city' loses its 'constitutive-outside' and can no longer be understood solely through traditional urban morphologies and indicators such as density, population, or proximity. Urbanisation thus extends into 'non-city' areas, connecting places, regions, and institutions across multiple scales and temporalities. According to Lefebvre, these processes have 'formed a worldwide and, even, planetary totality' (Lefebvre, 2016: 148).

Building on Lefebvre's work, critical urban theory scholars developed the framework of 'planetary urbanisation' (Brenner, 2014; Brenner and Schmid, 2015; Merrifield, 2013), extending the notion of the planetary to a universal phenomenon that characterises contemporary urbanisation processes. As Brenner (2017: 201) notes, these processes encompass 'concentrated urbanisation' (e.g. cities, city-regions, urban agglomerations) and 'extended urbanisation' (e.g. remote areas such as oceans, rainforests, and infrastructure for resource extraction, energy and food production, or water provision), with the latter supporting the functioning of urban agglomerations. In this context, Lefebvre's moments of 'implosion/explosion' are equated with concentrated (implosion) and extended (explosion)

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<sup>2</sup> The original definition of 'hinterlands' refers to an interpretation of city-hinterland relations as territorially and functionally contiguous. The city constitutes as the political centre, market, and manufacturing site for the adjacent resource-extracting hinterland. This definition originates from Heinrich von Thünen's city-hinterland model of 1826 and has informed numerous conceptual frameworks in economic geography and urban research until today (see Brenner and Katsikis, 2020: 26).

urbanisation. Through their hypothesis of an all-encompassing planetary urbanisation, they aim to shift urban analysis from a city-centric perspective towards understanding urbanisation ‘as a way of seeing’ (Angelo, 2017). Consequently, they advocate for an urban theory ‘without an outside’ (Brenner, 2014), seeking to develop ‘new theoretical categories to investigate the relentless production and transformation of sociospatial organisation across scales and territories’, while promoting ‘adventurous, experimental, and boundary-breaking methodological strategies’ (Brenner and Schmid, 2014: 163; see **Article 1**, for a comprehensive outline of planetary urbanisation theory, including its origins, objectives, and limitations).

However, as ambitious as the goals of planetary urbanisation theory may be, it has faced extensive critiques in recent years. These critiques range from: 1) accusations of a purported ‘totalitarianism’, allegedly overlooking diverse, situated, and locally specific variations and lived experiences while lacking sufficient empirical evidence (e.g. Goonewardena, 2018); to 2) critiques of the dominance of predominantly white male authors in shaping theoretical and methodological debates within Western academia through ‘bold’ frameworks and gestures, thereby impeding analytical pluralism (e.g. Derickson, 2018; Peake, 2016); to 3) challenges to the theory’s inherent (post-)Marxist lens, which focuses predominantly on political-economic explanations for uneven urbanisation, with calls to incorporate intersectional analyses addressing socially embedded power relations, including racism, colonialism, nationalism, class, and patriarchy (e.g. Kipfer, 2018; Oswin, 2018; see **Article 1** for a detailed overview of these critiques).

While I find planetary urbanisation theory’s call to explore new epistemologies of contemporary urbanisation processes compelling—particularly in relation to the implementation of Chinese large-scale projects and their global interdependencies from an interdisciplinary urban research perspective—I align with the majority of the aforementioned appraisals. In my view, the planetary urbanisation thesis exhibits two key conceptual deficiencies that overlook Lefebvre’s core principles of the urban as the grounds for ‘centrality’ and ‘difference’ (2003 [1970]). Firstly, interpreting ‘extended urbanisation’ processes as solely dependent on ‘concentrated urbanisation’, while subsuming them under the notion of the planetary, overlooks the distinct elements and fragments that emerge during the various implosion-explosion moments inherent in extended urbanisation processes (see Keil, 2018b). Second, the concept of the planetary, in my view, is misinterpreted and not accurately aligned with Lefebvre’s terms. This misinterpretation risks reducing the theory to a universal framework and, as some critics have argued, even rendering it ‘totalitarian’ (see Goonewardena, 2018).

Therefore, I propose, as other urban scholars have recently suggested (e.g. Angelo and Goh, 2020; Keil, 2018a), to address the conceptual shortcomings and bold claims of planetary urbanisation constructively by revisiting Lefebvre’s core principles. This would help develop a more nuanced analytical framework, grounded in an advanced understanding of the concept of *extended* urbanisation (see Arboleda, 2020; Castriota and Tonucci, 2018; Ghosh and Meer, 2021; Keil, 2018a), moving away from a theory reduced to totality and universality towards an

analytical framework that recognises unequal socio-spatial developments under extended urbanisation processes, incorporating both locally specific embeddedness as well as global interdependencies into the investigation. In doing so, I align with Keil's (2018b: 1591) recent call 'to rescue planetary urbanization from the ivory tower and return it to the street', further arguing that 'the concept—now in danger of becoming a vacuous shell for academic debate—must be politicized again and linked to its revolutionary origins'.

Building on these debates, the next section develops an analytical framework for examining Chinese large-scale projects and infrastructure developments *in* and *from* Europe's peripheries. This approach puts the multifaceted urbanisation dynamics that occur in peripheries at the centre of its analysis. Thus, it aligns with the broader 'peripheral turn' (Ren, 2021) in urban studies, highlighting the epistemological, economic, socio-spatial, and ecological significance of peripheries withing the production of the contemporary urban (see Phelps et al., 2022).

### 3. Theoretical framework and key concepts

As outlined in the previous sections, Chinese large-scale clean technology projects in Europe's inner and outer peripheries represent multi-scalar endeavours embedded in globally interconnected and spatially discontinuous geographies that extend 'beyond the city'. Their implementation processes involve a multiplicity of actors, resources, and practices, traversing sectors, borders, and temporalities. In the following section, I propose a conceptual refinement of the concept of *extended* urbanisation, aiming to establish a suitable analytical framework that examines the complex and multi-scalar relations from a more distinctly urban perspective while also maintaining a focus on their political-economic dimensions. To enhance its applicability on the ground, I integrate two additional concepts that facilitate a more nuanced analysis of project implementation, specifically addressing the dynamic power relations and diverse temporalities that shape, and are shaped by, the envisioning, planning, and construction processes on-site.

#### 3.1 Extended urbanisation: Framing large-scale projects *in* and *from* 'beyond the city'

The concept of *extended* urbanisation was first introduced by Monte-Mór (2014) in his analysis of industrialised urban spaces and networks in the rural Brazilian Amazon. He described it as encompassing 'dynamic metropolitan centres and, increasingly, distant peripheries that are dialectically linked back to the centres and subcentres of the capitalist system' (ibid: 111). This framing connects to Lefebvre's notion of 'implosion/explosion' (Lefebvre, 2003 [1970]), capturing the dialectical relationship between 'urban centres' (implosion) and the 'urban fabric' (explosion) shaped by industrial expansion and socio-spatial reconfiguration under

global capitalism. While Soja (2012) uses extended urbanisation to explore regional urbanisation dynamics, Brenner and Schmid (2015) subsume it under the framework of planetary urbanisation, a much-discussed approach critiqued for its limitations (see **Section 2.3** of this article). I argue that a reorientation of the concept of extended urbanisation offers a more effective framework for analysing multi-scalar urbanisation processes beyond cities, including peripheral regions and small towns. However, this requires disentanglement from static implosion/explosion interpretations (urban centres vs. distant peripheries) and oversimplified planetary narratives. To this end, I revisit Lefebvre's core idea of 'centrality', which underscores the essence of the extended urbanisation framework by acting as a precondition for the production of societal and spatial 'difference' (2003 [1970]).

Relating to the notion of the 'urban fabric' (explosion), Lefebvre identifies 'centrality' as a fundamental condition that arises within a completely urbanised society (Lefebvre, 2003 [1970]). Centrality, according to him, constitutes the access to global flows such as information, goods, and social networks, establishing a condition of 'relating to the world'. This process transcends traditional spatial concepts and city-centred imaginaries, and can, instead, manifest socio-spatially in diverse contexts, including 'non-urban' and 'remote' areas far removed from urban core centres (see Vogelpohl, 2011). According to Lefebvre's core principles, the essence of centrality enables the creation of open spaces of 'difference', which, in turn, serve as emancipatory prerequisites for everyday encounters, political co-creation, and the emergence of something new (Schmid, 2005). How socio-spatial differences are produced—whether through diverse lifeworlds, development plans, imaginaries, or vested interests—depends on the ways in which these elements are socially constructed and represented (see **Articles 1 and 4**, for more detailed accounts on the concept of *extended* urbanisation).

Revisiting extended urbanisation's core highlights that diverse forms of centrality can also emerge in so-called 'peripheral' and/or 'remote' regions, including small town development contexts (see **Article 1**). This is crucial, as the notion of the 'periphery' remains susceptible to a dichotomous framework that inherently ascribes primacy to 'centrality'—typically framed as cities and urban agglomerations. Against the backdrop of our traditional understanding of the centre-periphery dichotomy (city/countryside; urban/rural; urban centre/suburbs), the dynamic, multi-scalar, and relational forms of centrality in remote regions, as they are inherent to extended urbanisation, remain obscured. This is also evident in planetary urbanisation theory, where forms of extended urbanisation (explosion) are consistently interrelated in relation to concentrated urbanisation (implosion) and subsumed under the planetary concept (see **Section 2.3** of this article). In contrast, an advanced understanding of extended urbanisation adopts a dialectical approach, highlighting the multiple emerging forms of 'centrality' and their relationally produced and non-directional forms of 'peripherality'. This approach, I argue, highlights socio-spatial differences within the periphery, rather than concealing them beneath a static and hierarchical dichotomy between the centre (urban agglomerations) and the periphery (e.g. urban outskirts, remote areas).

Such re-rooting aligns with Keil's (2018a) recent argument that extended urbanisation (explosion) results in 'numerous, disjunct elements' (e.g. suburbs, peri-urban areas, industrial parks, small-town contexts). He asserts that encompassing the diversity of these disjunct elements under the label of the 'planetary' oversimplifies and overlooks the varied relations, imaginaries, and lived realities inherent in the urban explosion moment, along with its multi-scalar relations and socio-spatial formations. As Keil states, 'there is much to learn by foregrounding the explosion antithesis conceptually and recognising its own differentiated dynamics of multiple and multifarious implosions-explosions' (Keil, 2018a: 500). In other words, perceiving the implementation of transnational large-scale projects in Europe's inner and outer peripheries as a multifaceted and relational interplay of 'implosion-explosion' provides an unbiased framework that acknowledges the multi-scalar complexity of extended urbanisation processes that shape and are shaped by the projects' implementation. This perspective moves away from the dominant centre-periphery dichotomy that examines peripheries in relation to one or few near and/or far urban centres. Instead, it interrogates the ever-changing processes between the creation of new 'centrality' and modes of 'peripherality' *in* and *from* beyond the city, including its cross-sectoral, multi-scalar, and pluri-temporal relations.

While this conceptual framing of extended urbanisation forms my foundational approach for analysing Chinese large-scale projects and their global interdependencies and networks, it proved particularly useful in my investigation of the actual impacts of project implementation, through which I was able to uncover diverse centrality-peripherality relations in the study region and beyond (see **Article 4**). To make the rather theoretical concept more applicable on the ground, I complement it with two additional conceptual lenses, which I will introduce in the following.

### **3.2 Formations of the political: Tracing dynamic actor and power relations**

The central focus of this dissertation is to examine how Chinese large-scale projects are implemented on the ground, with a particular emphasis on Sino-German cooperation between local built environment professionals and their (inter)national partners. To adequately analyse the complex cooperation practices among the diverse actors involved, including the dynamic power relations underpinning these cooperation networks, the dissertation frames implementation practices as performative 'formations of the political' (Adam and Vonderau, 2014). Rooted in qualitative policy research, this concept understands policies—in the case of this dissertation, the various planning and approval policies, along with their associated legal regulations and procedures—as dynamic political actions (Wedel et al., 2005). Such understanding moves away from traditional interpretations of policies as linear sequences of rational actions imposed top-down from state to local levels. Instead, it views policies as 'central organising principles' that are socially constructed, continuously re-negotiated, and contested across a multitude of levels, actors, and institutions (Shore and Wright, 2011). In doing so, these actions are perceived as tangible entry points for tracing broader and often invisible societal relations, governance mechanisms, and power dynamics through

ethnographic methods (Shore et al., 2011: 12). Adam and Vonderau (2014) link this qualitative study of broader relations and networks *through* policies to Bourdieu's (2001) concept of the 'political field'. The latter originally refers to the centres of state power where political elites engage in dynamic alliances and rivalries, shaping the 'legitimate view of the social world' and, consequently, the 'categories of perception' that structure social order and establish political hegemony for the majority of society (Bourdieu, 2001: 17; translation by the author). According to Bourdieu, this shaping of interpretive authority (*Deutungshoheit*) characterises the true nature of 'political struggle'. The integration of both concepts as 'formations of the political' aims to highlight the political dimension and dynamic nature of the ongoing renegotiation and contestation of policies during their implementation. Consequently, this approach extends the focus beyond state elites, encompassing a diverse range of multi-level actors and institutions (see **Article 3** for a more comprehensive outline of the concept).

The application of this concept primarily enables me to address the dynamic interrelations between what is visible (in my case, concrete cooperation practices) and what remains invisible (e.g. individual and/or collective resources, networks, interests). The concept frames these interrelations as complex and fluid formations of political action. Such formations are inherently dynamic, continually reconfiguring themselves, overlapping and interweaving, while temporarily gaining or losing significance. For instance, during the implementation of large-scale Chinese projects, host state government actors often address specific local issues (e.g. stabilising regional economies and preserving jobs) and, at the same time, pursue international opportunities (e.g. enhancing economic connectivity and visibility). In doing so, they form a range of ad hoc alliances with a diverse array of local, national, and international actors (Klinger and Muldavin, 2019). Such a focus on shifting and partly overlapping networks, including their underlying interests, moves away from singular explanations of transnational projects as mere instruments of capital accumulation (Mohan, 2021)—a view often also invoked by extended urbanisation theory. Moreover, analysing the implementation of large-scale projects and their cooperation practices through the lens of 'formations of the political' facilitates an exploration of the emerging tensions and relationships between concrete micro-fields of power (e.g. decision-making networks in project implementation) and broader societal debates and perceptions (e.g. 'China-as-threat' narratives, EU-China policies), where power cannot be easily personified or precisely located. Nonetheless, both dimensions wield significant influence, shaping individual relationships and power networks that, in turn, affect on-site cooperation practices. In sum, by focusing on the dynamic and continuous reassembling of components such as policy rationalities, governance mechanisms, actor networks, as well as individual and collective resources, I position the conceptual framework of 'formations of the political' alongside other influential approaches, such as assemblages thinking (see McFarlane, 2011). However, with its primary focus on policies as political actions and its origins rooted largely in anthropology, the concept, in my view, is particularly suited 1) to address the notion of power and emerging forms of agency during the implementation practices of large-scale projects; and 2) to be operationalised within an exploratory and qualitative ethnographic study, as adopted in this dissertation.

### 3.3 Time as infrastructure: Understanding pluritemporalism as formative agent

The dissertation builds on the conceptual understanding that time and temporality, like space and spatiality, are not merely pre-existing backdrops to the implementation of large-scale projects. Instead, it views time and temporalities as active ‘agents’ that both shape and are shaped by the multiplicity of (trans)local practices, institutions, and politics involved in project implementation. Accordingly, the dissertation expands the overarching conceptual lens of extended urbanisation by incorporating the concept of ‘time as infrastructure’ (Besedovsky et al., 2019: 581), which bears the potential ‘to elucidate the ways in which political, social, and economic conditions shape and exert authority’ over the envisioning, planning, and/or construction of large-scale projects. Enhancing the focus on time and temporalities as driving forces behind project implementation necessitates, first of all, the understanding of ‘social time’ (Nowotny, 1992). This involves a shift from the predominance of ‘natural time’, such as clock-time or astronomical time, towards recognising time as socially constructed and diversely experienced (Elias, 1992; Giddens, 1987). In other words, time is conceptualised through the lens of ‘pluritemporalism’ (Nowotny, 1992: 424), which captures the simultaneity of natural and social time, as well as the coexistence of different social temporalities and various geographies of time (Ogle, 2013). Such an understanding of heterogeneous and overlapping temporalities is further developed in conjunction with the concept of infrastructure by Besedovsky et al. (2019) to explore the variable ways in which time enables and/or constrains urban practices. This approach extends the concept of infrastructure—traditionally seen as an intermediary of material and immaterial flows that facilitates, structures, and/or disrupts modern societies (e.g. McFarlane and Rutherford, 2008)—by recognising temporality itself as infrastructure, which offers a new ‘analytical window’ to explore how social organisations and interactions are shaped (see Angelo and Hentschel, 2015). This, in turn, bears the potential to reveal the multiple practices, regulations, and power mechanisms underlying temporal infrastructures, shedding light on the interests and motifs that drive their making (see **Article 2** for a more comprehensive outline of the concept).

Building on this conceptualisation, the dissertation aims to illuminate the diverse temporalities underlying, structuring, and (re)shaping the implementation of Chinese large-scale projects. For example, implementation practices are closely linked to temporal processes such as political decision-making, material flows, and financialisation, while also being influenced by unforeseen events and disruptions. Simultaneously, they draw on past individual and collective experiences, informing future practices while generating new, path-dependent trajectories. Large-scale projects, therefore, mediate time as much as they mediate space, existing in a ‘constant state of becoming’ (Smith, 2016). Thus, they are shaped by a multitude of overlapping time frames, cycles, and rhythms. I argue that such a time attuned perspective helps to unfold the multiple temporalities at play during the projects’ implementation. Simultaneously, it gains a better understanding of how, by whom, and for what purposes various temporalities are deployed to, for instance, accelerate, slow down, or block the coupling, planning, and construction of large-scale projects. Moreover, I argue that it allows

for a more comprehensive study that moves iteratively forward and backward in time, thereby elucidating practices, policies, and/or events that extend far beyond the actual 'project time', incorporating the *longue durée* of, for instance, the projects' envisioning, maintenance, and/or decay. In sum, focusing on time and temporalities as 'agents' in (re)shaping large-scale projects enables the conceptualisation of Chinese large-scale projects not only through their spatial characteristics and the (im)material flows they are embedded in, but also—and crucially—as multi-temporal arrangements.

In the following section, I focus on the operationalisation of the analytical framework by introducing the dissertation's research design. I then summarise the empirical findings of the individual research articles and their contributions in the subsequent section, before engaging in a cross-article discussion of the dissertation's results.

## 4. Research design

The methods used to collect and analyse the data underpinning my individual empirical research articles are briefly outlined in each manuscript. In the following section, I provide a more detailed account of the overarching methodological framework of my cumulative dissertation. Next, I briefly introduce my selection of two cases involving Chinese large-scale clean technology projects in peripheral East Germany, encompassing one successfully implemented project in Arnstadt-Ichtershausen (Thuringia) and one failed project in Bitterfeld-Wolfen (Saxony-Anhalt). Finally, I offer insights into the different phases and methods of data collection and outline the qualitative content analysis used to interpret the diverse datasets.

### 4.1 Methodology: Adapting Institutional Ethnography to urban studies

As outlined in previous sections, Chinese large-scale clean technology projects are embedded in globally interconnected and spatially discontinuous geographies, involving a multiplicity of actors, resources, and practices, traversing sectors, borders, and temporalities. Examining their implementation should therefore be understood as engaging with a multi-level 'power project' (Lee 2022: 317), manifesting in the form of an urban arena co-produced by Chinese and non-Chinese actors, situated within diverse political, economic, and cultural contexts. The methodological challenge lies in capturing the diverse perspectives and levels involved. While project implementation is shaped by the embodied, situated practices and decision-making processes of local professionals, these practices are simultaneously embedded in, for instance, broader institutional settings, regulatory frameworks, and cultural norms.

Therefore, I adapt what Smith (2006) conceptualises as *Institutional Ethnography (IE)* to the field of urban studies. The analytical core principle of this approach is a phenomenological ontology that views the social as the guiding and concerting factor in people's activities. Smith extends

this with the concept of social relations, which, drawing on Marx, refers to the large-scale coordination of people's activities. This implies that the actions of individuals at a specific site and moment in time are interconnected with those of other people in and across multiple other sites and temporalities, even if the actors do not know or interact with one another directly. In other words, the situated practices surrounding the implementation of transnational large-scale projects are 'organised in powerful ways by trans-local social relations that pass through local settings and shape them according to a dynamic of transformation that begins and gathers speed somewhere else' (Smith, 2006: 17). According to Smith (1990: 6), these trans-local social relations, referred to as 'ruling relations', consciously or unconsciously coordinate and structure people's practices. They are mediated through text-based discourses and knowledge, including policies, laws, regulations, media or scientific, technical, and cultural norms, among others (ibid.).

Based on this qualitative research approach, I place the situated practices of professionals involved in project implementation at the centre of my inquiry. This means that I adopt the particular standpoint of professionals as a methodological starting point to trace how their practices and assessments interrelate with broader multi-scalar and pluri-temporal 'ruling relations'. Following IE, a core method for this inquiry is the use of qualitative interviews (Smith, 2006: 23), which offer partial views and assessments of specific social situations, events, and decision-making processes—in my case related to the projects' implementation, including envisioning, planning, construction, and operationalisation. The work of institutional ethnographers is 'to put together an integrated view based on these otherwise truncated accounts' (ibid: 18), not only to learn 'how things work' but also, and crucially, how these things relate to and are coordinated by other actors, institutions and practices. Such mediating textual sources served as a second central data source for my inquiry, including project-related development plans, policies, and regulations, as well as formative development discourses, imaginations, and institutional cultures. I combine this with participatory observations conducted during project-related planning meetings, information events, conferences, and network meetings. In addition, I integrate mobile ethnography's method of walking, enabling the exploration of concrete transformations 'at the street level—where spatial social practices are performed, materiality is embodied, and specific regulations of space are lived' (Streule, 2020: 7) (see **Section 4.3** for a detailed explanation of how I applied these methods in the field).

In sum, I argue that IE provides both a suitable methodological lens and a versatile, practical toolkit for the qualitative investigation of the complex implementation practices of transnational (Chinese) large-scale projects. Specifically, it avoids the 'trap of empiricism'—the belief that 'reality is simply written on its surface' and that 'all you need to understand about the field is, in some way, already present in *the* field' (Willis 1997, cited in Shore et al., 2011: 43). Instead, it enables researchers to move beyond a static notion of the field, reconceptualising it as a dynamic set of interconnected relational sites, institutions, scales, and temporalities.

## 4.2 Case selection: Arnstadt-Ichtershausen and Bitterfeld-Wolfen, East Germany

The dissertation's qualitative research focuses on two case studies of recent Chinese electric vehicle battery cell gigafactories, along with their associated energy, research, and logistics facilities in East Germany. The qualitative study distinguishes between a primary case, which is examined in depth, and a secondary case, which primarily serves to validate insights derived from the first case. The primary case addresses a successfully implemented project on the northern outskirts of the town of Arnstadt, within the municipality of Ichtershausen, Thuringia. Including non-public negotiations preceding the project announcement in July 2018, the project has been pursued since 2017 by the Chinese battery cell manufacturer Contemporary Amperex Technology Limited (CATL). It is the world market leader in battery cell manufacturing, headquartered in Ningde, Fujian province, China. The secondary case is a failed project in the town of Bitterfeld-Wolfen, Saxony-Anhalt, which was pursued since 2019 by the private Chinese corporation Farasis Energy, based in Ganzhou, Jiangxi province, China.

See **Article 2 and 4**, for a comprehensive overview of the Arnstadt-Ichtershausen case, including its individual development stages, actual on-site facilities and infrastructure developments, as well as information on the corporate history and partners of CATL. See **Article 3**, for detailed insights into both cases and their development trajectories, particularly focussing on the relevant planning and approval procedures, including the key professionals involved in project implementation.

The two cases were selected because they are *most similar* in terms of their geographical location, as they are both situated in peripheral medium-sized town contexts within Germany's new federal states (*Neue Länder*). Thus, they both share similar contemporary and historical socio-economic and political contexts. Moreover, the project implementation occurred within a similar constellation of actors, and the respective local administrative units are of comparable size. Both projects were presented to the public around the same time as innovative green flagship initiatives, accompanied by grand promises for the future development of their respective regions but also for East Germany as a whole. Both were the investors' first gigafactory projects outside mainland China and the first large-scale Chinese greenfield construction projects in East Germany, each involving envisaged investment sums of up to €2 billion. Both projects were executed within a similar timeframe and encountered comparable challenges and obstacles during implementation, including COVID-19 restrictions, supply chain disruptions, and increased construction costs exacerbated by Russia's invasion of Ukraine. However, the two cases are *most different* in their outcomes. While the project in Arnstadt-Ichtershausen officially entered an initial testing phase in January 2023, today officially operating, the project in Bitterfeld-Wolfen was not realised beyond the purchase and preparatory development of the site and the investor's acquisition of existing facilities. While most case studies focus on lessons learned from successes, this study argues that failed cases are equally valuable for examination, as they can illuminate potential problems, obstacles, and challenges in project implementation. Consequently, I

contend that the Bitterfeld-Wolfen case serves as a suitable counterpart for contrasting and comparing the in-depth insights gained from the primary case in Arnstadt-Ichtershausen.

My focus on the East German region is based on two main reasons. First, the region has recently experienced a boom in new clean technology projects, particularly battery cell gigafactories, building on its longstanding tradition in the automotive supply industry. This tradition is supported by skilled labour, a central location near key German and European car manufacturers, and a sufficient supply of renewable energy sources (Asabe et al., 2022). See **Article 4**, for a comprehensive overview of investment locations for electric vehicle battery cell gigafactories in Europe's inner and outer peripheries. Second, while East Germany's economic development over the past two decades has largely relied on large-scale industrial projects, the region has also been subject to recurring structural economic transformations. After Germany's political reunification in 1989/90, the region was promised investments aimed at modernising and enhancing the environmental standards of the GDR's former key industries. However, instead of economic prosperity, industries were either quickly downgraded to the status of extended workbenches for mainly West German firms or even partially abolished. As a result, during the two decades that followed, industrial sector recovery took significantly longer than initially anticipated, with unemployment rates remaining persistently high for years, well above the national average. The migration of well-educated individuals to more prosperous regions in West Germany resulted in a substantial 'brain drain', especially felt in the loss of young citizens. Additionally, low birth rates exacerbated the population decrease, turning many regions into a downward spiral of continual socio-economic deterioration, urban shrinkage, and infrastructural decline (see Lang, 2012).

The post-reunification period and ongoing peripheralisation have increasingly excluded regions and their actors from local economic and social resources, further limiting their influence on political decision-making (see Kühn et al., 2017). This is evident in the developments around the case of Arnstadt-Ichtershausen, which are reflective of many post-industrial regions in East Germany. Despite facing sizeable economic challenges in the late 1990s, the promise of significant growth under a new market economy continued to fuel ambition. Following the transfer of a 'ready-made state' (Rose and Haerpfer, 1997) from West to East Germany, extensive land restructuring and institutional reforms were implemented. As public funds dwindled and municipal roles were diminished, local municipalities sold vast lands to the newly formed State Development Corporation of Thuringia. This corporation, operating as an extension of the Thuringian Ministry of Economic Affairs, was granted the authority to negotiate directly with investors. It not only increased the exclusion of local municipalities from setting investment conditions for industrial development, but also led to the persistent presence of large industrial parks and related infrastructure systems.

However, despite making significant economic and democratic progress over the course of the last three decades, East Germany has yet to achieve the expectations of West German living standards, even thirty-five years post-reunification. Economic, demographic, and socio-cultural differences not only persist but are, contrary to general expectations, becoming more

pronounced (see Mau, 2024). Today, nearly 30 percent of East German workers are employed in low-wage sectors—twice the national average—contributing to a widening wealth gap between East and West Germany. Demographic trends worsen these disparities, as East Germany has a higher proportion of people over sixty-five and continues to face a sharp decline in birth rates and population post-reunification. In Thuringia, projections indicate that only fifty young workers will enter the labour market for every 100 retirees (see André et al., 2020). Even amidst positive economic developments, demographic decline in the region has led to growing frustration and insularity among those left behind, making it less attractive to newcomers from other areas or abroad (see Schmalz et al., 2024). This raises critical questions about the acceptance of foreign investors and employees. Against this backdrop, and amid rapidly evolving global e-mobility markets and increasing supply chain volatility, the region currently faces new transformational challenges within the local automotive supply industry (Blöcker et al., 2020). In sum, these dynamics make the region particularly compelling for investigating whether new large-scale clean technology projects can effectively address such persistent challenges.

#### **4.3 Fieldwork: Methods of data collection and analysis**

The trajectory of my fieldwork unfolded in three partly overlapping phases, each corresponding to distinct stages of data collection. The initial phase (April 2021–October 2022) involved exploring Chinese investments in Europe’s e-mobility sector, which sparked my fascination with the topic. Concurrently, I started monitoring the developments surrounding the case in Arnstadt-Ichtershausen, conducting initial background conversations on-site and examining the corporate history of CATL, the Chinese battery manufacturer driving the project. The second phase (July 2022–August 2023) centred on intensive fieldwork in Arnstadt-Ichtershausen and Bitterfeld-Wolfen, including a set of integrated qualitative methods. This included semi-structured qualitative expert interviews with professionals involved in the projects’ coupling, planning, construction, and operationalisation. I also conducted participatory observations during, for instance, planning-related meetings, conferences, and information events, complemented by several exploratory visits to document the actual transformation processes on-site. Additionally, I gathered various planning and policy documents. In the final phase (November 2023–August 2024), I began the qualitative content analysis of the datasets, combined with an iterative approach of moving back and forth between the gained material and the field. This included conducting additional, targeted interviews with previously underrepresented professionals to refine and deepen my preliminary findings.

##### *Phase 1: Approaching the field and gaining a contextual overview*

The **initial phase (April 2021 - October 2022)** allowed me to investigate the relatively new phenomenon of East Asian, particularly Chinese, investments in the European e-mobility sector. My engagement with this topic began in April 2021, prior to my role as a PhD researcher

at HafenCity University Hamburg. A newspaper article<sup>3</sup> discussing the (geo)political significance of CATL's new developments in Arnstadt-Ichtershausen piqued my interest and shaped my approach, which unfolded across three interconnected layers. On the first layer, I gathered detailed information about CATL's project in Thuringia. Using official announcements, public statements, and sources such as Thuringian ministry websites, newspapers, social media, and municipal council meeting minutes, I started examining the background and development of the major investment. Between September 2021 and October 2022, at irregular intervals, I travelled repeatedly to Arnstadt-Ichtershausen to observe and document the project's progress. These observations were systematically documented using field notes and photography. Additionally, I engaged in informal discussions at, for instance, public information and business networking events, which I documented through individual field reports. My initial interlocutors included, for instance, representatives of the municipal council, Sino-German business associations, and the State Development Corporation of Thuringia. These conversations provided preliminary insights into the project's genesis, including the constellation of actors and their respective objectives. At this stage, I began compiling a detailed overview of potential interviewees, incorporating background information on their roles within the project, their individual relationships with other stakeholders, and the circumstances under which I encountered them. This process enabled me to develop an in-depth understanding of the actor network over time, which significantly informed the second and third phases of my fieldwork.

On the second layer, I examined CATL's corporate development and global investment activities through extensive desktop research, using global investment trackers, FDI data archives, e-mobility business websites, newspapers, and social media. These sources enabled me to contextualise the Thuringian project within CATL's broader networks of strategic investments in the e-mobility value chain, providing insights into the corporation's global growth strategy. This information was crucial for understanding where, how, and why CATL, as a global market leader in electric vehicle battery cells, has invested across the entire e-mobility value chain worldwide. It also helped me identify the corporation's key cooperation partners and gain a clearer understanding of its global production networks. A similar approach, although less extensive, was initiated in mid-2022 for the Chinese battery cell manufacturer Farasis Energy. While these insights were essential for referencing the corporations' global activities and contextualising statements made by professionals during the interviews I later conducted, the dissertation intentionally places the analysis of global production networks in the background. Instead, it focuses primarily on the local

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<sup>3</sup> The article titled 'German Town Opens Door to Chinese Money' by Jack Ewing was published on 3 September 2019 in the print edition of *The New York Times International Edition*. The author explores Europe's ambivalent stance towards Chinese investments in critical domestic technologies, using the example of CATL's nearly €2 billion investment in a new electric vehicle battery cell gigafactory in the Thuringian town of Arnstadt. While political representatives at the EU and national levels express concern over Chinese investments, particularly in the context of efforts to achieve technological independence, the article also highlights local voices from politics, business, and civil society who view the investments as a promising opportunity for the future of their region. The article was also published online on 2 September 2019 under the title 'With a \$2 Billion Factory From China, a German City Lets Others Worry.' URL: <https://www.nytimes.com/2019/09/02/business/china-germany-battery-factory.html> (Accessed February 12, 2025).

implementation processes of the projects.

The third layer involved reviewing the historical trajectory of Chinese outbound investments in Europe, with a particular focus on Germany. This research provided context on the long-standing trade and investment relations between Europe and China since China's economic opening in 1978. It also examined the sectors, target countries, and regional variations in Chinese investments across Europe. This understanding was vital in recognising the key role Chinese corporations play in Europe's green transition in recent years and how EU-China dependency in this particular sector has been evolved. Based on the CATL case, I then expanded my research to map similar investments in electric vehicle battery cell gigafactories across Europe, focusing on Chinese and other East Asian (e.g. South Korean, Japanese) and Western (e.g. German, US) corporations. The Battery Atlas Europe,<sup>4</sup> along with additional data from newspapers and e-mobility websites, provided me a comprehensive overview of such projects, including investment volumes, stakeholders, and geographic distribution. This research formed the basis for selecting my secondary case study: the 'failed' project by the Chinese corporation Farasis Energy in Bitterfeld-Wolfen, Saxony-Anhalt (see 4.2 of this article).

### *Phase 2: Actively reconstructing and observing multi-case project implementation*

During the second phase (January 2023 – August 2023), my research prioritised intensive on-site investigation to gain deeper insights into the actual project implementation processes. Building on my overarching methodological approach, I employed a set of integrated qualitative methods. According to Gläser & Laudel (2010), this comprehensive approach provides the opportunity to reconstruct specific situations, events, processes, and/or practices. It creates space for interpretation, allowing for the consideration and analysis of different perspectives, as well as the integration of one's own reflections. In the following paragraphs, I will outline the individual methods of data collection, before subsequently explaining the analysis of these data sets.

A main pillar of my qualitative research were semi-structures expert interviews with a diverse range of professionals involved in the projects implementation processes. To identify and establish contact with potential interview candidates, I employed various techniques. A key resource was the above mentioned list for the CATL case in Arnstadt-Ichtershausen, compiled over more than a year, containing background information on professionals and their cooperation partners. A similar list had been maintained since summer 2022 for the secondary case in Bitterfeld-Wolfen. This groundwork enabled swift access to key individuals involved in project implementation during the initial interview phase. As the research advanced, I

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<sup>4</sup> The Battery Atlas Europe is a project led by the Chair of 'Production Engineering of E-Mobility Components (PEM)' at RWTH Aachen University, under the direction of Prof. Dr.-Ing. Achim Kampker and Prof. Dr.-Ing. Dipl.-Wirt.-Ing. Heiner Hans Heimes. Its aim is to provide transparency in the battery sector, facilitate the exchange of information among all participating stakeholders, and support market entry. All information on the Battery Atlas is freely accessible. URL: <https://battery-news.de/battery-atlas-europa/> (Accessed February, 12 2025).

increasingly used the snowballing technique, asking interviewees to recommend further contacts, who, again, often connected me with others in their networks (Valentine, 2005). While effective, this was supplemented with purposive sampling to ensure targeted engagement with professionals based on their expertise in specific aspects or phases of project implementation (Gläser and Laudel, 2010). Personal networks also proved instrumental, including individuals I already knew from other contexts or encountered through my participation in planning-related meetings, information sessions, and networking events. Notably, a Chinese researcher from Hong Kong University, formerly employed by CATL and an acquaintance from a previous conference, facilitated key introductions to CATL staff during his research stay in Germany. This combination of techniques allowed me to establish a robust and diverse interview pool, offering comprehensive insights into cross-sectoral perspectives, objectives, challenges, and standpoints related to the projects' implementation processes, addressing a critical gap in planning research (Grubbauer, 2015).

Over the course of my research, I conducted a total of 21 qualitative expert interviews with 24 professionals involved in the projects' implementation (see **Table 1**). Of these individuals, 18 were male, reflecting the generally low representation of women encountered during my fieldwork. The interview participants spanned a diverse range of expertise and sectors, including policy officials and administrative staff from local municipalities and townships, district administration units, and federal state authorities, as well as professionals at various levels within German and Chinese planning, construction, and transport corporations. Combining these cross-sectoral perspectives with my approach of building on two cases enhanced the robustness of the empirical data and facilitated triangulation, enabling the validation and contextualisation of interviewees' knowledge and statements in their respective contexts (Lichtman, 2014). The interviews were semi-structured, enabling me to ask critical research-driven questions while also allowing sufficient flexibility to explore unforeseen topics and aspects raised by the participants (Valentine, 2005). Each interview, averaging one and a half hours, was conducted in person, audio-recorded, transcribed, and subsequently coded for analysis.

**Table 1** Overview of qualitative semi-structured interviews referencing either the Arnstadt-Ichtershausen (AR) case or the Bitterfeld-Wolfen (BW) case.

#	Code	Date	Pers	Gen	Position	Length
1	BW01	19 Jan 2023	1	M	Local policy, representative	01:05 h
2	BW02	16 Mar 2023	1	M	Local administration, division manager	01:35 h
3	AR01	02 Mar 2023	1	M	Local policy, representative	01:53 h
4	BW03	17 Mar 2023	1	M	Federal state administration, division manager	01:30 h
5	BW04-06	07 Mar 2023	3	M,M,F	Local administration, planners	02:18 h
6	AR02	03 Apr 2023	1	M	Private planning firm, division manager	01:32 h
7	AR03	04 Apr 2023	1	M	Private planning firm, division manager	02:06 h
8	BW07	13 Apr 2023	1	M	Private construction company, engineer	01:19 h
9	BW08	13 Apr 2023	1	F	Federal state policy, representative	01:28 h
10	AR04	02 May 2023	1	M	Local policy, representative	01:26 h
11	AR05	03 May 2023	1	M	District administration, division manager	01:25 h
12	AR06	03 May 2023	1	M	District administration, division manager	01:14 h
13	AR07	14 Jun 2023	1	M	Federal state administration, staff	01:40 h
14	BW09	30 Jun 2023	1	M	Federal state policy, representative	01:18 h
15	AR08	14 Jul 2023	1	M	Private transport company, logistics planner	01:25 h
16	AR09	14 Jul 2023	1	M	Private transport company, logistics planner	01:41 h
17	AR10-11	20 Jul 2023	2	M,M	District administration, division manager & staff	01:23 h
18	AR12	17 Apr 2024	1	M	Private planning firm, lead engineer	01:10 h
19	AR13	19 Apr 2024	1	F	Private battery company, logistics planner	01:28 h
20	AR14	17 Jun 2024	1	M	Private planning firm, manager	01:38 h
21	AR15	27 Jun 2024	1	M	Private construction company, division manager	00:58 h

The primary aim of the interviews was a ‘reconstructive investigation’ (Gläser and Laudel, 2010: 13), examining and understanding the social situations, relations, and assessments of particular events, developments, and decision-making processes across different phases of the project implementation (e.g. coupling, planning, construction, operationalisation) from the perspective of the professionals involved. In line with my methodological approach of IE, this reconstruction formed a crucial empirical basis for tracing further links and connections to other project-related actors, events, as well as the regulatory frameworks and policies shaping or mediating professionals’ actions. This interplay enabled me to compile a ‘bigger picture’, incorporating a multitude of events, documents, scales, and temporal dimensions that extend beyond the immediate, temporary project context in which the professionals were embedded.

Beyond its reconstructive facet, the interviews also targeted the professionals’ *aggregation*, *anticipation*, and *affirmation* (von Soest, 2022: 278) of project-related aspects, developments, and decision-making processes. Aggregation refers to the professionals’ ability to distil complex project processes and regulations into accessible explanations, which helped me better

understand the scope and sequence of, for instance, the different planning and approval procedures, as well as the functioning of specific facilities and manufacturing processes within the actual gigafactories. Additionally, the professionals' expertise were invaluable for anticipating future developments and gaining insights into emerging trends within the projects' implementation. This 'insider' perspective, for instance, allowed me to access key information well before its public announcement, such as CATL's decision to cancel the second and third expansion phases at the Thuringian development site. Furthermore, the interviews served as a method of affirmation. While maintaining anonymity, for example, I occasionally confronted the interview participants with statements of previous interviewees and/or particular findings from my research. Their confirmations or rebuttals enabled me to better contextualise and validate my interpretations of the data.

The framework of the semi-structured interviews remained consistent over time, aligning with my research questions, while a few adjustments integrated new insights and explored each interviewee's expertise. I typically began with a general question about their views on Chinese investments in green transition technologies in Europe, revealing varying perceptions and attitudes. Participants then described their roles and responsibilities, forming the basis for deeper exploration of their experiences with project implementation. Questions addressed different phases of implementation, individual practices, collaboration with other professionals, and challenges, successes, and constraints. These aspects were explored in depth, resulting in varied content across interviews. At the end of each session, I allowed time for follow-up questions by the participants and encouraged them to raise unmentioned issues. Some introduced new aspects, while others reiterated key points, emphasising their significance. I took detailed notes during each interview and promptly prepared comprehensive reports afterward to document my impressions, observations, and reflections. These included not only the interviews themselves but also the immediate context before and after each session.

Another central element of my fieldwork involved participant observation at planning-related meetings and information events, as well as regular Sino-German network events and professional conferences, all of which I documented in detail. For instance, my regular participation in the Sino-German network events, organised by the state development corporation of Thuringia, was particularly instrumental, not only for regularly engaging with key professionals to discuss project progress but also for gaining valuable insights into the general discourses and standpoints of professionals and local business representatives regarding broader geopolitical issues in Sino-German cooperation. One of my field notes from December 2022 captures a perspective I frequently encountered, highlighting the often divergent perceptions of local professionals towards national and EU-level policies:

*During the discussion, I observed widespread disappointment regarding the perceived lack of government support for their [local firms and authorities holding business relations with China] economic interests. Many seemed eager for a swift return to the "old days", where China was regarded as a strong economic partner, irrespective of its anti-liberal and anti-democratic*

*stances. Economic priorities clearly took precedence, while democratic and ethical values appeared secondary, if considered at all. The event, particularly Mr. X's input, seemed to function as an echo chamber for these (in their own perception) "marginalised" voices.*  
December 2022

Beyond gaining 'inside' perspectives from institutions, meetings, and events, I employed the method of walking (Streule, 2020), which was essential for my embodied and sensory examination of the project's on-site implementation progress. This included an analysis of its socio-spatial impacts and symbolic significance for local town development. In this context, I tracked and photographed the progress of constructing the battery-cell gigafactory in Arnstadt-Ichtershausen, alongside related infrastructure developments and issues, such as the high-voltage power line and the DB Rail Logistics Center. These observations also provided insights into the daily routines of on-site construction workers, Chinese employees, and other staff, as well as the transforming urban environment of the industrial park but also the nearby towns. While these observations were not the primary focus of my research, they offered an important contextual background for better validating and understanding the statements made by my interviewees.

A third pillar of my qualitative analysis is based on project-related planning documents, such as local development plans, architectural layouts, construction plans, approval notices, as well as minutes and public announcements from town and municipal council meetings where project-related issues were discussed and decided. These documents were crucial for validating interview statements and cross-referencing them with the content and specific aspects of the documents. Moreover, they provided insights into how the practices of professionals are embedded within a variety of legal and technological regulations, in order to better understand broader 'ruling relations' that structure professionals' action on-site. However, the access to a few single documents proved to be particularly challenging, partly due to their sheer volume and technical complexity and partly because access was hindered by non-disclosure agreements.

### *Phase 3: Analysing and verifying results by means of extraction and triangulation*

After completing a first large set of interviews, participant observations, and document collection by August 2023, I began the third phase (November 2023–August 2024) with the analysis of the datasets. This was carried out using the method of qualitative content analysis through extraction (Gläser and Laudel, 2010), which is primarily aimed at analysing reconstructive investigations and differs from the similarly named and frequently applied approaches of so called summarising and/or structuring qualitative content analysis (e.g. Mayring, 2010[1987]). The primary critique of the latter is that it is overly theory-driven, operating in a predominantly deductive manner and thus insufficiently open to the integration of analytical categories (codes) that are inductively derived from the material. Addressing this limitation is precisely the core objective of content analysis through extraction. Particularly in the context of my overarching methodological approach of IE (see **Section 4.1** of this article),

which takes real-world issues in the field as the starting point for further exploratory investigations, I opted for this more balanced and iterative approach to data collection and interpretation.

Content analysis through extraction dwells on a systematic approach to the interpretation of data sets. In the first step, I developed an analytical coding system, which was primarily theory-driven. Using MaxQDA-database, the codes were applied to the transcribed interviews as well as to my numerous other field records and collected documents. In parallel, I also developed additional inductive codes that addressed the research questions, deriving more directly from the material. To better understand the causal relationships (e.g. specific planning decisions or particular cooperation practices) within the coded sections across different documents, I extracted and condensed individual text fragments in one document. This process involved repeatedly moving between the original sources and the condensed material to improve causality. Throughout this process, I inductively refined and modified the analytical coding system based on the collected material. This approach helped me achieve a more grounded derivation of my findings.

During my analysis of the first set of data and its condensed derivatives, I identified certain gaps that prevented me from reconstructing specific aspects, but which were central to answering my research questions. For example, while I was able to trace the processes of strategic coupling and cooperation practices during the initial years of implementation, I still lacked specific perspectives from the construction sector during the later implementation phases and from within the operational routines of the battery cell manufacturers. For this reason, I specifically reached out to certain professionals in this phase of the fieldwork to conduct a handful of supplementary interviews. This approach is broadly comparable to the Anglo-American tradition of 'grounded theory', which integrates data collection and analysis in a strongly iterative and cyclical process. In my case, however, this more iterative process was limited to the third phase of the fieldwork.

## **5. Published work**

The cumulative dissertation is composed of four research articles, one of which is part of a scientific journal and the other three as chapters in edited volumes. At the time of the dissertation's submission, two of the articles have already been published, and two have been accepted for publishing (April and September 2025). All articles are single-authored and have undergone double-blind peer review. As standalone and self-contained publications, the individual articles do not reference the overarching dissertation and instead present their own coherent theoretical approach, methods, findings, and scientific contributions. However, all the articles adhere to an overarching theoretical and methodological framework. Simultaneously, they are based on a limited set of interviews and other primary data. As a

result, some core conceptual ideas and pieces of empirical evidence inevitably recur across the articles, while in a few instances, different terminologies are used for the same concepts and research subjects.

## 5.1 Overview research articles

- Article 1**      **Langguth, H. (2022)** Planetare Kleinstadt: Perspektiven für eine multiskalare und nicht-stadtzentrierte Kleinstadtforschung. In N. Gribat, S. Weidner, B. Weyrauch and J. Ribbeck-Lampel (eds.), *Interdisziplinäre Kleinstadtforschung*, (51-70) transcript Verlag, Bielefeld.
- Article 2**      **Langguth, H. (2025)** Waiting, acceleration, stabilisation: Polychronic temporalities as implementation drivers of a large-scale Chinese green technology project in Eastern Germany. In E. Apostolopoulou, H. Cheng, J. Silver and A. Wiig (eds.), *The Material Geographies of the Belt and Road Initiative: Infrastructures and political ecologies on the New Silk Road*, (93-112) Bristol University Press, Bristol.
- Article 3**      **Langguth, H. (2024)** Navigating conflictual cooperation: Temporary power coalitions in the planning and approval of large-scale Chinese green technology projects in Eastern Germany. In M. Grubbauer, A. Manganelli and L. Volont (eds.), *Conflicts in Urban Future-Making*, (229-256) transcript, Bielefeld.
- Article 4**      **Langguth, H. (2025)** ‘Left-behind’ amid the ‘boom’? Large-scale green technology projects and reinforced peripheralisation in Eastern Germany. *European Urban and Regionals Studies*, 32(4), 381-398.

## 5.2 Articles’ main findings and contributions

- Article 1**      **Langguth, H. (2022)** Planetare Kleinstadt: Perspektiven für eine multiskalare und nicht-stadtzentrierte Kleinstadtforschung. In N. Gribat, S. Weidner, B. Weyrauch and J. Ribbeck-Lampel (eds.), *Interdisziplinäre Kleinstadtforschung*, (51-70) transcript Verlag, Bielefeld.

The **first research article** is conceptual in nature and develops the overarching theoretical lens underpinning the doctoral research. Recognising that transnational large-scale clean technology projects—due to their scale, infrastructural demands, and financial incentives—are predominantly implemented in peripheral, sparsely populated regions, often within small-town development contexts, the article bridges two increasingly relevant but previously disconnected strands of research: 1) the call for more interdisciplinary approaches to German

small-town studies that adequately recognise and address the heterogeneity, complexity, and non-linearity of small-town development trajectories, both conceptually and methodologically (e.g. Gribat et al., 2022; Steinführer et al., 2021); and 2) critical urban theory's call—particularly that of planetary urbanisation theory (see **Section 2.3** of this article; Brenner, 2014; Brenner and Schmid, 2015)—to move beyond city-centric categories in urban analysis towards viewing extended urbanisation as a 'way of seeing' (Angelo, 2017). The latter aims at incorporating global interdependencies and metabolisms, as well as their spatially discontinuous geographies, into place-specific analyses.

The starting point of the article is a comprehensive review of planetary urbanisation theory, including its origins, objectives, and limitations. It also provides an extensive overview of the critiques that have emerged regarding this theory in recent years (e.g. totalising views and homogenisation of local urban specifics; bold and dominant narratives; excessive focus on political-economic factors as the primary drivers of urbanisation; see **Section 2.3** of this article). Building on this, as well as the observation of a significant lack of on-the-ground empirical studies, the article aims to critically reposition planetary urbanisation theory by advancing the concept of *extended* urbanisation (see **Section 3.1** of this article). This aims to be adapted for further application in interdisciplinary (German) small-town studies (e.g. in the analysis of transnational large-scale projects in peripheral regions of Germany and/or Europe).

Drawing on Lefebvre's (2003[1970]) core principle of urban 'centrality', the article presents two key findings that refine the concept of extended urbanisation. First, it requires a 'non-city-focused' approach to urban research, one that accounts for the multiple forms of centrality (and thus global interdependencies) emerging in peripheral regions, such as small-town contexts. According to Lefebvre, society is embedded in a complete urban fabric and is thus fully urbanised. Thereby, centrality is a critical condition urbanisation that enables society to be 'in relation with the world' (e.g. access to information, societal networks). This relational connection serves as the foundation for the production of socio-spatial 'difference' (e.g. everyday encounters and negotiations among various groups, policies, and interests), which is the defining characteristic of urbanised societies. Based on the understanding of a globally encompassing urbanisation, this process can emerge beyond traditional spatial categories such as 'cities' or 'urban centres', even in remote and distant peripheries (see Vogelpohl, 2011). Traditional dualistic centre-periphery perceptions fall short here, rendering invisible the relational differences of emerging centrality in peripheries, which are inherent in extended urbanisation. An advanced concept of extended urbanisation, instead, embraces a dialectical understanding of centrality and peripherality, accounting for their dynamic, relational character *in* and *from* peripheries (see **Section 3.1** of this article). This constitutes a key argument for making the framework applicable to small-town studies as a non-city focused approach that accounts for both the locally-specific embeddedness and its multi-scalar interdependencies.

Second, the notion of the 'planetary' remains an empty shell and is trapped in

misinterpretations of a totalising, universal urban theory (Goonewardena, 2018) unless its true emancipatory foundation, as originally envisioned by Lefebvre, is recognised. To address this, the manuscript offers an in-depth review of Lefebvre's notion of 'planetary totality' and contextualises it against the political conditions of the 1960s and 1970s, marked by heightened militarisation (also in terms of wording) on one hand and the search for politically-ecological alternatives on the other (e.g. the postgrowth movement). Following this, the article incorporates Spivak's (2015) alternative reading of the planetary, highlighting that it is grounded in the idea of 'decentring human agency' in global coexistence. Thus, thinking through the notion of the planetary does not solely invoke a spatial dimension for extended forms of contemporary urbanisation but constitutes the prerequisite 'to think the other'—the emancipatory potential to address all living organisms with respect, dignity, and responsibility. Such decentring perspective through the notion of the planetary simultaneously foregrounds individual and collective agency in a capitalist economy often depicted as 'alternativlos' (without alternatives). In this context, the planetary does not aim for the homogenisation of differences and socio-spatial struggles, as some critiques have suggested, but instead highlights them, making them visible and tangible. This frames the second key argument the article seeks to demonstrate, while introducing the extended urbanisation concept to small-town studies.

**Article 2**      **Langguth, H. (2025)** Waiting, acceleration, stabilisation: Polychronic temporalities as implementation drivers of a large-scale Chinese green technology project in Eastern Germany. In E. Apostolopoulou, H. Cheng, J. Silver and A. Wiig (eds.), *The Material Geographies of the Belt and Road Initiative: Infrastructures and political ecologies on the New Silk Road*, (93-112) Bristol University Press, Bristol.

The **second research article** investigates the diverse imaginations, motifs, and interests driving the deployment of the gigafactory project and its associated energy, transport, and logistics infrastructures in the town of Arnstadt-Ichtershausen. It is part of an edited volume examining new material geographies of China's Belt and Road Initiative (BRI), with an emphasis on locally situated research approaches (Apostolopoulou et al., 2025). To this end, I engage with infrastructure studies, spanning from political-economic analyses of state efforts to reconfigure global flows of people, goods, and capital across territories and scales (Easterling, 2016; Schindler and Kanai, 2021) to more place-sensitive inquiries into how infrastructures enable and constrain everyday urban practices and how social relations (re)produce urban infrastructural systems (Graham and McFarlane, 2015; Lawhon et al., 2018). Moving beyond the spatial focus of much of this literature, which marginalises infrastructures' temporal dimensions, the article considers time not as a static backdrop but as an active agent that shapes and is shaped by urban infrastructures (Besedovsky et al., 2019). Following this, I develop a temporal-relational approach that is capable of providing insights into the place-specific conditions, practices, and histories that steered the project's implementation over time (see **Section 3.3** of this article).

My findings highlight that the simultaneity and interplay of three temporalities—*waiting*, *acceleration*, and *stabilisation*—which I refer to as ‘polychronism’, forms the critical foundation for the successful implementation of the project and its associated infrastructural developments. Contrary to the widespread perception of China's global activities as an orchestrated strategy of economic statecraft with distinctly Chinese characteristics, the analysis reveals that federal state authorities have played the primary role in structurally preparing, actively shaping, and persuasively attracting the project's implementation. Driven by inter-state competition, the Thuringian state government and its development corporation have spearheaded 1) the long-term waiting and search for flagship investors over a longer *durée* of more than two decades; 2) the short-term acceleration of multilateral investments following the project's public announcement in 2018; and 3) the rhythmic stabilisation through narratives promoting the region's future prosperity based on innovative large-scale projects in times of recurring economic crises.

By synchronising these entangled temporalities, the federal state government has steered an infrastructure-based future for the region, while simultaneously increasing its influence at the local level. Central to the temporal dynamics is speculation, which emerges as a strategic tool for navigating economic uncertainties. This implies speculative long-term waiting for the ‘right’ investor at the ‘right’ time, stimulating speculative investments following the project's public announcement, and crafting speculative narratives about the region's grand future amid recurring economic crises. Speculation thus becomes not incidental but a deliberate strategy employed by the federal state government over time. This partly runs counter to national and European development agendas, fostering sub-national cooperation with Chinese corporations and negotiating opaque concessions to the Chinese investor through bilateral agreements. Consequently, planning, administration, and policy professionals at the local level are increasingly excluded from decision-making processes and power networks, further marginalising their role in shaping the region's development trajectory.

The empirical findings contribute to the growing body of research examining China's global expansion, particularly focusing on its (trans)local urban effects (e.g. Apostolopoulou et al., 2023; Cheng and Apostolopoulou, 2023; Shin et al., 2022). Conceptually, I align with the recent plea to motivate a ‘temporal turn’ in infrastructure studies (Addie et al., 2024: 271), advocating for greater engagement with time-infrastructure entanglements. Thus, I seek to conceptualise large-scale projects and infrastructure not only through their spatial characteristics and the urban flows they enable, but also as temporal arrangements that characterise the project's ‘constant state of becoming’ (Smith, 2016).

**Article 3**      **Langguth, H. (2024)** Navigating conflictual cooperation: Temporary power coalitions in the planning and approval of large-scale Chinese green technology projects in Eastern Germany. In M. Grubbauer, A. Manganelli and L. Volont (eds.), *Conflicts in Urban Future-Making*, (229-256) transcript, Bielefeld.

The **third research article** delves deeper into the actual implementation practices and examines how Sino-German cooperation unfolds in both the successful and failed project in Arnstadt-Ichtershausen and Bitterfeld-Wolfen. To do so, I empirically focus on the manifold frictions, obstacles, and disputes that arise among planning, administration, and policy professionals, alongside (inter)national partners and Chinese investors, involved in the projects' formal planning and approval procedures. The study identifies three main fields of conflict: (1) insufficient preparedness and ignorance of Chinese investors regarding local planning contexts and their specific planning procedures, standards, and demands; paired with unawareness of German professionals towards Chinese planning cultures; (2) differing conceptions of cooperation formats, paired with misleading (non-)communication; as well as (3) situations of deception and contractual non-compliance by Chinese actors. Drawing on concepts of qualitative policy research (Shore and Wright, 1997; Wedel et al., 2005), the identified conflicts serve as 'genuine ethnographic moments' (Adam and Vonderau, 2014: 24), in which the underlying and contested interests become empirically tangible. As such, they function as valuable analytical windows for my further investigation of Sino-German cooperation practices, including how these are shaped across institutions, scales, and temporalities, as well as the dynamic power relations underpinning them (see **Section 3.2** of this article).

My analysis reveals that both projects disrupted local planning and approval procedures, with federal state ministries and authorities actively intervening. While interventions by host state actors are also evident in other, non-Chinese, large-scale projects, typically due to their economic and political relevance and cost overruns, interventions in the cases studied differ primarily in terms of nature and scope. Here, due to the inexperience and lack of preparedness of Chinese cooperation partners and investors, federal state officials have gone beyond their usual responsibilities, such as bargaining, concluding investment agreements, or engaging in political advocacy. Instead, driven by ongoing conflicts and the constant threat of project failure, they have aimed at creating and cultivating close partnerships with Chinese investors and planning firms, with measures ranging from numerous visits to the firms' headquarters in mainland China to ministerial directives to shared on-site offices. However, these interventions have had differing effects in the two cases studied, resulting in the formation of diverging temporary power coalitions that, in turn, created new lines of conflict. In Thuringia, cooperation between state authorities and the investor ensured the project's success but sidelined several local demands, leading to new tensions with local authorities. In Saxony-Anhalt, despite extensive efforts, federal state actors were unable to counteract the Chinese investor's lack of commitment. Instead, the project's failure has fostered a coalition between

professionals at the federal state, district, and local levels, marked by confidence in their own actions, a critical reflection on shared futures, and growing resistance to Chinese investment.

By focusing specifically on ‘internal’ planning conflicts, including their underlying temporary power dynamics, the article contributes to international planning research and theory in the following ways. It empirically examines and brings to light planning conflicts within and across planning-related institutions, authorities, and agencies—an area that remains largely underexplored. In doing so, it responds to recent critiques (e.g. Bertram and Altrock, 2023) highlighting that existing research on planning conflicts surrounding large-scale projects—particularly within the tradition of agonistic planning theory (e.g. Pløger, 2004; Gualini, 2015)—tends to overemphasise conflicts arising between planning and the public. This is particularly evident in contemporary studies on large-scale energy and mobility transition projects, which primarily address conflicts relating to, e.g., civil society protests, the ambiguous role of public participation, or appropriation by right-wing populist movements. Thus, my study addresses the dilemma recently highlighted by Hesse and Kühn (2023), namely that the core assumption of agonistic theory—open-ended, publicly inclusive negotiations—is often at odds with the actual decision-making processes on the ground, which typically remain concealed behind the closed doors of institutions and authorities. Conceptually, the article seeks to refine agonistic planning theory by integrating an understanding of planning procedures, including emerging conflicts, as productive and performative ‘formations of the political’ (Adam and Vonderau, 2014). This allows for adequately capturing the dynamic, ever-evolving, often improvised and transient power relations within which planning procedures are embedded—a persistent shortcoming of agonistic planning theory, particularly in addressing the multi-scalar and multi-temporal interactions between built environment professionals and their cooperation partners.

**Article 4**      **Langguth, H. (2025)** ‘Left-behind’ amid the ‘boom’? Large-scale green technology projects and reinforced peripheralisation in Eastern Germany. *European Urban and Regional Studies*, 32(4), 381-398.

The **fourth research article** examines the actual impacts of project implementation. To do so, I engage with longstanding work on peripheralisation (Fischer-Tahir and Naumann, 2013; Kühn, 2015) that address the variegated dynamics behind processes through which peripheries are produced. I further integrate them with recent debates on the role and future of ‘left-behind’ places (Fiorentino et al., 2024). However, as these debates predominantly rely on binary approaches—typically contrasting peripheral regions with distant and/or nearby metropolitan cores and decision-making centres—I propose a more relational and multi-scalar framework by critically revisiting the conceptual core of extended urbanisation theory (see **Section 3.1** of this article; Lefebvre, 2003 [1970]); Keil, 2018b; Langguth, 2022). Focusing empirically on Arnstadt-Ichtershausen, this approach enables further analysis of the ever-changing centralisation-peripheralisation dynamics arising from CATL’s project development within the region and beyond.

My findings challenge the prevailing assumption—mainly postulated by local policy and business officials—that transnational investments in large-scale green technology projects inherently drive future growth and prosperity in ‘left-behind’ places. Instead, they demonstrate that the investment influx and peripheralisation dynamics are intricately linked across scales and time spans. This is evidenced through three identified dimensions of peripheralisation that emerge or solidify during centralisation efforts surrounding the project’s planning and implementation. A first economic dimension highlights the reinforcement of outward-oriented value flows and limited value retention within the region. While short-term local gains initially arose following the project’s announcement and implementation—such as rapidly increasing rental and real estate prices benefiting local municipalities and housing associations—the new developments led to a series of value-extracting effects. These include the long-term deduction of local business taxes, the predominant employment of Chinese specialists alongside flexible labour from temporary employment agencies, and cooperation with a tightly knit network of Chinese and international partner firms in areas such as factory equipment, automation technology, commodity sourcing, packaging, logistics, and even daily employee transport.

A second dimension addresses centralisation-peripheralisation dynamics around infrastructural developments within the region. Although new manufacturing, transport, and logistics infrastructures have enhanced the region’s transnational connectivity, embedding it into broader networks of global resource extraction and consumption, the developments remain disconnected from the actual socio-ecological needs on-site, in some cases even exacerbating them. This includes, for instance, additional strain on local transport infrastructure due to increased logistics traffic, which municipalities—lacking funds for upgrades—are left to manage. The findings also highlight the janus-faced nature of the developments, as they rely on the fluctuating and often short-lived dynamics of global capital, while simultaneously materialising as long-lasting built infrastructures on the ground. With the overall decline in demand for EV battery cells in recent years, the subsequent reduction in industrial activity, and CATL’s recent downsizing measures for the Thuringian site, the region now risks being ‘left behind’, facing growing threats of vacant and deteriorating facilities.

A third institutional dimension highlights the exacerbation of unequal power relations between federal state authorities and professionals. This reflects place-specific histories of restructuring land ownership to the benefit of state-level institutions, alongside austerity policies and cuts to jobs and responsibilities in local municipalities during the post-reunification era of the 1990s and 2000s. Bolstered by their institutional status, since then, state-level actors have repeatedly been able to respond swiftly, leveraging their direct and strong negotiating position with investors to stabilise regional economic crises. However, their centralised authority has gradually bypassed local interests and needs, fostering an increasing paternalism in state-level actions. Empirically, this becomes evident through insufficient transparency towards municipalities and local planning authorities on critical issues and challenges in project development as well as a general climate of lacking participation and

involvement during the project's implementation processes.

The findings empirically contribute to a number of recurring studies in economic geography and urban studies on uneven power relations stemming from 'left-behind' places' dependence on near and far economic and political decision-making centres (Lang, 2012). At the same time, they underscore that such dependence is also the result of long-standing structural disadvantages of these places, resulting from a lack of resources that hinders local authorities from effectively influencing decision-making processes (Kühn et al., 2017). Moreover, my findings address the lack of robust empirical and methodological evidence on how centralisation-peripheralisation dynamics manifest socio-spatially in the context of extended urbanisation processes, a recurring critique. Thus, the conceptual framework developed in the article provides a novel lens for future studies of 'left-behind' places, particularly as it deploys a critical inquiry into how modes of governance surrounding centralisation efforts perpetuate peripheralisation both within the region and beyond (Gansauer et al., 2024).

## **6. Synthesis and key contributions**

The main findings of the individual research articles are synthesised in the following section. To this end, I have identified three interlinked thematic strands, addressing the overarching research question. These themes encompass: 1) insights into on-the-ground implementation, highlighting how emerging obstacles and conflicts result in a series of improvised implementation practices; to 2) a temporal perspective on the re-scaling of state power at the local level, which allowed federal state level professionals to drive successful project implementation; and 3) the role of federal state and local level professionals in frequently advancing grand visions surrounding large-scale industrial projects, which have contributed to East Germany's locked-in regional economy, perpetually haunted by the ghosts of the past and the unfulfilled promises of the future. The dissertation's empirical, conceptual, and methodological contributions are interdisciplinary in nature, situated at the interface of urban, infrastructure, and planning studies.

### **6.1 The myth of a grand strategy: Improvisation, fragmentation, and failure amid conflict-laden project implementation**

Previous political-economic and geopolitical studies on Chinese infrastructure projects in Europe's peripheries have outlined the notion of China pursuing a 'grand strategy' to achieve foreign economic and political objectives through 'economic statecraft' (Easterling, 2014; Jones and Zeng, 2019; Schindler and Kanai, 2021). Particularly in Southeast Europe—often seen as Europe's 'soft underbelly' (Tsimonis et al., 2020)—Chinese activities are frequently framed within 'China-as-threat' narratives (e.g. Heath and Gray, 2018; Pavličević, 2018), portraying

host-state actors as 'weak' and 'receptive'. The dissertation's empirical findings challenge these notions and, instead, demonstrate that the implementation of both gigafactory projects was decisively shaped by multi-level interests and contestations (Blanchard and Flint, 2017; Rekhviashvili and Lang, 2024). While Chinese battery-cell manufacturers aimed to secure lucrative contracts with European carmakers through 'China-speed' (Xu, 2019) project implementation, the latter pressured for swift realisation to address transformation challenges in the domestic automotive sector (see Blöcker et al., 2020). Politically, federal state-level authorities pledged development promises centred around large-scale and innovative green flagship projects (Appel et al., 2018; Larkin, 2013), mainly driven by competition among East German regions to secure regional economies in times of recurring upheavals (see **Article 2**). These dynamics, combined with the novelty of Sino-German cooperation, placed significant pressure on the professionals involved and had disruptive effects on local implementation processes.

The conflicting interests resulted in a series of frictions, ruptures, and disputes, shaping the implementation of both projects. Shortcomings on the part of Chinese investors—such as insufficient preparedness, ignorance of local planning standards, and instances of contractual non-compliance—contributed to conflict-laden cooperation. These issues were further exacerbated by local-level professionals, who not only had limited familiarity with the institutional cultures of Chinese corporations but also increasingly asserted their own demands and interests over time (see **Article 3**). Consequently, the numerous adjustments and delays during the projects' planning and approval procedures cannot solely be attributed to allegedly ignorant and 'threatening' Chinese investors. Instead, they represent a 'synergy of failures' (Tsimonis et al., 2020), equally rooted in the practices and manoeuvres of host-state professionals, exemplified by the deliberate slowing down and partial obstruction by parts of the local municipal authorities to gain their individual objectives.

In navigating conflicts and hurdles, a series of improvised, fragmented, and partially failed cooperation efforts emerged throughout the projects' implementation, which align with patterns of Chinese infrastructure developments identified in other world regions (e.g. Lee, 2017; DiCarlo, 2021). To avert project failure, federal state-level authorities intervened heavily, adopting ad hoc measures that often exceeded their capacities and mandates, while making significant concessions to investors (see **Article 2**). These efforts failed in Bitterfeld-Wolfen, leading to the cancellation of agreements and project termination. In contrast, measures in Thuringia fostered entanglements between Chinese investors and sub-national officials, resulting in a series of ad hoc, short-term cooperation formats outside conventional project workflows, which enabled long-term implementation (Thiel and Grabher, 2021). At the same time, these formats partially bypassed national and EU-level policy frameworks (see Rogelia, 2020). Chinese investors endured cost overruns and delays (Flyvbjerg, 2011) while asserting adherence to project schedules to maintain agreements with German car manufacturers (see **Article 4**). While the dissertation's grounded approach aligns with other recent studies on the (trans)local urban effects of Chinese infrastructure developments in Europe's peripheries (e.g.

Apostolopoulou, 2024; Grgić, 2019; Rogelja, 2020; Szabó and Jelinek, 2023), its findings uncover new dimension of Sino-German cooperation, particularly rooted in the standpoint of local authorities, federal state institutions, and planning firms.

By taking the actual implementation practices of professionals and their cooperation partners as a starting point for its analysis, the dissertation contributes to studies on (Chinese) large-scale projects on a methodological level. The application and refinement of Institutional Ethnography and its set of qualitative methods not only addresses recent calls for methodological innovation in studying 'Global China' from the ground up (see Franceschini and Loubere, 2022; Lee, 2022; Schaefer and Mohan, 2024) but also advance broader scholarly engagements with large-scale project implementation. For example, current studies on planning conflicts, particularly in the context of green transition projects (e.g. Eichenauer, 2018; Kühn, 2023), often remain limited by a binary perspective of planning versus public protest (see Bertram and Altröck, 2023; Hesse and Kühn, 2023). Others see the need for more comprehensive insights into how cross-sectoral objectives, challenges, and practices drive the design, planning, and construction of large-scale urban and architectural projects (e.g. Grubbauer, 2015). This dissertation's methodological approach addresses these gaps by: 1) revealing the often-concealed interactions among professionals and their cooperation partners, thus shedding light on the power dynamics typically hidden within the domains of authorities, investors, and planning firms; 2) enabling access to otherwise inaccessible actors and institutions through long-term engagement, network-building, and trust established within and across institutional contexts; and 3) integrating multiple sites, institutions, scales, and temporalities, thereby providing a relational framework for studying the implementation of large-scale projects 'from the inside out'.

## **6.2 Between state-led development and state paternalism: Driving project implementation through the re-scaling of state power at the local level**

The dissertation deploys not only a multi-scalar but also a temporal perspective on the implementation of Chinese large-scale projects in Europe's peripheries. It develops a dynamic analytical framework that conceptualises time and temporality not merely as a passive backdrop but as active 'agent' that both shapes and is shaped by implementation processes (see **Section 3.3** of this article). This approach was crucial in uncovering how federal state authorities in Thuringia emerged as the main drivers, strategically employing the 'polychronic' interplay of temporalities to facilitate successful project implementation. This included: 1) the long-term *waiting* and search for flagship investors over a *durée* of more than two decades, including strategic infrastructural preparation of the investment site; 2) the short-term *acceleration* of multilateral investments in the region following the project's public announcement; and 3) the rhythmic *stabilisation* in times of recurring economic crises through grand narratives and visions based on innovative large-scale projects that promote the region's future prosperity (see **Article 2**). In contrast to the failed project in Bitterfeld-Wolfen, Saxony-Anhalt, the state-led strategic development measures in Thuringia were pivotal to create suitable conditions for successful project implementation. Simultaneously, as emphasised

across my empirical articles, these conditions also contributed to the gradual re-scaling of state influence at the local level, frequently at the expense of municipal authorities, whose roles became increasingly marginalised.

The re-scaling processes of state influence observed in East Germany align with Brenner's (2004) conceptualisation of the processual production and continuous transformation of modern state spatiality. Drawing on Harvey's (2006) analysis, these dynamics are rooted in capital's contradictory requirements for spatial fixity and mobility, driven by its inherent tendency toward overaccumulation crises. To manage such crises, state institutions play a pivotal role by deploying targeted policy frameworks that prioritise specific jurisdictions, places, and scales as focal points for development regulations and public investments (Ferguson and Jones, 2002). In East Germany, this became evident in the post-reunification restructuring of institutions and land ownership during the 1990s. Responding to socio-economic challenges such as persistent deindustrialisation, outmigration, and peripheralisation (see Kühn et al., 2017; Lang, 2012), newly established state development corporations (under the supervision of their respective federal Ministries of Economic Affairs) were tasked with creating supra-regional industrial parks to enhance locational advantages, accelerate capital circulation, and maintain territorial cohesion (see Brenner, 2004: 78). However, these centrally delegated policies produced uneven spatial effects due to varying locational conditions, institutional legacies, and political alliances (MacKinnon and Shaw, 2010). While the Thuringian state development corporation acquired land ownership and expanded its authority to develop and infrastructurally prepare large plots for new investment sites, Saxony-Anhalt's corporation was limited to solely marketing pre-existing sites internationally, without obtaining land ownership. These disparities led to unequal outcomes over subsequent decades, as repeated economic upheavals necessitated new state spatial strategies, resulting in locally differing 'state spaces' in Thuringia and Saxony-Anhalt—'hierarchical ensemble[s] of socio-spatial infrastructures, institutions, and relations' (Brenner, 2019: 79).

The different ensembles of state spaces, which evolved over several decades, led to uneven and differently effective implementation processes in both projects. While in Bitterfeld-Wolfen, relatively decentralised structures meant that state-level authorities played a mediating role and local municipalities had the opportunity to negotiate investment agreements directly with Chinese investors, the latter had to purchase numerous different plots of land from various private owners, significantly delaying project implementation. In contrast, the centralised structures in Arnstadt-Ichtershausen allowed federal state authorities to sell fully prepared plots of land, including potential expansion areas, directly to the investor, entirely bypassing local municipalities in the strategic coupling and negotiation of investment agreements. However, against the backdrop of the political significance of the project, as well as increasingly emerging problems and the threat of project failure, officials and staff of the Thuringian state development corporation increasingly intervened, forming close alliances with the investor. In doing so, they increasingly disregarded the interests of local

municipalities, which they partly bypassed with 'paternalistic' actions, including opaque decisions with the investor and circumventing local planning authority through the approval of implementation plans (see **Article 3**).

The dissertation's focus on the role of time and temporalities aligns with scholarly initiatives examining the deployment, impacts, and appropriation of Chinese infrastructure developments through temporal lenses (e.g. DiCarlo, 2024; Joniak-Lüthi, 2019), expanding them with a particular focus on state power re-scaling on the local level. With its efforts in highlighting temporal connections of project implementation that extend far into the past, the dissertation adds to existing studies on project temporalities (e.g. Thiel and Grabher, 2021; Söderlund, 2017). It highlights that 'project time' emerges as a new mode of attention to 'archeologies of the present' (Appel, 2018), enabling multi-scalar insights into today's formation of past decisions, policies, and actions. In sum, through its temporally attuned framework, the dissertation sheds light on the protean and processual nature of large-scale projects (Smith, 2016), unveiling how their implementation processes represent an incremental accumulation over the *longue durée*. This includes policies, physical artefacts, knowledge, and features developed, utilised, and maintained by multiple actors and generations over time (Edwards, 2003). Furthermore, I argue that the dissertation's temporal perspective advances our conventional understanding of large-scale project implementation by effectively revealing how global development dynamics and place-specific histories and power relations are mutually constitutive.

### **6.3 Haunted futures: East Germany trapped in a perpetual present of recurring visions and unfulfilled promises**

Large-scale projects and infrastructure developments are important not only for their present achievements but also for what they signify about the future (Larkin, 2013). This dissertation, across its research articles, demonstrates how the gigafactory projects in East Germany were consistently framed, particularly by federal and local policy officials, as 'green' and 'innovative' flagship initiatives, accompanied by bold promises around future economic growth, job creation, and infrastructural development (Anand et al., 2018). While some envisioned an 'East Germany in the fast lane', others in Thuringia projected the vision of a new 'Battery Valley' at the heart of Europe, thereby 'performing the future in the present' (Davoudi, 2018: 103). Beyond the need to address transformation challenges within the domestic automotive sector (Blöcker et al., 2020), such visions were also fuelled by regional competition among East German states, aiming to enhance international visibility and recognition by elevating large-scale green transition projects as emblematic of supposedly progressive modes of governance (Appel, 2018).

The portrayed visions surrounding the implementation of Chinese gigafactories in East Germany invoke the notion of developmental time (Ogle, 2013; Appel, 2018)—a linear, progressive trajectory presumed to generate positive future impacts. However, as the

dissertation's findings demonstrates, the actual impacts of the projects play out more ambiguous on the ground. The findings challenge the assumption that transnational investments in large-scale projects inherently foster future growth and prosperity. Instead, they reveal that investment influxes and dynamics of peripheralisation are deeply interconnected across scales and time spans. Focusing on the successful implementation in Arnstadt-Ichtershausen, Thuringia, the analysis highlights how centralisation efforts surrounding the deployment of the project have, on one hand, increased the region's economic centrality and transnational connectivity (Schindler and Kanai, 2021). On the other hand, these efforts have also resulted in: 1) outward-oriented value flows with limited local value retention; 2) large-scale built infrastructure that inadequately addresses local socio-ecological needs, partly even exacerbating them; and 3) deepening of unequal power relations between federal state institutions and local planning, policy, and administrative professionals (see **Article 4**).

Moreover, the dissertation highlights that the ambivalent, partly contradictory developments surrounding large-scale projects in East Germany are not new but have repeatedly surfaced throughout the region's relatively recent history. Following the grand promises and high expectations for socio-economic revitalisation associated with Germany's reunification in 1989/90, East Germany instead experienced the dismantling of local industries, leading to a downward spiral of socio-economic decline, urban shrinkage, and infrastructural degradation (Lang, 2012). Against this backdrop, federal state-led development strategies aimed to stimulate new economic opportunities, particularly focusing on transnational investment in large-scale industrial projects (see **Article 2**). However, these efforts resulted in recurring cycles of great aspirations and subsequent disillusionment due to the region's reliance on the volatile and frequently short-lived cycles of global capital and profit-making (Halseth, 2017). For example, state-promoted photovoltaic manufacturing initiatives in the early 2010s—accompanied by ambitious visions of regional renewal—ultimately failed, culminating in the collapse of domestic production, which subsequently relocated to East Asia. Such recurring 'boom-and-bust' dynamics compelled the respective regions and industries to repeatedly seek new investments to sustain their local economies and jobs, at the same time prevent built infrastructure from falling into disuse and decay (Carse and Kneas, 2019). Borrowing Derrida's (2006[1993]) thoughts on hauntology, one could provocatively say that the region's developments surrounding large-scale industrial projects are haunted by the ghosts of the past and the unfulfilled promises of the future. In other words, past decisions and ideologies that prioritised large-scale industry development paths have trapped East Germany in a 'locked-in' economy that 'constrain[s] *in-situ* value retention' (Gansauer et al., 2024: 396). Simultaneously, an economy that is compelled to perpetuate its own sustenance. I argue, that the failure of the Chinese project in Bitterfeld-Wolfen and the recent downscaling of the initial Chinese gigafactory plans in Arnstadt-Ichtershausen—given the turbulent cycles of global e-mobility markets—signify a continuation of these boom-and-bust dynamics, resulting in a 'perpetual present' in which alternative visions of different and alternative futures become virtually impossible. Instead, the new is merely a repackaging of the old, reimagined in

different forms and facets.

The dissertation's observation of regional 'stagnation' in terms of 'locked-in' economies corresponds with recent inquiries into the future of 'left-behind' places (e.g. Fiorentino et al., 2024; MacKinnon, 2024). The findings particularly contribute to critical examinations into how infrastructure developments can genuinely enable such places to 'catch up' (Gansauer et al., 2024) or how 'left-behind' places are unevenly affected by green transition strategies (Rodríguez-Pose and Bartalucci, 2024). In parallel, the dissertation's findings contribute to the renewed surge of interest in small-town development in Germany and beyond (e.g. Gribat et al., 2022; Steinführer et al., 2021) while also informing recent scholarly initiatives that focus on distinctive urban development dynamics in East Germany (e.g. Bernt and Volkmann, 2024; Bernt and Holm, 2020). Building on these debates, I argue that investigations into these topics can greatly benefit from employing the conceptual lens of extended urbanisation, as this approach proves particularly effective in shifting its analytical focus beyond binary city-periphery frameworks (see Wachsmuth, 2014). Instead, as demonstrated in this dissertation, it moves peripheries in the centre of its multi-scalar analysis (see Keil and Wu, 2022; Phelps et al., 2022), unveiling the dialectical relations between new centralisation and peripheralisation dynamics that result from both global-local interdependencies and place-specific histories (see **Article 4**).

## 7. Conclusion and outlook

The dissertation has framed transnational Chinese large-scale clean technology projects in Europe's peripheries as multi-scalar endeavours, intricately intertwined with variegated and discontinuous urban geographies under *extended* urbanisation. To examine the projects' on-the-ground implementation, it has developed a conceptual framework that places particular emphasis on the dynamic power relations and diverse temporalities that shape, and are shaped by the projects' trajectories. Empirically, the dissertation has engaged with the implementation of two electric vehicle battery cell gigafactories recently pursued by Chinese corporations in peripheral East Germany: one successfully implemented project in Thuringia and one failed initiative in Saxony-Anhalt. Thereby, the study has particularly addressed the role of local planning, administration, and policy professionals, using their situated practices and perspectives as the methodological starting point for its qualitative inquiry.

The cross-article findings have presented a complex and ambiguous picture of a multi-level power project (Lee, 2022), involving Chinese and non-Chinese actors embedded in diverse political, economic, and cultural contexts and guided by varying imaginations, motifs, and interests. Yet, the study has highlighted that federal host-state authorities emerged as key drivers of project implementation in both cases. Persistent conflicts in Sino-German

cooperation and obstacles during the COVID-19 pandemic, including increasing shifts in global e-mobility markets and supply chain vitality, prompted federal state level officials to intervene deeply in project processes, often exceeding their capacities and mandates to prevent project failure. In contrast, local municipal authorities were partially marginalised, excluded from critical decision-making processes. In response, they deliberately slowed or obstructed project implementation within their means to assert their own objectives. While the dissertation has provided crucial insights into the dynamic power relations during project implementation across multi-level cooperation partners, it also raises new unaddressed questions regarding the relational nature of *agency*. Future scholarly engagement with both 'Global China' and urban future-making practices should further address these questions on empirical, methodological, and conceptual levels. This would provide deeper insights into the diverse ways of how local professionals acquire the capacity to set agendas, negotiate, and act in alignment with specific interests and objectives (see Links, 2021). Such inquiry would not only link agency to modes of power but also focus on the existing structures that hinder the achievement of goals, critically examining how such structural barriers are navigated or dismantled by local professionals and their cooperation partners.

Through its engagement with *temporalities*, the dissertation has shown that the conditions enabling project implementation today, including the strong position of federal state-level professionals, are deeply entwined with place-specific socio-political trajectories. Rooted in post-reunification institutional restructuring and two decades of local-level austerity policies, federal state professionals gradually utilised strategic, state-led development measures to rescale their power, thereby establishing the critical conditions for the current project success in Thuringia. These findings offer an 'archaeology of the present' (Appel, 2018), providing vital insights into how past decisions, policies, and actions have shaped today's implementation. Thus, the research has underscored that large-scale project implementation constitutes a 'constant state of becoming' (Smith, 2016), encompassing overlapping temporal frames, cycles, and rhythms extending well beyond the defined 'project time'. By foregrounding time, the dissertation aligns with broader calls for a 'temporal turn' (Addie et al., 2024) in urban, infrastructure, and planning studies. I argue that future research should further investigate the role of temporalities, particularly in urban future-making practices, as such an approach challenges dominant conceptualisations of urban issues by illuminating the intricate relationship between spatiality and temporality. As Massey (1992) argued, spatiality and temporality are inextricably linked, forming a fundamental basis for urban materialisation. Spatial developments are embedded in temporal processes such as planning, construction, and maintenance, while also being shaped by unforeseen disruptions. Additionally, urban future-making practices draw on individual and collective past experiences to improve future living conditions while simultaneously creating new path-dependent trajectories. A stronger focus on temporalities as active agents would thus not marginalise spatial considerations but would instead enhance our understanding of spatial dynamics through a temporal lens.

Moreover, I would like to address some other limitations of my study that warrant further reflection. While focusing on two most-similar Chinese cases in relative proximity provided consistently engaging research opportunities and enabled in-depth insights, this approach also presents limitations in terms of comparability. On the one hand, this concerns the absence of a comparative examination of large-scale clean technology projects pursued by non-Chinese investors. Such a comparison could have offered deeper insights into similarities and differences in planning cultures, on-the-ground perceptions, and the challenges encountered by local professionals and their cooperation partners. On the other hand, the study's focus on East Germany and thus its limited scope in comparing other Chinese large-scale projects in Europe and beyond is also a constraint. For example, the recent rise in Chinese investments in electric vehicle battery cell gigafactories in Hungary underscores the value of comparing post-socialist regions in Central and Eastern Europe. This could reveal how socio-economic, political, and cultural trajectories shape project outcomes and highlight differing strategies and impacts of project implementation across varied governance contexts.

Lastly, gaining access to some actors and information proved challenging, particularly when engaging with Chinese investors and private planning firms operating on their behalf. Non-disclosure agreements partly constrained data collection, requiring reliance on numerous unofficial conversations and informal meetings throughout my fieldwork. While these interactions were valuable for contextual understanding, their empirical validity was limited. However, I contend that the methodological approach proved highly fruitful in retrospect, as it facilitated long-term on-site engagement, network-building, and the establishment of trust with local professionals, forming the backbone of this study.

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## **Data availability statement**

The dissertation builds on a qualitative dataset that I collected over the course of three partly overlapping fieldwork phases (see pp. 34ff., Section 4.3 'Fieldwork: Methods of Data Collection and Analysis'). The core of this dataset consists of 21 expert interviews conducted with a total of 25 professionals from different fields in relation to the two case studies, Arnstadt-Ichtershausen and Bitterfeld-Wolfen. An overview of these interviews, including information on the interviewees' professional backgrounds, can be found in the methods chapter of the dissertation (see p. 38). However, all interviewees signed a form of consent with the author that not only stipulates the anonymisation of the interview data but also states that the corresponding audio files will be deleted at the end of the project in April 2025 and that the transcribed data will be used exclusively for the purposes of this dissertation and will not be shared with third parties.

In addition, the dissertation draws on fieldwork notes, photographs and other visual materials (e.g., graphics), local municipal gazettes, social media data, urban planning and/or policy documents as well as project related architectural layouts as sources. While the latter are also subject to non-disclosure in accordance with the agreed form of consent between the interviewees and the author, the fieldwork notes remain unavailable due to participants' anonymity and restrictions relating to the private ownership and copyright of source materials. References to all other sources are provided directly in the respective peer-reviewed articles and/or the framing paper.

In sum, all data that can be made publicly available have been presented and accordingly referenced in the dissertation's peer-reviewed articles and/ or framing paper. Data excluded from publication are withheld for one or more of the following reasons: (1) participants' confidentiality and/or lack of consent; (2) non-disclosure agreements stipulated in forms of consent; and/or (3) legal constraints, including copyright and private ownership of certain documents and photographs.







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## PART II - RESEARCH ARTICLES

- Article 1**      **Langguth, H. (2022)** Planetare Kleinstadt: Perspektiven für eine multiskalare und nicht-stadtzentrierte Kleinstadtforschung. In N. Gribat, S. Weidner, B. Weyrauch and J. Ribbeck-Lampel (eds.), *Interdisziplinäre Kleinstadtforschung*, (51-70) transcript Verlag, Bielefeld.  
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## **Kleinstadtforschung**

Interdisziplinäre Perspektiven

**[transcript]**

Der HochschulCampus KleinstadtForschung (hckf.de) ist ein Modellvorhaben im Rahmen des Forschungsprogramms »Experimenteller Wohnungs- und Städtebau« (ExWoSt) des Bundesministeriums für Wohnen, Bau und Stadtentwicklung (BMWSB), betreut vom Bundesinstitut für Bau-, Stadt- und Raumforschung (BBSR) im Bundesamt für Bauwesen und Raumordnung (BBR).



# ExWoSt

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# Planetare Kleinstadt

## Perspektiven für eine multiskalare und nicht-stadtzentrierte Kleinstadtforschung

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Hannes Langguth

»One thing a planetary view of everyday practices can help reveal is how particular small-scale ideas and behaviors are outcomes of global urban processes rather than local quirks, reactions against cities as places, or timeless, natural associations.«

(Angelo/Goh 2020: 8)

### Disziplinäre Reflexion

Aus der Perspektive der kritischen Stadt- und Regionalforschung verstehe ich Kleinstädte und ihre alltäglichen Lebenswelten als spezifisch lokal-räumliche Artikulationen, die sich dynamisch im Kontext weltweiter gesellschaftlicher, ökonomischer und ökologischer Transformationsprozesse fortlaufend (re)konfigurieren. Entgegen tradierter Konzepte und Vorstellungen der Kleinstadt als eine sich gegenüber ländlichen und (groß-)städtischen Untersuchungsräumen funktional-räumlich abgrenzende Einheit nähere ich mich dem kleinstädtischen Kontext insbesondere vor dem Hintergrund eines spannungsgeladenen, teils widersprüchlichen und sich zeitlich als auch räumlich überlagernden Beziehungsgeflechts multipler Geografien, Lebenswelten, Orten und Institutionen, das sich über Maßstabebenen hinwegspannt. Dabei manifestieren sich die Wirkkräfte dieses Geflechts nicht nur im spezifisch Kleinstädtischen, sondern werden vice versa ebenso durch dessen gelebte sozial-räumliche Beziehungen konstituiert und geformt. Mit meinem Beitrag ziele ich darauf ab, einen geeigneten theoretisch-konzeptionellen Untersuchungsrahmen für die interdisziplinäre Kleinstadtforschung zu skizzieren, der ebendiesem wechselseitigen Beziehungs- und Abhängigkeitsverhältnis zwischen lokal-räumlicher Artikulation und globaler Vernetzung gerecht wird und gleichzeitig eine

situative und raumsensible Annäherung an das spezifisch Kleinstädtische befördert. Hierzu beziehe ich mich auf die in der internationalen kritischen Stadttheorie im Laufe der vergangenen Jahre viel und in Teilen kontrovers debattierte These einer planetaren Urbanisierung, um die ihr inhärenten und bisher kaum gehobenen Qualitäten eines multiskalaren und nicht-stadtzentrierten Untersuchungsrahmens für die Kleinstadtforschung produktiv zu machen. Neben der Neuverwurzelung der These mit ihrem revolutionären Geist im Sinne einer emanzipatorischen urbanen Praxis als auch der theoretisch-konzeptionellen Weiterentwicklung mithilfe raumsensibler Ansätze feministischer Positionen greife ich hierfür zudem auf meine eigene empirische Forschungsarbeit zur ostdeutschen Kleinstadtentwicklung im globalen Gefüge chinesischer Auslandsdirektinvestitionen zurück.

## 1. Einführung: Von Suchenden, die einander (noch) nicht gefunden haben

Aus der Perspektive der internationalen und interdisziplinären Stadt- und Regionalforschung, zu der ich mich zähle, ist die Auseinandersetzung mit der deutschen Kleinstadt ein ambivalentes Unterfangen. Auf der einen Seite steht die verhältnismäßig junge Entwicklung der deutschsprachigen Kleinstadtforschung. Trotz zahlreicher empirischer Arbeiten, insbesondere im Zuge der in den 1990er-Jahren beginnenden politischen Aufmerksamkeit für strukturschwache und periphere Regionen sowie der in diesem Zusammenhang diskutierten Schrumpfungproblematik vor allem in Bezug auf die neuen Bundesländer (z.B. Keim 2001; Hannemann/Kabisch/Weiske 2002; Schröer/Vogler/Lang 2003; Hannemann 2004; Oswalt 2005), werden Arbeiten zu kleinstädtischen Kontexten innerhalb der Stadt- und Regionalforschung als auch in den Planungswissenschaften bisher nur wenig rezipiert und verharren in einer »systematische[n] Aufmerksamkeitslücke« (Porsche/Steinführer/Sondermann 2019: 52). Die Gründe hierfür sind vielfältig. Neben fehlenden systematischen und vergleichenden Forschungsansätzen, überwiegend thematisch und räumlich begrenzten Einzelfallstudien sowie unzureichender Erhebung von kleinstadtspezifischen Daten durch örtliche Verwaltungen ist es insbesondere die Fokussierung auf entweder »(groß-)städtische« oder »ländliche« Raumkategorien innerhalb der deutschen als auch internationalen Stadt- und Regionalforschung, die noch immer zu einer Marginalisierung der Auseinandersetzung mit Kleinstädten führt.

Jüngere Initiativen<sup>1</sup> zielen darauf ab, dies zu ändern, indem sie Kleinstädte nicht nur in den Mittelpunkt ihrer Forschungsarbeiten stellen, sondern deren

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1 Hierzu zählen u.a. die Ad-hoc-Arbeitsgruppe Kleinstadtforschung der Akademie für Raumentwicklung in der Leibniz-Gemeinschaft (ARL), der Schwerpunktbereich »Kleinstädte in

Rolle auch in anwendungsorientierten Handlungsfeldern an der Schnittstelle von Planung, Zivilgesellschaft und Politik stärken. Diese Entwicklung ist vielversprechend, gleichzeitig bleibt festzuhalten, dass die Mehrheit der bisherigen Arbeiten in der Kleinstadtforschung die der Disziplin inhärenten und noch immer dominierenden binären Raumkategorien Stadt/Land für die eigene Legitimation und Einordnung innerhalb der Forschungslandschaft zugrunde legt. Die Folge ist, in der Mehrheit der Fälle, ein konzeptioneller und methodologischer Zugang, der sich einem tradierten Raumverständnis entlang typologischer Lage- und Strukturmerkmale annimmt und insbesondere anhand administrativer und funktional-quantitativer Zuschreibungen versucht, das »spezifisch Kleinstädtische«, wahlweise in Abgrenzung oder Beziehung zu einem vermeintlich »(Groß-)Städtischen« oder »Ländlichen«, auszumachen. Diese Lesart der Kleinstadt folgt nach wie vor dem einflussreichen Impetus der Chicago School und bezieht sich in der Regel auf quantitative Forschungsansätze, deren Kleinstadtdefinition auf die Bevölkerungs-, Siedlungs- und Bebauungsdichte sowie die Anzahl der Einwohner\_innen, Stadtteile oder Versorgungseinrichtungen gründet. Ein solcher Blick hat nicht nur stets eine defizitäre Perspektive auf kleinstädtische Funktionsmerkmale zur Folge, sondern läuft darüber hinaus Gefahr, auch innerhalb der Kleinstadtforschung einen »methodological cityism« (Angelo/Wachsmuth 2015) zu reproduzieren: einen überwiegend analytischen, empirischen und epistemologischen Fokus auf die traditionellen Formen und Definitionen des (Klein-)Städtischen, unter Ausschluss anderer, multiskalarer Wechselbeziehungen und Abhängigkeiten erweiterter Urbanisierungsprozesse. Um dieser Gefahr eines analytischen (Klein-)Stadt-Fetischismus in der Kleinstadtforschung entgegenzuwirken, bedarf es eines Untersuchungsansatzes, der in der Lage ist, die spezifischen Konstellationen lokal-räumlicher Kleinstadtentwicklungen stets als ein sich wechselseitig bedingendes, dynamisches Produkt politischer, ökonomischer, gesellschaftlicher und ökologischer Prozesse über Maßstabsebenen hinweg zu analysieren. Das jüngst veröffentlichte Kleinstadtkompodium des Ad-hoc-Arbeitskreises der ARL macht auf Grundlage einer umfangreichen Bestandsaufnahme deutschsprachiger Arbeiten in der Kleinstadtforschung unter anderem auf diese Problemstellung aufmerksam und fordert folgerichtig neue inter- und transdisziplinäre Forschungsansätze ein, die die Heterogenität, Komplexität, Vielschichtigkeit und Nicht-Linearität von kleinstädtischen Entwicklungspfaden und Alltagswelten sowohl theoretisch und konzeptionell als auch methodologisch adressieren und darüber hinaus einen Bezug zu neueren raumwissenschaftlichen Theoriediskussionen, auch und insbesondere aus der internationalen Forschungslandschaft, herstellen (Steinführer/Porsche/Sondermann 2021: 333).

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Deutschland« des BMI oder das dieser Publikation zugrunde liegende Forschungsprojekt »HochschulCampus Kleinstadtforschung (HCKF)« der BTU Cottbus.

Der vorliegende Beitrag setzt hier an. Die Suche nach neuen Untersuchungs- und Theorieansätzen der momentan in einer Aufmerksamkeitslücke verharrenden und sich insbesondere auf funktional-quantitative Untersuchungen beschränkten Kleinstadtforschung möchte ich in der Folge mit einer anderen Suche aus der internationalen Stadt- und Regionalforschung verbinden. Nämlich die Suche nach der Zukunft für die in den vergangenen Jahren viel und kontrovers debattierte These einer planetaren Urbanisierung (Lefebvre 2003 [1970]; Brenner/Schmid 2014, 2015). Indem ich die beiden Suchenden, die bisher einander (noch) nicht gefunden haben, miteinander in Verbindung setze, ziele ich darauf ab, der deutschsprachigen Kleinstadtforschung neue theoretisch-konzeptionelle und methodologische Impulse an die Hand zu geben. Zugleich möchte ich die bisher vorwiegend auf großmaßstäbliche Zusammenhänge fokussierende und als abstrakte Metatheorie diskutierte These der planetaren Urbanisierung mithilfe des empirischen Forschungsgegenstands Kleinstadt lokal-räumlich produktiv und damit anhand realer Lebenswelten different greifbar machen. Mit diesem Vorhaben adressiere ich, was als »überraschende methodologische Distanz« (Steinführer/Porsche/Sondermann 2021: 18) zwischen den in der Kleinstadtforschung dominierenden Ansätzen einer administrativen und funktional-quantitativen Bestimmung der Kleinstadt sowie den in der neueren (internationalen) Stadt- und Regionalforschung verbreiteten sozial-konstruktivistischen Forschungszugängen festgestellt wird.

Ich bin davon überzeugt, dass die Schließung dieser Distanz notwendig ist, um sowohl in Wissenschaft und Praxis als auch in der Politik spezifische Kleinstadtentwicklungen jenseits messbarer Funktionalität und Morphologie vor Ort, vor allem im Gefüge ihrer multiplen Beziehungen und Abhängigkeiten zu anderen Geografien, Lebenswelten, Orten und Institutionen weltweit analysieren, bewerten und nachhaltig gestalten zu können. Vordergründig braucht es hierzu einen geeigneten Untersuchungsansatz, der kleinstädtische Entwicklungspfade auf Basis einer multiskalaren und nicht-stadtzentrierten Perspektive betrachtet, die der planetaren Urbanisierungsthese inhärent ist. Eine solche Perspektive ist dringend notwendig, um die anhaltende Verengung auf tradierte Raumkategorien und Vorstellungen des ›Städtischen‹ innerhalb der deutschen Kleinstadtforschung aufzuweichen, gleichzeitig einen produktiven Untersuchungsansatz zu skizzieren, der den sich zeitlich und räumlich überlagernden Beziehungen des kleinstädtischen Forschungskontexts als Raum gelebter und multipler Alltagserfahrungen in einer weitreichend globalisierten Welt gerecht wird.

Ziel meines Beitrags ist es, die der These einer planetaren Urbanisierung inhärente Qualität eines multiskalaren und nicht-stadtzentrierten Untersuchungsansatzes für die deutschsprachige Kleinstadtforschung herauszuarbeiten. Hierzu gehe ich im zweiten Teil zunächst auf die vielstimmigen Kritiken ein, die in den vergangenen Jahren an der planetaren Urbanisierung vorgebracht wurden. Dieser Rückblick wird die wesentlichen Fehlstellen, aber auch Reduktionen und Missver-

stände gegenüber der planetaren Urbanisierungsthese aufzeigen. Im dritten Teil werde ich dann auf wesentliche Kritikpunkte als auch Bedeutungsebenen der planetaren Urbanisierung eingehen, um diese anhand meiner eigenen Forschungsarbeit zu Kleinstadtentwicklungen in Ostdeutschland für die Kleinstadtforschung produktiv zu machen. Dabei soll die Herausarbeitung eines multiskalaren und nicht-stadtzentrierten Untersuchungsansatzes für die Kleinstadtforschung im Mittelpunkt stehen, dessen mögliche Anwendungsperspektiven ich in einem letzten, zusammenfassenden Teil aufzeigen werde.

## 2. Die unbestimmte Zukunft der planetaren Urbanisierung

Die These der *planetaren Urbanisierung* (Lefebvre 2003 [1970]; Brenner/Schmid 2014, 2015) ist der Aufruf zu einem radikalen Umdenken von bestehenden (westlichen) Konzepten und Kartografien des Urbanen. Anlass und Notwendigkeit eines solchen Umdenkens sind die sich immer stärker ausdehnenden Verstädterungsprozesse und die damit verbundenen Herausforderungen, mit denen sich die internationale Stadt- und Regionalforschung als auch die angewandten Planungsdisziplinen und Politikbereiche konfrontiert sehen. Vor diesem Hintergrund reiht sich die planetare Urbanisierungsthese in jüngste Forderungen und Debatten der *Critical Urban Studies* ein, die darauf abzielen, die neuen Maßstäblichkeiten und multiskalaren Dimensionen globaler Verstädterungsprozesse, sich damit verändernde staatliche Governance-Strukturen, ungleiche regionale Entwicklungen als auch die multiplen Klima- und Umweltschäden jenseits unseres tradierten Verständnisses von Urbanisierung und Urbanität zu untersuchen (Brenner 2004; Brenner/Elden 2009; Merrifield 2013; Kanai 2014; Angelo/Wachsmuth 2015; Arboleda 2020). Urbanisierung, so die These, kann nicht länger ausschließlich in Bezug auf das Wachstum städtischer Bevölkerungen und die Ausdehnung morphologischer Formen der ›Stadt‹ gelesen werden, sondern hat darüber hinaus längst ein weltumspannendes, gar planetares Ausmaß angenommen. Dieses Ausmaß lässt sich insbesondere anhand von multiplen, multiskalaren, materiellen und nicht-materiellen Metabolismen charakterisieren, die nach Henri Lefebvre die »in sich verschlungenen Venen und Arterien einer vollständig verstädterten Gesellschaft« (2016: 121, Übers. d. A.) charakterisieren. In der Folge verliert die Stadt ihr konstitutives Außen, ist also nicht länger über rein morphologische Strukturen und Indikatoren wie Dichte, Bevölkerung und Nähe zu lesen. Urbanisierung dehnt sich damit prozessual in nicht-städtische Gebiete aus und setzt schließlich Orte, Regionen und Institutionen weltweit über unterschiedliche Maßstabsebenen und Zeitlichkeiten hinweg in Verbindung. Denken wir beispielsweise an den extensiven Extraktivismus von Rohstoffen oder die fundamentalen Klima- und Umweltschäden, die das weltweite ökonomische und städtische Wachstum bedingen, dann können

Urbanisierungsprozesse nicht länger ohne die sich zeitlich-räumlich überlagern und multiskalaren Beziehungen zwischen urbanen Zentren und der immer ausgedehnteren »Operationalisierung von Landschaften« (Brenner/Katsikis 2020, Übers. d. A.) verstanden werden. Selbst Ozeane, Wüsten, Regenwälder oder andere Gebiete und Territorien weit jenseits dessen, was wir gewohnt sind mit tradierten Bildern und Konzepten von Mensch/Natur, Zentrum/Peripherie oder Stadt/Land beschreibbar zu machen, sind unter Verwendung dieser Brille als längst unabdingbare Bestandteile weltweiter Verstädterungsprozesse zu verstehen. In der Folge müssen diese auch in Planungs- und Gestaltungsprozessen des (Klein-)Städtischen berücksichtigt und in sie einbezogen werden.

Eine solche Lesart von Urbanisierung, so die Vertreter\_innen der These, würde nicht nur die Perspektive auf die über Geografien, Orte, Maßstabebenen, Sektoren sowie Institutionen hinweg wirkenden strukturellen Beziehungen und Abhängigkeiten ortsspezifischer Entwicklungen im Kontext weltumspannender kapitalistischer Urbanisierungsprozesse öffnen, sondern darüber hinaus auch den Blick auf die konkreten politisch-ökonomischen Bedingungen und eingeschriebenen Machtbeziehungen lokal-räumlicher Ausformulierungen global wirkender Urbanisierungsprozesse schärfen. Vor diesem Hintergrund sind insbesondere auch Kleinstädte nicht länger als abzugrenzende räumlich-funktionale Einheiten, sondern als urbane Gefüge zu verstehen, die sich durch sozial-räumliche Beziehungen und Metabolismen über Maßstabebenen und Orte hinweg lokal-räumlich konstituieren.

Die Kritiken, die in den vergangenen Jahren an dieser These einer planetaren Urbanisierung aus der internationalen Kolleg\_innenschaft der interdisziplinären Stadt- und Regionalforschung heraus geübt wurden, wiegen derweil schwer. Hillary Angelo und Kian Goh (2020) gehen diesen detailliert und systematisch nach. In der Folge lassen sich schließlich drei wesentliche, in Teilen miteinander verwobene Stränge kritischer Stimmen identifizieren. Ein erstes Lager, das die Mehrheit der Kritiken ausmacht, stützt sich insbesondere auf empirische Forschungsarbeiten, die in den allermeisten Fällen aus vergleichender und postkolonialer Perspektive die ortsspezifischen Unterschiedlichkeiten urbaner Gefüge und deren spezifische Alltagswelten, besonders in Regionen des globalen Südens, herausarbeiten (z.B. Peake 2016; Khatam/Haas 2018; O'Callaghan 2018). In der Folge verwenden diese Arbeiten ihre vielfältigen empirischen Funde als Argument dafür, dass die These einer planetaren Urbanisierung insbesondere aufgrund ihres großmaßstäblichen Untersuchungsansatzes als auch wegen ihres vordergründigen Verständnisses von Urbanisierung als Produkt eines globalisierten Kapitalismus eine stark abstrahierende und verallgemeinernde Metatheorie mit Universalitätsanspruch darstelle. Damit beziehen sich diese Stimmen auf eine vermeintlich totalitäre Lesart, die globale Urbanisierungsprozesse als überall gleich beschreibe und »die vorgibt, uns zu sagen, dass das Städtische von nun an die planetarische Bedingung ist, unter Aus-

schluss der Agrarfrage, des Ländlichen, der Landschaft, der Wildnis, all ihrer Geschichten, all ihrer Geografien, all dieses Lebens« (Peake 2016: 2–3, Übers. d. A.). Damit sei das Konzept der planetaren Urbanisierung schließlich ungeeignet und blind für die vielfältigen, situativen und lokal-räumlichen Ausprägungen und Lebenswelten des Urbanen inklusive ihrer jeweiligen historischen und kulturellen Kontexte (vgl. O'Callaghan 2018: 434). Indem diese Kritiken ihre spezifisch lokal-räumlichen Untersuchungen regelrecht als Gegenentwurf einer vermeintlich als »universell« bezeichneten Theorie der planetaren Urbanisierung mobil machen, werfen sie nicht nur die drängende Frage auf, inwieweit ihre Arbeiten größere geografische Maßstäbe und Wechselbeziehungen als auch global wirkende ökonomische und politische Strukturen tatsächlich adressieren, sondern zielen darüber hinaus auch an einem der grundlegenden Anliegen der planetaren Urbanisierungsthese vorbei. Nämlich dem Ziel, einen theoretisch-konzeptionellen Rahmen zu schaffen, der es ermöglicht, eben genau diese situativ lokal-räumlichen Gefüge des Urbanen als konkrete und sich unterscheidende Produkte global verknüpfter und multiskalar wirkender Urbanisierungsprozesse greifbar zu machen. Der planetaren Urbanisierungsthese geht es also nicht darum, Differenzen zu übersehen oder gleichzumachen, wie in einer Vielzahl der empirischen Kritiken behauptet wird. Vielmehr ist ihr grundlegendes Anliegen, Differenzen sichtbar und brauchbar dafür zu machen, die politisch-ökonomischen Bedingungen für die sich teils entgegenwirkenden und multiskalar überlagernden ungleichen Entwicklungen von Orten, Territorien und Regionen herausarbeiten zu können. Dies birgt schließlich das Potenzial und die Voraussetzung einer – ganz im Sinne der Lefebvreschen Bedeutung der These – Politisierung und Überwindung ebendieser strukturellen Bedingungen. Ich komme an späterer Stelle auf diese Bedeutungsebene zurück, um schließlich das emanzipatorische und revolutionäre Potenzial eines multiskalaren und nicht-stadtzentrierten Untersuchungsansatzes, der der planetaren Urbanisierungsthese innewohnt, für die deutschsprachige Kleinstadtforschung aufzuzeigen.

Eine zweite Gruppe der Kritiken richtet sich vordergründig an die Positionalität der insbesondere männlich-weißen Autoren innerhalb der westlichen Wissenschaftscommunity, die vornehmlich die erkenntnistheoretischen Ableitungen der planetaren Urbanisierung und ihrer Diskurse in der internationalen Stadt- und Regionalforschung dominieren (vgl. Peake 2016; Derickson 2018; Oswin 2018; Katz 2021). Diese Gruppe argumentiert, dass einerseits die privilegierte Stellung, aus der heraus die Autoren als renommierte Wissenschaftler in der akademischen Welt sprechen, die Strukturen ungleicher Wissensproduktion, insbesondere zwischen Wissenschaftler\_innen des globalen Nordens und Südens, reproduzieren und verfestigen. Zum anderen, dass die immer wieder als abstrahierende und allgemeingültig gelesene These den Ausschluss und die Marginalisierung feministischer als auch LGBTQI+-Perspektiven sowohl innerhalb der Wissenschaftslandschaft als auch der alltäglichen Produktion von urbanen Räumen fortschreibt und mani-

feiert. Für Natalie Oswin nutzt die Theorie der planetaren Urbanisierung daher weniger als Erklärung, dass es »in der urbanen Welt kein *Außen* mehr gibt« (Brenner 2014: 751, Übers. d. A., Herv. i. O.), sondern dient vielmehr als Beweis dafür, dass durch den vermeintlich universellen Anspruch der Theorie, sowohl in Bezug auf ihren Inhalt als auch ihre Repräsentation, »die Existenz der vielen Außen[seiter\_innen] in der kritischen Stadttheorie hervorgehoben und verstetigt wird« (Oswin 2018: 542, Übers. d. A.).

Diese Kritik, wie sie Natalie Oswin und andere Kolleg\_innen formulieren, zielt zwar, ebenso wie die zuvor benannten Kritiken, an dem eigentlichen konzeptionell-inhaltlichen Anliegen der planetaren Urbanisierungstheorie vorbei. Darüber hinaus verkennt sie, dass es auch Positionen marginalisierter Personengruppen sind, die an der Entwicklung großmaßstäblicher Theorien arbeiten. Gleichzeitig stellt die Kritik jedoch die politische Forderung zur Öffnung akademischer Räume für eine vielmehr stimmige und egalitäre Wissenschaft auf und ist damit ein fundamental wichtiges Korrektiv in der aktuellen Debatte. Obwohl Neil Brenner als Reaktion auf diese Kritik für einen »engagierten Pluralismus« (2018) zur Öffnung produktiver Möglichkeitsräume wirbt, der eine kritische Debatte zwischen unterschiedlichen Positionalisierungen in der Wissenschaft eröffnen soll, bleibt festzuhalten, dass die planetare Urbanisierungstheorie zentrale feministische Positionen der kritischen Stadt- und Regionalforschung schlicht übersieht. Auch auf diesen Punkt komme ich in meinen späteren Ausführungen zurück, da eine gezielte Verbindung mit ebendiesen verkannten Positionen die insbesondere orts- und raumsensible als auch multiskalare Untersuchungsperspektive der planetaren Urbanisierungstheorie deutlich macht.

Ein weiterer wesentlicher Strang der Kritiken an der planetaren Urbanisierungstheorie zielt auf ihre theoretisch-konzeptionelle Weiterentwicklung ab und versucht insbesondere die auf Henri Lefebvre zurückzuführenden Aspekte und Begrifflichkeiten der ›Differenz‹ und des ›alltäglichen Lebens‹ (*everyday life*) herauszuarbeiten und zu stärken (vgl. Buckley/Strauss 2016; Angelo/Goh 2020). Schließlich soll so die kritisierte ›Blindheit‹ der planetaren Urbanisierungstheorie überwunden und die ortsspezifische Wirkung global verknüpfter Urbanisierungsprozesse in Form lokal-räumlich spezifischer Gefüge und ihrer urbanen Lebenswelten aufgezeigt werden. Darüber hinaus versuchen andere Positionen den primär (post-)marxistischen Ansatz der planetaren Urbanisierung aufzuweichen, um die Dominanz ihrer politisch-ökonomischen Lesart global ungleich wirkender Urbanisierungsprozesse mithilfe von intersektionalen Analysen gesellschaftlich eingeschriebener Machtbeziehungen, etwa im Zusammenhang von Rassismus, Kolonialismus, Nationalismus, Klasse oder patriarchalen Strukturen, zu erweitern (Kipfer 2018; Oswin 2018). Achille Mbembe und Sarah Balakrishnan (2016) skizzieren in diesem Zusammenhang die Vision eines neuen Afropolitanismus, der planetar wirkenden Prozessen eines fortdauernden Kolonialismus westlicher Länder durch die Neupositionierung afrikanischer Kulturen und Perspektiven in

der Welt entgegenwirkt und so auf einen panafrikanischen Zusammenschluss zur Einschränkung imperialistischer Strukturen und Werte abzielt.

Ich denke, dass mit der hier angeführten Übersicht mehr als deutlich wird, dass das Feld der Kritiken an der planetaren Urbanisierungsthese im Laufe der vergangenen Jahre vielstimmig und weit gestreut ist und insbesondere in Bezug auf ihren fehlenden Pluralismus und ihre theoretisch-konzeptionelle Reduktion des Planetaren deutlich wird. Es stellt sich damit die Frage nach der Zukunft der These einer planetaren Urbanisierung. Ist der vielversprechend gestartete Aufruf nach einem radikalen Umdenken tradiierter Konzepte und Kartografien des Urbanen in der Krise oder gelingt es, diesem auf Dauer gerecht zu werden? Wie kann ein solch ambitioniertes Projekt in der konkreten Untersuchung und Arbeit mit spezifisch lokal-räumlichen Konstellationen des Urbanen tatsächlich produktiv gemacht und empirisch unterlegt werden? Und wie kann dem ausschließenden Gestus der These gezielt entgegengewirkt und eine Vielstimmigkeit sowohl urbaner Lebenswelten als auch wissenschaftlicher Positionen gefördert werden?

In der Anwendung und Weiterentwicklung der planetaren Urbanisierungsthese aus der relativ jungen Disziplin der Kleinstadtforschung heraus sehe ich die Chance, zumindest Teile dieser Fragen zu beantworten, um gleichzeitig geeignete theoretisch-konzeptionelle und methodologische Ansätze für die zukünftige Untersuchung, Planung und Gestaltung von Kleinstädten zu entwickeln. Um diesem Ziel näherzukommen, möchte ich in der Folge auf zwei Kritikfelder näher eingehen, mit denen ich mich durch meine eigene Positionierung zwischen Kleinstadtforschung und der internationalen Stadt- und Regionalforschung besonders verbunden fühle, um dadurch die Bedeutung der planetaren Urbanisierungsthese auch für die Kleinstadtforschung herauszuarbeiten. Dies betrifft (1) die politische Forderung nach einer vielstimmigeren, pluralen und egalitären Wissensproduktion im Zusammenhang mit der These der planetaren Urbanisierung und (2) deren theoretisch-konzeptionelle Weiterentwicklung insbesondere in Bezug auf die Hervorhebung ihrer durch Henri Lefebvre geprägten Bedeutungsebenen. Durch die Verbindung mit zentralen feministischen Positionen und eine Art ›Neuverwurzelung‹ der These mit ihrem revolutionären Geist möchte ich in der Folge schließlich insbesondere die multiskalaren und nicht-stadtzentrierten Analyseebenen, die der planetaren Urbanisierungsthese inhärent sind, stärken. Schließlich soll hierdurch ein stärkerer raum- und ortssensibler Untersuchungsansatz für die deutschsprachige Kleinstadtforschung herausgearbeitet werden, der gleichzeitig die multiplen und multiskalaren Wechselbeziehungen der alltäglichen Raumentwicklungen kleinstädtischer Kontexte in den Blick nimmt.

### 3. Die Neuausrichtung der planetaren Urbanisierungsthese in der Kleinstadtforschung

Vor dem Hintergrund der zuvor aufgeführten Kritiken an der These der planetaren Urbanisierung, den immer wieder auftretenden begrifflichen Missverständnissen sowie der konzeptionellen Reduktion zahlreicher Kritiker\_innen weist Roger Keil zu recht darauf hin, dass es notwendig sei, »die planetarische Urbanisierung, die nun Gefahr läuft, zu einer leeren Hülle für akademische Debatten zu werden [...], aus dem Elfenbeinturm zu befreien und sie auf die Straße zu bringen« (2018: 1591, Übers. d. A.). Damit fordert er nichts Geringeres, als dem Konzept seinen »revolutionären Geist« zurückzuführen, anstatt in akademischen Debatten als rein theoretisches Konstrukt zerrieben zu werden.

»Die Theorie der planetaren Urbanisierung wird nur einen langfristigen Wert haben, wenn es gelingt, den »virtuellen (abstrakten) Gegenstand« einer »urbanisierten Gesellschaft« mit der Pluralität der tatsächlichen Projekte urbaner Akteur\_innen und Denker\_innen, welche diese gestalten, zu verbinden.« (Ebd.: 1594, Übers. d. A.)

Ich stimme der Notwendigkeit einer »Neuverwurzelung« der These mit ihrer Lefebvreschen Bedeutung im Sinne einer auf »Zentralität«, »Differenz« und »Emanzipation« basierenden »urbanen Praxis« zu. In der Folge möchte ich diese inhärenten Aspekte noch einmal auf den Plan rufen, um einerseits der anhaltenden Reduktion der planetaren Urbanisierung entgegenzuwirken und andererseits die in meinen Augen bisher nicht gehobene Qualität des Konzepts für die Weiterentwicklung eines multiskalaren und nicht-stadtzentrierten Untersuchungsansatzes innerhalb der deutschsprachigen Kleinstadtforschung deutlich zu machen.

Zunächst ein kurzer Blick zurück in die Zeit Ende der 1960er-Jahre. Diese Zeit, in der Henri Lefebvre an seinem Schlüsselwerk *The Urban Revolution* (2003 [1970]) arbeitete, war innerhalb westlicher Gesellschaften durch zwei entgegenwirkende Narrative gekennzeichnet. Auf der einen Seite stand die lange Phase eines allgemeinen Fortschritts- und Technologieglaubens, der insbesondere im ökonomischen Aufstiegsversprechen der Nachkriegsjahre wurzelte und eng gekoppelt war mit einer politisch-militärischen Mobilmachung eines umfangreichen Atom- und Raumfahrtprogramms. Parallel entwickelte sich ein Gegenarrativ, das geprägt war von der ökologischen und ökonomischen Debatte um die »Grenzen des Wachstums«. Vor diesem Hintergrund war eines der drängenden Themen, dem sich auch Henri Lefebvre in Anlehnung an Karl Marx annahm, das Verhältnis einer sich stetig ausdehnenden kapitalistischen Urbanisierung der Welt zur damit einhergehenden Zerstörung von Umwelt und Natur. »Die Beherrschung der Natur, die mit der Technologie und dem Wachstum der Produktivkräfte einhergeht und ausschließlich den Anforderungen des Profits unterliegt, gipfelt in der Zerstörung der Natur.« (Lefebvre

2016: 149, Übers. d. A.) Urbanisierung steht hier in direktem Zusammenhang mit einem »global produzierten Raum im Weltmaßstab und der Fragmentierung und Pulverisierung (Privatisierung), die sich aus den kapitalistischen Produktionsverhältnissen ergeben. Der Raum zerfällt, wird in Stücke unterteilt und verkauft [...], während er sich als weltweite und sogar planetarische Totalität abbildet.« (Ebd. 2016: 148, Übers. d. A.)

Diese Ausführungen beinhalten gleich mehrere Bedeutungsebenen, auf die die planetare Urbanisierungsthese zurückzuführen ist. Zum Ersten eine semantische Ebene: Henri Lefebvres Schriften sind geprägt von einer allgemein-gesellschaftlichen Sprache, die gekennzeichnet ist durch begriffliche Superlative. Die Erschließung des Weltalls und der planetare Blick auf die Erde waren im damaligen Kontext medialer Alltag, der sich begrifflich bei Lefebvre widerspiegelt. Gleichzeitig ist diese Begrifflichkeit bewusster Ausdruck einer zweiten Bedeutungsebene, nämlich der Maßstäblichkeit des menschlichen Handelns und damit seiner individuellen und kollektiven Verantwortung in der Welt. Henri Lefebvre nimmt damit vorweg, was Ulrich Brand und Markus Wissen als »imperiale Lebensweise« (»imperial mode of living«) bezeichnen, die

»das Alltagsleben in den kapitalistischen Zentren im Wesentlichen durch die Gestaltung der sozialen Beziehungen und der Mensch-Natur-Beziehungen *anderswo* ermöglicht, d.h. durch den (prinzipiell) unbegrenzten Zugang zu Arbeitskraft sowie natürlichen Ressourcen und Senken-Ökosystemen (wie z.B. Regenwälder und Ozeane im Fall von CO<sub>2</sub>) [...] – im globalen Maßstab« (2021: 39f., Übers. d. A., Herv. i. O.).

Es ist dieser Bezugsrahmen, in dem das Konzept der planetaren Urbanisierung heute, insbesondere vor dem Hintergrund immer deutlicher spürbarer Folgen einer weit vorangeschrittenen Klimakrise, auch in der Kleinstadtforschung produktiv angewendet werden kann. Denn entgegen einer nach wie vor dominanten Einordnung von Kleinstadt als funktional abzugrenzendem Untersuchungsraum ist der konkrete kleinstädtische Entwicklungskontext stets gestalteter und gestaltender Teil multiskalar wirkender Beziehungen im Kontext global verknüpfter Wirtschaftsentwicklungen, politischer Steuerungsprozesse, großmaßstäblicher Infrastrukturprojekte oder ökologischer Krisenerscheinungen.

Um in diesem Zusammenhang die These der planetaren Urbanisierung tatsächlich produktiv zu machen, hilft die alternative Lesart des »Planetaren« nach Gayatri Spivak (2015), die den Blick wendet und eine planetare Perspektive nicht als reines Analysekriterium weltumspannender Abhängigkeiten versteht, sondern als Möglichkeit dafür, sich von hegemonialen (westlichen) Konzepten der Globalisierung und Globalität zu lösen. Dies gelingt durch die räumlich-konzeptionelle Distanz, die eine Lesart aus der Perspektive des Planetaren mit sich bringt und unter der die Auswirkungen des menschlichen Lebens auf der Erde überhaupt erst deutlich wer-

den. Damit tritt die eigentliche Bedeutung des Menschseins in den Vordergrund. Nämlich das »Denken des Anderen« (»to think the other«) als Voraussetzung dafür, unsere gegenwärtigen Vorstellungen eines gemeinsamen Zusammenlebens in der Welt radikal neu zu verhandeln. Der Blick und das Denken über das Planetare verbirgt also das emanzipatorische Potenzial eines menschlichen Handelns, das allen lebenden Organismen einschließlich ihrer Biome mit Respekt, Würde und Verantwortung begegnet, als auch die individuellen und kollektiven Handlungsspielräume (»agency«) gegenüber eines immer wieder als unbegrenzt gezeichneten kapitalistischen Wirtschaftssystems hervorhebt.

Wenn Henri Lefebvre also von einer »planetaren Totalität« im Zusammenhang der weltweiten Ausbreitung »imperialer Lebensweisen« spricht, dann gründet die Wahl seiner Begrifflichkeit des Planetaren eben genau in dieser emanzipatorischen Dimension. In der Folge zielt die These darauf ab, die planetarische Totalität kapitalistischer Urbanisierungsprozesse sichtbar zu machen. Und zwar nicht, um die daraus resultierenden weltweiten Ungleichheiten zwischen spezifischen Orten, Regionen, Ökosystemen und gesellschaftlichen Gruppen »gleichzumachen«, wie von einem Teil der Kritiker\_innen vorgetragen, sondern vielmehr, um mithilfe des spezifischen »Denkens des Anderen« die konkreten Bedingungen für die Entwicklung neuer Ansätze zur Auflösung ebendieser ungleichen Verhältnisse zu schaffen (vgl. Goonewardena 2018; Spivak 2015).

Um den emanzipatorischen Charakter der planetaren Urbanisierungsthese zu unterstreichen, lohnt zudem der Rückgriff auf Henri Lefebvres Definition einer »vollständigen Verstädterung der Gesellschaft«, in der er die Herausbildung des Urbans als die Grundlage menschlicher Emanzipation und damit der Negation kapitalistischer Urbanisierung erkennt. Das Urbane als auch das RURALE sind hierbei, in Abgrenzung zu den morphologisch-räumlichen Kategorien Stadt und Land, als dynamische Produkte sozialer Verhältnisse zu verstehen. Vor dem Hintergrund der bereits zuvor erläuterten Vereinnahmung der Umwelt durch das menschliche Handeln im Rahmen einer imperialen Lebensweise und der damit einhergehenden vollständigen Verstädterung vermittelt das Urbane zwischen dem Globalen und dem Lokalen. Das Globale bezieht sich auf den Bezugsrahmen der politischen Gestaltung und Zirkulation des Kapitals in einer globalisierten Welt. Das Lokale, das Henri Lefebvre als das Private bezeichnet, beschreibt die alltägliche Lebenswelt an einem konkreten Ort. Das Urbane wird zum Vermittler zwischen diesen Lebenswelten und fördert den gesellschaftlichen Austausch, indem es das Lokale mit dem Globalen relational in Verbindung setzt. Ein In-Beziehung-Setzen mit der Welt tritt ein, dessen Wesen die »Zentralität« ausmacht, von der aus alles konzentriert verfügbar ist (Informationen, Waren, soziale Beziehungen, kulturelle Güter etc.).

Eine solche gesellschaftliche Verbindung mit der Welt, die der Lefebvreschen Bedeutung einer »verstädterten Gesellschaft« zugrunde liegt, bleibt losgelöst von den tradierten, räumlichen Bildern, Vorstellungen und Konzepten der »Stadt« und

kann sich überall, insbesondere auch an »nicht-städtischen« und den urbanen Zentren weit entlegenen Orten der Welt herausbilden (vgl. Vogelpohl 2011). Entgegen der von Theodor Adorno ausgeführten Bedeutung der »Provinzialität« als einer unreflektierten Geisteshaltung, die sich in nach außen abgrenzenden, teils autoritären Räumen manifestiert (vgl. Förtner/Belina/Naumann 2019; Belina 2021), ermöglicht das Wesen der »Zentralität« die Herausbildung von offenen Räumen der »Differenz« und damit die Bedingung für das alltägliche Aufeinandertreffen und Begegnen, die politische Mitgestaltung und das Entstehen des Neuen (vgl. Lefebvre 2003 [1970]). Genau hier ist ein wesentliches Grundanliegen der planetaren Urbanisierungsthese zu verorten. Nämlich die Öffnung des Blicks auf die Möglichkeit einer emanzipatorischen urbanen Praxis, die überall auf der Welt in Erscheinung treten kann. In der Folge muss die These einer planetaren Urbanisierung vor dem Horizont der Freiheit und der Möglichkeit einer individuellen und kollektiven Emanzipation des Menschen von den ihn und seine Umwelt strukturierenden Verhältnissen gelesen werden (vgl. Keil 2018). Sich dem spezifisch Kleinstädtischen mit ebendiesem nicht-stadtzentrierten Blick zu nähern, ermöglicht es nicht nur, dessen Einbettung in globale Metabolismen nachzuzeichnen, sondern darüber hinaus den Fokus auf die konkret lokal-räumlichen Artikulationen des Urbanen und die in diesem Kontext erwachsenden individuellen als auch kollektiven Handlungsspielräume zu werfen.

Dass die planetare Urbanisierung neben einer nicht-stadtzentrierten insbesondere auch eine multiskalare Untersuchungsperspektive befördern kann und wie beide Perspektiven in der Kleinstadtforschung zur Anwendung kommen können, möchte ich in der Folge hervorheben. Hierzu ist es hilfreich, zunächst den Selbstanspruch der planetaren Urbanisierungsthese zu erden. In meinen Augen ist die These, wie sie von Neil Brenner und Christian Schmid postuliert wird, weder eine radikal neue Idee (was sie durch ihre teils heroische Selbstbeschreibung und selbstbewusste Representation fälschlicherweise beansprucht), noch ein komplett gescheitertes Projekt (was vor allem von Kritiker\_innen aus dem empirischen Lager angeführt wird). Vielmehr verstehe ich die These – jenseits von Henri Lefebvres Schriften – in der Tradition langjähriger Bemühungen auch anderer (post-)marxistischer und insbesondere feministischer Positionen, die von dieser nur unzureichend bis gar nicht berücksichtigt werden (vgl. Oswin 2018; Angelo/Goh 2020).

So ist es beispielsweise die feministische Humangeografin Doreen Massey, die bereits 1991 in ihrem erstmals veröffentlichten Artikel »A Global Sense of Place« ein progressives und differenziertes Ortsverständnis skizziert, das die multiskalaren Beziehungen einer zur damaligen Zeit stetig zunehmenden Globalisierung in den Blick nimmt. Ihr damit verbundenes Anliegen ist das Entwerfen eines raumsensiblen Verständnisses von »place« als spezifisch lokal-räumliche Konstellation sozialer Beziehungen, Zusammentreffen und Verflechtungen an bestimmten Orten (vgl. Massey 1994). Anhand spezifischer urbaner Alltagserfahrungen entwirft sie ein

Raumverständnis, das den konkreten Ort als dynamisches und heterogenes Produkt sich teils entgegenwirkender und überlagernder Beziehungen versteht. Von diesen ist der Großteil auf einer übergeordneten, großmaßstäblichen Ebene konstruiert und wird aus diesem Grund nicht direkt im Raum vor Ort ersichtlich. Doreen Massey geht auch auf die diesem Narrativ eingeschriebenen Macht-Geometrien ein. Nämlich einer vermeintlich abstrakten und dominanten Ebene des Globalen (Planetaren), der sich die Ebene des Lokalen als machtloses und abhängiges Gegenstück unterzuordnen habe (vgl. Massey 2005: 83).

Es ist dieser Trugschluss einer vermeintlich durch globale Wirkkräfte dominieren lokalen Ebene, den in meinen Augen auch die planetare Urbanisierungsthese insbesondere durch ihren dominant diskursiven Gestus als auch durch ihren großmaßstäblichen Analyseansatz während der vergangenen Jahre reproduziert hat und den es gilt, im Rahmen zukünftiger Empiriearbeiten als auch theoretisch-konzeptioneller Weiterentwicklungen aufzulösen. Hierfür ist es zentral, dass Ansätze der planetaren Urbanisierung das Globale als ein ebenso auf lokaler, regionaler und nationaler Ebene konstruiertes Produkt sozialer Beziehungen und konkreter Interessen verstehen, das »demnach gerade nicht globaler Herkunft [ist], sondern tatsächlich die kulturelle Herrschaft über und wirtschaftliche Ausbeutung der zu Peripherien gemachten Weltregionen« konstituiert (Helbrecht et al. 2021: 323). Eine solche relationale und multiskalare Perspektive könnte nun durch weitere Positionen der internationalen Stadt- und Regionalforschung ergänzt werden, soll aber nicht Gegenstand meiner weiteren Ausführungen sein. Vielmehr möchte ich in der Folge kurz verdeutlichen, wie ein multiskalärer und nicht-stadtzentrierter Untersuchungsansatz in der Kleinstadtforschung produktiv werden und welchen Beitrag er für die Zukunft der Disziplin leisten kann. Hierzu greife ich auf meine eigene Forschungsarbeit zu chinesischen Direktinvestitionen (FDI) in ostdeutschen Kleinstädten im Zuge der Mobilitäts- und Energiewende zurück.

Aufgrund ihrer strategischen Standortbedingungen, insbesondere durch ihre Nähe zu deutschen und europäischen Automobilherstellerfirmen, rücken ostdeutsche Kleinstädte in den vergangenen Jahren zunehmend in den Fokus von Auslandsdirektinvestitionen (FDI) chinesischer Firmen. Diese Investitionen fließen insbesondere in die Bereiche Produktion, Forschung und Recycling von Batteriezellen und bedingen die Planung und den Bau teils größerer Produktions-, Logistik- und Transportinfrastrukturen vor Ort. Mit meinen Untersuchungen fokussiere ich auf die spezifischen Aushandlungs- und Planungsprozesse großmaßstäblicher Industrieansiedlungen der chinesischen Firmen Contemporary Amperex Technology Limited (CATL) und Farasis Energy in den Kleinstädten Arnstadt (Thüringen) und Bitterfeld-Wolfen (Sachsen-Anhalt). Eine nicht-stadtzentrierte und multiskalare Perspektive unter Verwendung der planetaren Urbanisierungsthese ermöglicht mir hierbei zunächst, die spezifisch lokal-räumlichen Prozesse der Aushandlung, Entscheidung und Planung inklusive ihrer multiplen Zielstellungen und Bedingungen

in Beziehung und Abhängigkeit zu weiteren Investitionsprojekten der betreffenden Unternehmen und ihrer globalen Partnerinstitutionen an anderen Orten der Welt nachzuzeichnen. Dabei handelt es sich um strategische Investitionen entlang der gesamten Wertschöpfungskette der globalen Elektro-Automobilindustrie. Hier sind nicht nur neue Forschungs- und Entwicklungsstandorte zu nennen, die im Laufe der vergangenen Jahre, ähnlich wie derzeit in Thüringen und Sachsen-Anhalt, auch beispielsweise in den USA und in Japan entstanden sind, sondern auch zahlreiche weitere Firmenbeteiligungen, die von der Rohstoffgewinnung über den Logistiksektor, den Bau von Elektrofahrzeugen und den Aufbau von Ladeinfrastrukturen bis hin zur Vermögensverwaltung reichen. Ein solches Engagement über globale Wertschöpfungsketten hinweg wird als Aufbau eines »global supply chain empire« (Khanna 2019: 28) bezeichnet, der in Bezug auf ausgewählte Schlüsseltechnologien insbesondere im Zuge der staatlich angeordneten »Go-out-Politik«<sup>2</sup> von chinesischen Unternehmen forciert wird. Die bereits getätigten und geplanten Investitionen in den betreffenden Kleinstädten in Thüringen und Sachsen-Anhalt sind damit vor dem Hintergrund ebendieser großmaßstäblich angelegten dynamischen Netzwerke der globalen Expansion zu verstehen. Globale Netzwerke, die sich räumlich, wirtschaftlich und gesellschaftlich immer weiter ausdehnen, immer wieder neue Investitionen befördern und immer weitreichendere Prozesse der Urbanisierung inklusive ihrer territorial-ökologischen Implikationen bedingen.

Die spezifischen lokal-räumlichen Prozesse der Aushandlung, Ansiedlung und Planung ebendieser chinesischen Investitionsnetzwerke vor dem Hintergrund des zuvor erläuterten dialektischen Zusammenhangs erweiterter Urbanisierungsprozesse zu untersuchen, ermöglicht es also, die spezifische Kleinstadtentwicklung vor Ort im Gefüge globaler Metabolismen sowie wechselseitiger Beziehungen und Abhängigkeiten greifbar zu machen. Dieses relationale System in der Kleinstadtforschung zu berücksichtigen bzw. es ausgehend von den lokal-räumlichen Untersuchungen überhaupt nachzuzeichnen, ermöglicht wiederum, das spezifische Spannungsfeld aufzuzeigen, in dem sich lokale Akteur\_innen, in meinem Fall Beteiligte aus kleinstädtischer Planung, Verwaltung und Politik, wiederfinden. In der Folge

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2 Die »Go-out-Politik« (chin.: zouchuqu zhanlüe 走出去战略) wurde 2001, zeitgleich mit dem WTO-Eintritt Chinas, im Rahmen des zehnten Fünfjahresplans (2001–2005) von der chinesischen Regierung ins Leben gerufen. Damit passte das Land seine Außenwirtschaftspolitik an und ermutigte chinesische Unternehmen, im Ausland zu investieren, gleichzeitig erleichterte die Politik die Gründung chinesischer Unternehmen im Ausland. In den folgenden Fünfjahresplänen wurde das Politikpapier immer wieder angepasst, sodass ein kontinuierliches Wachstum der Auslandsinvestitionen, der Ausbau internationaler Vertriebswege sowie die Verbreitung chinesischer Markenprodukte erzielt werden konnten. Die 2017 lancierte Belt and Road Initiative (BRI) kann als strategische Erweiterung dieser expansiven Politikbestrebungen Chinas gelesen werden.

kann das Handeln dieser Akteur\_innen im Sinne sozialer, multiskalarer Beziehungen des spezifisch Urbanen und damit der möglichen Herausbildung von Zentralität und Differenz verstanden werden. Damit rücken insbesondere die individuellen und kollektiven Handlungsspielräume der lokalen Akteur\_innen in den Vordergrund, was es wiederum erlaubt, die zahlreichen und teilweise widersprüchlichen Interessen der beteiligten staatlichen als auch nicht-staatlichen Akteur\_innen herauszuarbeiten. In meinem Fall gibt dies Aufschluss über die teils improvisierten, fragmentierten und heterogenen Prozesse, die mit Chinas Expansionsstrategie und den konkreten Industrieansiedlungen in den betreffenden Kleinstädten vor Ort verbunden sind (vgl. Lee 2017).

Der Untersuchungsansatz ermöglicht es also, die substanziellen Unterschiede in der Lokalisierung und Implementierung dieser Industrieansiedlungen in den jeweiligen Kleinstadtkontexten greifbar zu machen und die Handlungsspielräume lokaler Planungs-, Verwaltungs- und Politikakteure herauszuarbeiten. Damit gelingt es schließlich, ein differenziertes Bild chinesischer Expansionsbemühungen zu zeichnen, das auch die multiplen Stimmen, Bemühungen, Interessen und Absichten der gestaltenden Akteur\_innen vor Ort in den betreffenden Kleinstädten in den Blick nimmt und so dem dominanten Narrativ und dem politikgesteuerten Verständnis von China als Verfechter einer bis ins Detail geplanten großen Strategie globaler Expansion auf der Grundlage (neo-)imperialer und teils aggressiv vertretener Interessen entgegenwirkt. Damit wird deutlich, dass eine multiskalare und nicht-stadtzentrierte Forschungsperspektive es ermöglicht, sowohl die globalen Wechselbeziehungen und Wirkkräfte greifbar zu machen, in denen kleinstädtische Kontexte als gestaltete und gestaltende Entitäten eingebettet sind, als auch den Blick auf die jeweiligen lokal-räumlichen Besonderheiten einer urbanen Praxis – in meinem Fall die Handlungsspielräume Beteiligter aus kleinstädtischer Planung, Verwaltung und Politik – zu öffnen.

#### **4. Fazit: Perspektiven für eine multiskalare und nicht-stadtzentrierte Kleinstadtforschung**

Unter Berücksichtigung von Teilen der in den vergangenen Jahren formulierten Kritiken, insbesondere der politischen Forderung nach einem neuen Pluralismus in der akademischen Debatte (z.B. Oswin 2018; Katz 2021) als auch der notwendigen Neuverwurzelung der These mit ihrem revolutionären Geist einer emanzipatorischen urbanen Praxis (z.B. Keil 2018) sehe ich die planetare Urbanisierungsthese als einen geeigneten theoretisch-konzeptionellen Untersuchungsansatz, der auch und vor allem innerhalb der Kleinstadtforschung produktiv werden kann. Anhand meiner eigenen Forschungsarbeit zu Aushandlungs- und Planungsprozessen von großmaßstäblichen Industrieansiedlungen chinesischer Firmen in ostdeutschen

Kleinstädten habe ich versucht kurz aufzuzeigen, wie die Perspektive einer planetaren Urbanisierung es ermöglicht, sowohl die multiplen Beziehungen und Abhängigkeiten spezifisch lokal-räumlicher Kleinstadtentwicklungen über globale Geografien, Maßstabebenen und Institutionen hinweg nachzuzeichnen, die konkreten Bedingungen und Unterschiede dieser Prozesse als auch die daraus entstehenden Handlungsspielräume vor Ort zu betonen. Damit lässt sich festhalten, dass der Aufruf einer planetaren Urbanisierung nach einem radikalen Umdenken von bestehenden (westlichen) Konzepten und Kartografien des Urbanen hin zu einer neuen Lesart des Urbanen *ohne Außen* nicht bedeutet, dass es keine lokal-räumlichen Unterschiede gibt oder dass alle sozial-räumlichen Entwicklungen in der Welt durch diesen theoretisch-konzeptionellen Rahmen erklärt werden könnten oder sollten. Vielmehr manifestiert die planetare Urbanisierung eine These, nach der die umfassenden politisch-ökonomischen Kräfte der Urbanisierung und die damit verbundenen ökologischen und gesellschaftlichen Folgen nahezu alle Räume durchdringen, die wir wahrnehmen können, selbst diejenigen, die wir im Allgemeinen nicht als in diese strukturellen Bedingungen eingebettet betrachten. Vor diesem Hintergrund erwächst auch das spezifisch Kleinstädtische zu einem wichtigen Forschungsgegenstand der planetaren Urbanisierungsthese bzw. wird diese zu einem möglichen theoretisch-konzeptionellen Untersuchungsansatz für das spezifisch Kleinstädtische.

Indem die planetare Urbanisierung (1) das spezifisch Kleinstädtische als einen dynamischen und multiskalaren Prozess sozialer, ökonomischer, ökologischer und politischer Beziehungen und nicht als eine abzugrenzende, räumlich-funktionale Einheit versteht; und (2) mithilfe einer nicht-stadtzentrierten Perspektive das dem Kleinstädtischen inhärente emanzipatorische Potenzial des spezifisch Urbanen hervorhebt, stellt sie für die Kleinstadtforschung einen geeigneten theoretisch-konzeptionellen Rahmen dar, der den sich zeitlich und räumlich überlagernden Beziehungen des kleinstädtischen Forschungskontexts als Raum gelebter und multipler Alltagserfahrungen in einer weitreichend globalisierten Welt gerecht wird. In der Anwendung des Untersuchungsansatzes würde sich der bisher oft defizitär geprägte Blick auf das spezifisch Kleinstädtische im Sinne eines *ein Weniger an* (z.B. Versorgungseinrichtungen, Infrastruktur, kulturellem Leben) umkehren zu einem Blick auf *die Vielzahl von* Möglichkeiten des spezifisch (kleinstädtisch) Urbanen im Sinne der Lefebvreschen Bedeutung eines emanzipatorischen Verbindens mit der Welt. Damit ist die planetare Urbanisierungsthese die Einladung an die Kleinstadtforschung, den unterschiedlichen sozial-räumlichen Praktiken und Alltagsleben des spezifisch Kleinstädtischen sowohl im globalen Norden als auch Süden als gestaltendes wie gestaltetes Produkt heterogener und multiskalarer Prozesse nachzugehen und diese in den Mittelpunkt ihrer Forschungsarbeiten zu stellen. Denn nur in der Vielstimmigkeit und Pluralität des spezifisch Kleinstädtischen bei gleichzeitiger Berücksichtigung großmaßstäblicher Zusammenhänge und Abhän-

gigkeiten liegt die Chance, zukünftige Kleinstadtentwicklung aus ihrem jeweiligen Kontext heraus emanzipativ und verantwortungsvoll gestalten zu können.

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# THE MATERIAL GEOGRAPHIES OF THE BELT AND ROAD INITIATIVE

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

*Hannes Langguth*

## 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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Monika Grubbauer, Alessandra Manganelli, Louis Volont (eds.)

## **Conflicts in Urban Future-Making**

Governance, Institutions, and Transformative Change

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## 10. Navigating conflictual cooperation

### Temporary power coalitions in the planning and approval of large-scale Chinese green technology projects in Eastern Germany

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*Hannes Langguth*

#### Introduction

Large-scale green energy and technology projects are pivotal for driving the European Union's energy and mobility transition. Spurred by investment from multinational corporations, they encompass offshore and onshore wind farms, solar photovoltaic and solar thermal technologies, green hydrogen and hydropower plants, and large-scale facilities for the manufacturing and recycling of electric vehicle (EV) battery cells. However, the expansion of these projects, which predominantly affects peripheral and rural regions across Europe, brings significant challenges such as uneven spatial development and land-use conflicts, emerging frictions amid the shift away from fossil fuels, and tensions between implementation and public interest objectives (see Gailing and Röhring, 2015; Eichenauer, 2018; Bosch and Schmidt, 2022). In addition to increasing calls for streamlined planning and approval procedures, planning disciplines thus face the crucial task of managing the multitude of conflicts that arise during the implementation of large-scale green energy projects and their associated infrastructures.

In international planning theory, planning conflicts have increasingly been addressed through the concept of agonistic planning (Pløger, 2004; Collins, 2010; Gualini, 2015a; Roskamm, 2015; Kühn, 2021). This builds on earlier critique of consensus-oriented communicative and deliberative planning (Huxley and Yiftachel, 2000; Flyvbjerg and Richardson, 2002; Purcell, 2009) and views conflicts as productive political negotiation processes that either allow an exploration of relational dynamics of the consensus–conflict binary

(Legacy et al., 2019) or advocate for the re-politicization of planning (Gualini, 2015b; Gribat et al., 2017). Concerning conflicts over large-scale green energy projects, in recent years, scholars have primarily focused on the confrontation between planning and public protest, particularly addressing questions of social and economic justice (Eichenauer, 2023), the ambiguous role of participation (Kühn, 2023), and local co-optation by right-wing populist movements (Beveridge et al., 2024).

However, emerging conflicts among institutions involved in the actual planning and approval procedures of large-scale green projects, especially within Germany's multilevel governance system, remain largely unexplored. Amid increasing international investment in Europe's green transition, these conflicts provide critical insights into how transnational cooperation unfolds. This is particularly pertinent given the European Union's technological dependence on East Asian, particularly Chinese, corporations in key transition technologies (MERICS, 2022). Against this backdrop, conflicts arise due to differing planning cultures, legal frameworks, or divergent institutional and corporate objectives, impacting interactions among professionals in planning, administration, and politics, as well as with investors, businesses, subcontractors, and the public. Professionals must navigate these complexities to facilitate project implementation, guided by institutional responsibilities, political mandates, and prevailing regulations. Understanding professionals' interactions illuminates how conflicts are negotiated from local to national levels and reveals the underlying interests and power dynamics of projects.

This chapter addresses planning conflicts arising in the implementation of large-scale Chinese EV battery cell gigafactories and associated manufacturing, logistics, and energy infrastructures in Eastern Germany. The novelty, complexity, and scale of these projects, combined with divergent conceptions, interests, and cultural norms in Sino-German cooperation, put pressure on professionals, especially on the local level, leading to conflict-laden implementation processes. The examination presented here thus mirrors the growing interest in studying the (trans)local urban effects of China's global expansion (see Zheng et al., 2021; Shin et al., 2022; Apostolopoulou et al., 2023). Contrary to 'singling out, essentializing and demonizing' (Lee, 2022: 317) China's global activities, this analysis understands China's increasing presence in Europe as a 'collaborative power project' (ibid.). It moves the host states and their place-specific conditions, histories, and power structures to the fore in order to study how vested interests are negotiated locally across various levels, actors, and institutions.

Applying methods of institutional and non-local ethnography (Smith, 2006; Feldman, 2011), this analysis examines the planning and approval procedures of a successfully implemented gigafactory in Thuringia and a failed one in Saxony-Anhalt. It draws from 21 qualitative expert interviews conducted between January 2023 and June 2024 with professionals from local to state authorities, external planning firms, consultancies, and Chinese EV battery cell manufacturers. In addition, ethnographic and participatory observations were conducted at planning meetings, information events, town hall gatherings, trade fairs, and conferences. Textual sources such as urban development plans, architectural layouts, expert reports, approval documents, legal texts, newspaper reports, local gazettes, and social media posts were also analysed.

The chapter shows how planning conflicts in Sino-German cooperation are pivotal moments when contested interests become empirically tangible. It explores how conflicts arise, are navigated, and managed, highlighting institutional frameworks that govern professionals' interactions. Its findings reveal that despite similar conflict fields, responses differed between the two cases and were shaped by different power coalitions. Thuringia saw successful project implementation through intense state intervention and a coalition with Chinese investors. In contrast, Saxony-Anhalt faced resistance despite state efforts, leading to a coalition marked by a sceptical attitude towards Chinese involvement. The chapter thus underscores using planning conflicts as analytical lenses to study power dynamics in large-scale green energy projects, emphasizing their importance in future research.

The next section integrates qualitative policy research into planning research, broadening the conceptual and methodological framework of agonistic planning theory in relation to planning conflicts. After that, the two case studies of new Chinese EV battery cell gigafactories in Eastern Germany are presented, followed by a section which outlines the planning and approval procedures that shape both cases and introduces the roles of professionals and their interactions with other cooperation partners during implementation of the two projects. Subsequent sections highlight the conflict fields arising in Sino-German collaboration, then mobilize the identified conflicts to trace emerging power coalitions, and discuss resulting conflict lines. The concluding section evaluates the conceptual relevance of the empirical findings.

## From agonistic planning to planning conflicts as formations of the political

Agonistic planning scholarship resonates with earlier work on the political, economic, and social power relations inherent to planning (Flyvbjerg, 1996; Flyvbjerg and Richardson, 2002; Burkhardt, 2004). It draws from Mouffe's political science theory of agonistic pluralism (2013), which views conflicts as constituting elements of pluralistic democracies. This aligns with critiques of post-political planning (Swyngedouw, 2013; Metzger, 2018), which highlight how technocratic and consensus-driven tendencies sideline dissent and conflict within hegemonic planning structures. Instead, agonistic planning views conflicts and the actors behind them as productive forces for social and institutional change and actively seeks to cultivate respectful 'strife' in planning (Pløger, 2004).

While I agree with agonistic theory's view of conflicts as stimuli for change, I also acknowledge recent critiques of the concept's entrenched confrontation between planning and public protest, as well as its lack of precise insights into how conflicts can actually become productive (Bertram and Altrrock, 2023). In my view, the theory's main shortfall lies in overlooking the changing nature of the power relations in which planning procedures are embedded, particularly regarding the interactions between planning, policy, and administrative professionals – an overarching gap in international planning theory. Professionals interact within institutional frameworks, routines, and regulations. Their actions are coordinated through formal procedures but are also shaped by individual relationships, interests, and institutional cultures. By integrating agonistic theory with qualitative policy research approaches, I aim to cultivate an expanded understanding of planning conflicts that leverages conflicts as entry points for exploring professionals' interactions within and across institutions, time, and scales.

Qualitative policy research views policies as dynamic political actions (Shore and Wright, 1997; Wedel et al., 2005), offering analytical insights into broader societal transformations, governance mechanisms, and power dynamics (Shore et al., 2011: 12). This perspective challenges the conventional view of policies as linear sequences of rational actions imposed from state to local levels to solve presumed objective issues (Shore and Wright, 1997). Instead, anthropologically informed policy research sees policies as 'central organizing principles' that, akin to concepts such as 'class', 'nation', or 'citizenship', are socially constructed and reciprocally shape everyday lives (Shore

and Wright, 2011: 2). Adam and Vonderau (2014) adopt this approach, framing policies as productive and performative ‘formations of the political’. They draw on Bourdieu’s ‘political field’ (Bourdieu, 2001), expanding its scope beyond the elitist realm of state power to encompass the intricate and ever-evolving dynamics of diverse, often improvised and transient, power configurations that emerge from policy practices.

Adopting this concept of formation of the political in planning research enhances agonistic planning theory in at least three ways. First, it shifts away from agonistic planning’s entrenched confrontation between planning and the public, instead foregrounding interactions among planning professionals, including their institutional and societal entanglements. Second, it accounts for the dynamic and fragmented negotiation and decision-making processes underlying planning conflicts, including their multi-scalar configurations of actors and power. And third, by tracing these dynamic power relations and networks, it holds the inherent potential to generate a better understanding of how conflicts actually become productive in stirring change and, relatedly, who benefits from these processes and who does not. These goals are achieved by mobilizing planning conflicts as empirical instances to analyse individual interactions and decision-making processes across institutions and scales. Here, my focus lies on individual actions of the involved planning, administration, and policy professionals and their cooperation partners. Before I do so, in the next sections, I briefly outline my two case studies.

## The cases: Arnstadt-Ichtershausen and Bitterfeld-Wolfen

This analysis centres on the planning and approval of two Chinese EV battery cell gigafactories and associated infrastructures in Eastern Germany (Figure 1). Announced and implemented nearly simultaneously, these were their investors’ first factories outside mainland China and the first large-scale Chinese construction projects in Germany’s new federal states (*Neue Länder*). Both locations, marked by industrial decline and post-reunification outmigration, saw a revival as industrial hubs focusing on ‘future-oriented’ flagship projects (AR04, 2023; BW09, 2023).<sup>1</sup> Thus, the Chinese investments became pivotal in

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1 Information from interviews regarding the two cases is cited using a code system: Arnstadt-Ichtershausen (AR) and Bitterfeld-Wolfen (BW) are specified, whereas individual interview participants are anonymized and identified only by an assigned number

regional politics, sparking intense competition among federal state ministries aiming to secure regional prosperity (AR03, 2023; BW08, 2023) and between German car manufacturers aiming to diversify their production networks across Europe (AR09, 2023; BW09, 2023). Both projects also encountered similar challenges during implementation, including Covid-19 travel restrictions, supply chain disruptions, and increased construction costs exacerbated by the war in Ukraine. The cases thus offer comparative lessons on emerging planning conflicts and power dynamics in Sino-German cooperation on large-scale projects.

*Figure 1: Localization and main facts of the two selected case studies of Chinese EV battery cell gigafactories in Thuringia and Saxony-Anhalt.*



Source: Author.

The first case is a project by Contemporary Amperex Technology (CATL) in Arnstadt-Ichtershausen, Thuringia, implemented between 2018 and 2023. In addition to the new EV battery cell factory itself, CATL acquired a vacant office and module assembly complex, established a joint research centre with the Fraunhofer Institute for Ceramic Technologies and Systems (IKTS), and planned a new Rail Logistics Centre with DB Cargo. It has also utilized Opel's

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(see Appendix). Interviews were conducted in German; interviews and non-English quotations have been translated by the author.

freight station in nearby Eisenach and leased warehouses in Erfurt-Vieselbach and Magdeburg-Sülzetal. Initially budgeted at €1.8 billion, the investment escalated to more than €2 billion in late 2023. The actual factory construction site is a 34-hectare plot in the western extension of the Erfurter Kreuz industrial park. It falls under the jurisdiction of Ichtershausen, a part of the larger administrative district Amt Wachsenburg. Ichtershausen itself has a population of 8,000 and is situated on the northern outskirts of Arnstadt, a town with 28,000 inhabitants. Initially planned as a three-stage construction project, with an additional 70 hectares reserved for CATL, the plans for extension were officially cancelled in December 2023. In early 2024, around 750 Chinese (office employees and engineers) and 750 non-Chinese workers (mainly assembly and logistics staff) were employed on-site (AR13, 2024).

The second case is a failed project by Farasis Energy in Bitterfeld-Wolfen, Saxony-Anhalt, which was planned between 2019 and 2022. The intended investment amounted to €600 million for a total of 12 facilities, encompassing manufacturing, research, and logistics. The preliminary manufacturing capacity was announced at 10 GWh per year, envisioning 600 new on-site jobs (BWO3, 2023). After purchasing land and a vacant factory complex in mid-2019, construction of the factory project was scheduled to start in February 2020 on a 97-hectare site in the Solar Valley industrial park. The site is located at the western outskirts of the town Bitterfeld-Wolfen, which has a population of 37,000. Following the planned completion of the construction phase of the building shell in April 2021, the delivery of the first cells was slated for early 2022. However, after Farasis failed to provide necessary information and materials for planning and approval, causing multiple delays to the schedule, the project was terminated by the town of Bitterfeld-Wolfen in April 2022.

### **Formal planning and approval procedures and the role of professionals**

Implementation of the two projects, including their related manufacturing, logistics, and energy infrastructures, has been governed by three formal planning and approval procedures within Germany's multilevel governance system. These include the amendment of the local development plan (*Bebauungsplan*) according to the German Building Code, the approval procedure (*Genehmigungsverfahren*) under the German Federal Immission Control Act, and the planning approval procedure (*Planfeststellungsverfahren*) under the

German Administrative Procedure Act. These regulatory frameworks form the legal basis for interactions among planning, administration, and policy professionals, as well as their cooperation with partners such as Chinese investors, subcontractors, and German car manufacturers. The regulations encompass emission standards, environmental and public safety protections, and requirements for public participation and handling objections. Additionally, investment and development contracts establish shared goals and responsibilities among the partners, while practices already established from previous project implementations also shape cooperation among professionals. In the following, I introduce the different procedures and related cooperation practices in both cases to clarify the roles, responsibilities, and relationships of the professionals involved.

### **Amendment procedure of the local development plan according to the German Building Code**

The amendment procedure of each municipality's local development plan, regulated by the German Building Code (Baugesetzbuch, BauGB),<sup>2</sup> is the tool that establishes legal planning conditions for the factories' implementation. According to §8 BauGB, the plan navigates legally binding determinations to maintain the urban development order. This includes specifying land use, building dimensions, setback areas, natural climate protection, and ensuring supply and mobility infrastructure. Derived from the local land use plan, the development plan is approved as a statute by the respective municipality and must be publicly accessible.

To meet safety measures required for building approval and to accommodate CATL's factory layout requirements, amendments to the Erfurter Kreuz West development plan were necessary. These included expanding traffic areas, establishing a new helicopter emergency landing site, and securing rights of way for drinking water pipelines. The first amendment cycle was initiated by the responsible municipality of Amt Wachsenburg using a simplified procedure in October 2018, before CATL's property purchase. According to §13 BauGB, the simplified procedure allowed the omission of early public notification and objections, justified by the assessment that the amendments

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2 Baugesetzbuch in der Fassung der Bekanntmachung vom 3. November 2017 (BGBl. I S. 3634), das zuletzt durch Artikel 3 des Gesetzes vom 20. Dezember 2023 (BGBl. 2023 I Nr. 394) geändert worden ist.

would not significantly impact the environment or alter fundamental planning principles and the character of the surroundings.

However, after local criticism over CATL's lack of transparency occurred and objections from the Amt Wachsenburg municipality against a planned high-voltage power line were rejected by the power grid operator, the investor, and the responsible authorities, municipal representatives aimed at 'finding a healthy balance between CATL's development and the prosperity that the municipality gains from it' (ARO1, 2023). In early 2020, the council renewed plan amendments, adding enhanced environmental protection measures and requiring an environmental report. They issued a position paper to CATL and state-level authorities, making further amendments contingent on key demands: stopping large-scale projects such as overhead power lines, providing financial support for municipal housing and education, and improving fire and disaster protection (*ibid.*). Consequently, the local council withheld plan approval in order to exert pressure during negotiations.

The subsequent demands made by the Amt Wachsenburg municipality on CATL and state-level authorities became necessary due to the municipality's otherwise weak negotiating position. Despite the municipality's role in approving plan amendments, the State Development Corporation of Thuringia, acting on behalf of the Thuringian Ministry of Economic Affairs, Science and Digital Society, set the initial conditions in a bilateral investment agreement with CATL in July 2018. The municipality of Amt Wachsenburg was only informed about the project's implementation afterwards. The reason dates back to the late 1990s post-reunification restructuring of former East Germany, when the State Development Corporation acquired the land in question. Since then, it has been responsible for developing the land into fully prepared industrial sites to be offered to international investors (ARO6, 2023). Unlike other new federal states where development corporations typically serve solely as intermediaries, Thuringia stands out by empowering its State Development Corporation to directly purchase land. This unique authority enables direct contractual engagements with international investors, circumventing the need for involvement from local municipalities.

In Bitterfeld-Wolfen, the municipality directly negotiated with Farasis, with the Investment and Marketing Corporation Saxony-Anhalt only initially involved. Unlike in Thuringia, the earmarked land consisted of 84 individual plots sold by the municipality and private owners. Farasis's factory required significant changes to the local development plan, including building new roads, relocating a brine pipeline, and adjusting building plots, heights, and

infiltration facilities (BW04-06, 2023). Public objections and Farasis's constantly changing requirements led to three revisions of the local development plan, each involving public consultations. Despite strong municipal commitment, Farasis failed to meet the schedule and became 'the first and so far the only investor we had to chase up' (BW04-06, 2023).

The approval procedure was underpinned by a bilateral urban development agreement in accordance with §11 BauGB, signed between Bitterfeld-Wolfen's town administration and Farasis in November 2019. It detailed mutual responsibilities, the plan amendments, and preparatory measures to be carried out at Farasis's expense (BW02, 2023). However, in April 2022, the town administration terminated the agreement after Farasis did not comply with its terms. After the project's failure, two new amendment proposals were launched to reverse the changes and establish small-scale manufacturing with on-site renewable energy (BW04-06, 2023). At the time of this writing, the plan amendments remain unresolved and are still pending approval because Farasis retains ownership of parts of the land (*ibid.*).

### Approval procedure under the German Federal Immission Control Act

The approval procedure under the German Federal Immission Control Act (Bundesimmissionsschutzgesetz, BImSchG)<sup>3</sup> governs the planning, implementation, and operation of large-scale industrial facilities processing harmful substances. It consolidates all environmental regulations into a single assessment, ensuring compliance with standards for hazardous material storage, air toxin emissions, and waste discharge. The procedure aims to expedite planning and coordinate authorities. Compliance imposes requirements on implementation and operation, monitored continuously by state and local authorities.

In the Arnstadt-Ichtershausen case, due to the project's complexity and tight schedule, CATL adopted an iterative approach called rolling wave planning (*rollierende Planung*). This method involved refining and adjusting plans across eight application cycles. The main approval authority, the Thuringian State Office for Environment, Mining, and Nature Conservation, in Weimar,

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3 Bundes-Immissionsschutzgesetz in der Fassung der Bekanntmachung vom 17. Mai 2013 (BGBl. I S. 1274; 2021 I S. 123), das zuletzt durch Artikel 11 Absatz 3 des Gesetzes vom 26. Juli 2023 (BGBl. 2023 I Nr. 202) geändert worden ist.

was responsible for checking application completeness, publishing notices, receiving feedback, coordinating hearings, and issuing decisions. It also classified the project according to the act's Appendix 1, the ordinance on installations subject to authorization. However, since CATL's EV battery cell factory was the first of its kind in Germany, it was classified as a 'facility for surface treatment of PVC films', which allowed it to bypass a detailed environmental impact assessment that would have required additional planning time (AR07, 2023).

A leading role in CATL's approval procedure was taken by the general planning firm GICON-Großmann Ingenieur Consult, which have extensive experience with the planning approval of large-scale industrial projects. GICON handled the application process and gathered necessary information, documents, and expert reports from specialist engineers and firms, supported by the project management firm Pro Terra Team (AR05, 2023). The planning of the cleanroom – the factory's manufacturing area with constant air purity, temperature, and humidity – was done by Exyte, which joined the project in mid-2019 (AR12, 2024). They took over the original planning from the Chinese firm SEEDRI, which prepared the project's first approval application. Exyte subcontracted the construction work to the firm Goldbeck Ost (*ibid.*). The actual manufacturing facilities were imported from China and installed by the Chinese firms Wuxi Lead Intelligent and Shanghai SK Automation (AR13, 2024).

The total of eight approval notices contained hundreds of regulations that CATL had to consider, covering both the construction and operation of the factory. The first partial approval, granted in July 2020, issued permission for the construction of the manufacturing building and ancillary facilities but also stated structural and occupational safety requirements.<sup>4</sup> The second and third partial approvals focused on operationalization and emphasized compliance with air quality, water management, and environmental conservation.<sup>5</sup> Extensive fire safety regulations were addressed throughout all approval notices. In sum, the requirements necessitated numerous additional and cost-intensive expert reports throughout the procedure (AR06, 2023).

The additional reports and permits conflicted with CATL's ambitious schedule. With approval for preliminary measures, CATL began construction

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4 TLUBN, Thüringer Landesamt für Umwelt, Bergbau und Naturschutz, Genehmigungsbescheid Nr. 11/19, 14.07.2020.

5 TLUBN, Thüringer Landesamt für Umwelt, Bergbau und Naturschutz, Genehmigungsbescheid Nr. 18/20, 17.01.2022 and Genehmigungsbescheid Nr. 05/23, 18.10.2023.

in October 2019, risking dismantling at their own expense if full approval was not granted. The second partial approval, for starting two manufacturing lines in test mode, was handed over by Thuringian ministers in April 2022 during an effective publicity event on-site. Although CATL couldn't manufacture battery cells due to incomplete facilities (AR12, 2024), this event politically adhered to the original schedule of a planned manufacturing start in 2022. In fact, significant delays occurred due to additional expert reports and Covid-19 restrictions (AR03, 2023). Consequently, in 2023, even with the final approval, CATL couldn't fully process raw materials into electrodes and battery cells in the new Arnstadt-Ichtershausen factory (AR12, 2024). Instead, orders were fulfilled with imported cells from China and modules assembled on-site (AR13, 2024).

In the Bitterfeld-Wolfen case, the BImSchG approval procedure never fully commenced. However, significant groundwork was laid in the first half of 2019. This included Farasis commissioning the general planning firm Drees & Sommer to prepare application documents and coordinate the procedure. It also involved several *jour fixe* meetings between the investor and local-, county-, and state-level authorities, organized by the town administration. These rounds with the authorities (*Ämterrunden*) stemmed from collaboration habits in previous projects and took place bi-weekly during the initial months (BWO2, 2023). The meetings aimed to prepare for the June 2019 scoping meeting, the first coordinating step of the approval procedure.

Although the two cases are not directly linked, professionals from both projects were indeed in contact with each other. Employees of the State Administrative Office in Halle leveraged personal contacts with the approval authority and the State Development Corporation of Thuringia to gain insights on how things were handled in the CATL case in Thuringia (BWO3, 2023). Additionally, annual informal meetings among senior officials from the State Administrative Offices of Saxony-Anhalt, Thuringia, and Saxony further facilitated mutual exchange (*ibid.*). And at the ministerial level, personal contacts were utilized to stay mutually informed about the projects' respective statuses (BWO8, 2023).

## Planning approval procedure under the German Administrative Procedure Act

The planning approval procedure under the German Administrative Procedure Act (*Verwaltungsverfahrensgesetz, VwVfG*)<sup>6</sup> does not concern the factories themselves but the associated large-scale infrastructure projects related to CATL's developments in Arnstadt-Ichtershausen. These included a new 110 kV high-voltage overhead power line and a new Rail Logistics Centre. According to §72 VwVfG, they fall under the formal procedure due to their exceptional spatial dimensions and impacts (noise, environment, costs), affecting various public and private interests. The procedure aims to negotiate and balance occurring tensions between affected stakeholders. In the case of the overhead power line, the Thuringian State Administration Office in Weimar acted as the approval authority. For the Rail Logistics Centre, due to its relevance for national freight logistics, the German Federal Railway Authority would have led the procedure had the project not first been cancelled.

The construction of a new 110 kV high-voltage overhead power line and transformer substation was prompted by CATL's energy needs. In November 2019, Thüringer Energienetze, the regional grid operator, initiated the plan approval process by applying for a scoping meeting with the Thuringian State Administrative Office, which was held in January 2020. Following that, a preliminary assessment was conducted to determine if a formal spatial planning procedure (*Raumordnungsverfahren*) was required. However, in June 2020, the Thuringian state planning authority denied the necessity of such a procedure, as the project complies with Thuringia's current 2025 development programme and the Mittelthüringen regional plan.

In the first half of 2020, the approval authority reviewed initial objections. While an alternative substation site was approved, the Amt Wachsenburg municipality's proposal for a significantly costlier underground cable, which they intended to provide the extra costs for (AR01, 2023), was rejected. The authority stated that 'there are no spatial planning reasons to justify the professional ne-

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6 *Verwaltungsverfahrensgesetz* in der Fassung der Bekanntmachung vom 23. Januar 2003 (BGBl. I S. 102), das zuletzt durch Artikel 1 des Gesetzes vom 4. Dezember 2023 (BGBl. 2023 I Nr. 344) geändert worden ist.

cessity of underground cabling over the planned overhead line'.<sup>7</sup> Consequently, the decision for the initial overhead version was published two years later, with public consultation in July 2022. Despite the municipality's persistent objections, the planning approval was upheld in September 2023. In November of the same year, the municipality challenged this decision in a lawsuit filed with the Thuringian Higher Administrative Court, which was dismissed in March 2024.

Parallel preparatory measures for the planning approval procedure for the second infrastructural project, a new Rail Logistics Centre (RLC), began in July 2021. DB Cargo initiated the project with CATL and acted as the leading contractor. The aim of the proposed RLC was to reactivate and extend Arnstadt's vacant freight station to handle CATL's raw materials and battery cells via rail. This involved repurposing the freight yard by constructing new tracks, a transshipment hall, container parking spaces, a DispoTower, two gantry cranes, and a noise barrier to shield nearby residential areas. In October 2021, DB Cargo held an on-site information event. Initially estimated at €12 million, construction costs were later calculated to be €30 million (AR09, 2023). Construction was scheduled for 2023, with commissioning planned for early 2024. However, the project did not progress beyond preparatory measures and failed before submission to the approval authority. It was officially cancelled in April 2023.

## **Frictions, obstacles, and disputes in Sino-German cooperation**

During the aforementioned planning and approval procedures, numerous frictions, obstacles, and disputes arose in both projects. These can be analysed in terms of three fields of conflict: lack of preparedness of Chinese investors regarding local planning contexts, differing conceptions of cooperation formats and communication, and non-compliance with contracts and agreements.

### **Ignorance, unpreparedness, and distinct planning cultures**

Chinese investors faced significant challenges in navigating German approval procedures, causing conflicts and delays. Reflecting on the Bitterfeld-

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7 TLVwA, Thüringer Landesverwaltungsamt, Stellungnahme Errichtung 110-kV-Anschlussleitung Erfurter Kreuz incl. Umspannwerk durch die Thüringer Energienetze GmbH & Co. KG (TEN) in der Gemeinde Amt Wachsenburg, Ilmkreis, 07.09.2020, 14.

Wolfen case, a Saxony-Anhalt government representative expresses frustration: ‘Via video conference, I repeatedly dictated to the CEOs [of Farasis] what they needed to do. [...] None of it worked’ (BW09, 2023). The Chinese firm overlooked the fundamental preparatory steps. A local administrative representative notes, ‘We repeatedly emphasized that you must first purchase the land before you can even begin to submit a building application [...]. Then, everything that needs to be done in Germany, like archaeology surveying or disposal of contaminated soil’ (BW02, 2023). Repeated delays and failures in providing necessary information led to growing frustration among partners, causing officials to become obstinate and suspend meetings until progress was seen (BW08, 2023).

In Arnstadt-Ichtershausen, frictions stemmed from the project’s approval procedure and the Federal Immission Control Act’s legal requirements. CATL initially hired a Chinese planning firm due to too high quotes from three German planning firms (AR15, 2024). This led to confusion, as a state representative highlights: ‘They [CATL] immediately asked, “What kind of law is this? Can you send it to us? [...] We would like to take it and translate it into Chinese. Then we will give it to our planning firm so that they can plan accordingly.” [...] They actually did that. [...] Again and again, it failed’ (AR03, 2023). In general, CATL felt frustrated by numerous regulatory and environmental requirements. A transport and logistics company employee remarked, ‘CATL was pretty upset about the conditions in Europe, particularly the numerous local requirements’ (AR09, 2023).

The approval procedure incurred costs for permits, consultation dates, and public announcements totalling around €465,000 between 2020 and 2023. Numerous expert and inspection reports, along with structural adjustments such as extensive sprinkler systems, resulted in additional and unforeseen costs for CATL. The issue intensified with the legal stipulation that ‘defensive fire protection must be able to carry out effective firefighting operations 24 hours a day, 7 days a week, within 5 minutes of being alerted’,<sup>8</sup> which CATL could only accomplish with a costly in-house emergency response team. Consequently, CATL ‘encountered a scenario where costs spiralled out of control. [...] They significantly underestimated the approval procedure. The biggest letdown for them was the costs’ (AR03, 2023).

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8 TLUBN, Thüringer Landesamt für Umwelt, Bergbau und Naturschutz, Genehmigungsbescheid Nr. 11/19, 14.07.2020, 36.

The lack of transparency and disregard of local interests caused further frictions. A district-level official highlights that compared to non-Chinese firms, past projects had stronger public engagement and information policies (AR06, 2023). Another official acknowledges that ‘too little reached the citizens’ (AR05, 2023). And a local politician cites an information event where citizens’ concerns about energy supply and pollution were dismissed. Shortly after, the municipality learned about planning approval for a new 110 kV high-voltage line and ‘from that moment on, all minds changed’ (AR01, 2023). The municipality then opposed the power line project, partly restricting access for federal state authorities and planning firms to the affected properties.<sup>9</sup>

Thus, CATL’s and Farasis’s ignorance of German planning and approval procedures created a range of conflict-laden situations, increasing pressure on federal state and local authorities. In Thuringia, the state government struggled to balance diverging interests, knowing that ‘regional acceptance doesn’t concern the firm [CATL] at all’ (AR03, 2023). Parallel to this, pressure was further amplified by conflicting statements from the investor. A local policy representative notes, ‘If the Chinese feel that this is not profitable in the medium term or if the hurdles become too great, they just pack up and leave immediately [...]. That was a clear statement [from CATL] already in 2019. Not in public events, but behind closed doors, when we were in the ministry’ (AR01, 2023). This highlights the demanding behaviour of the Chinese investors, who exerted considerable pressure on their partners to advance the projects.

### Misconceptions, conflicting expectations, and (non)communication

During the planning and approval procedures, German cooperation partners faced unanticipated expectations from the Chinese investors regarding political support and the streamlining of procedures. Significant displeasure arose at the ministerial level in Saxony-Anhalt, where it was expected that the state ‘should push prices [for land purchases] or procure generous banking conditions’ (BW09, 2023). The expectation of political support was also evident in

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9 TLVwA, Thüringer Landesverwaltungsamt, Planfeststellungsbeschluss, Errichtung einer 110-kV-Freileitung zwischen den Umspannwerken Thörey und Wachsenburg, Änderung der 110-kV-Leitung Thörey-Gotha/ Vorhabenträgerin: Thüringer Energienetze GmbH & Co. KG, 19.09.2023, Anlage 2: Information über die Durchführung von Untersuchungen für das Vorhaben Trassierung des 110-kV-Anschlusses UW Wachsenburg der Fa. CATL, 26.02.2021, 1.

Thuringia, where ‘the Chinese thought “Okay, the minister is here. So he approves everything”’ (AR03, 2023). And regarding the RLC project in Arnstadt, a cooperation partner notes, ‘Even though we are Deutsche Bahn and somehow belong to the state – which they [CATL] made a point of – we are a company that must operate economically’ (AR09, 2023).

Divergent views on land prices, the number of Chinese employees in Germany, and cost assumptions heightened tensions during contract negotiations. In Arnstadt-Ichtershausen, a federal state official recalls, ‘There were simply points in the [investment] contract that we couldn’t sign, but CATL really wanted them in there’ (AR03, 2023). In Bitterfeld-Wolfen, the urban development contract led to ongoing friction between the town administration and Farasis. As Farasis faced delays, land for their gigafactory was sold to new investors, leading to contract termination due to no response from Farasis (BW02, 2023). The town administration tried to repurchase land from Farasis to enable new development, offering compensation for preparatory costs. However, the town couldn’t meet Farasis’s higher price, leaving local officials with limited influence over land development (*ibid.*).

Mutual communication issues and a lack of contact persons and decision-makers on the Chinese side presented significant challenges. Regarding the failed RLC project, a partner expresses frustration: ‘We had to find a way to communicate about a problem that is not ours. Rather, it’s a political problem: a problem with how China, or how CATL, manages its direct investments here. And they don’t manage them at all’ (AR09, 2023). Other issues included CATL’s sudden and unannounced visa applications to the local immigration authority, which caused great discomfort among clerks (AR03, 2023). In Bitterfeld-Wolfen, senior state officials travelled to Farasis headquarters in China for face-to-face meetings, only to return uncertain: ‘Not much happens in their faces and behaviour [...]. We flew back and didn’t know what actually happened’ (BW08, 2023). The town administration echoed frustration, noting ongoing communication breakdowns: ‘Everyone who was here on-site said, we can’t decide anything, we have to pass it on [...]. That’s where communication always faltered’ (BW02, 2023).

These examples demonstrate that intercultural differences, lack of communication, diverging expectations, and mutual uncertainty regarding responsibilities significantly shaped cooperation in the two Sino-German projects. Chinese investors expected more direct support from federal state governments, whereas German partners struggled with the hierarchical but non-transparent decision-making structures of Chinese firms. State representatives from

Saxony-Anhalt describe Farasis's communication as 'so non-transparent that we didn't even realise there was no transparency' (BWO8, 2023). However, in Thuringia, state officials acknowledged, 'You must at least have a hint of an idea how the company is structured. [...] You also need to discuss things with the boss directly. And I can't discuss that with the boss, as I don't hold his rank. Instead, we'll need to let the minister handle it again' (ARO3, 2023). This demonstrates that the established communication and decision-making formats of the host state actors clearly reached their limits with the new Sino-German projects.

### **Deception, false promises, and unfulfilled obligations**

Tensions among partners arose due to the lack of information provided by Chinese investors. An employee of a planning firm working with Farasis recalls, 'It's always the case in every project that you have to chase things a bit to get them in [...], but then we realized that nothing was coming in at all' (BWO7, 2023). Another individual involved summarizes Farasis's lack of details on manufacturing capacities, material flows, and production processes, saying, 'it was always very tough [...]. They couldn't provide this information, partially due to the lack of knowledge (BWO8, 2023). Similarly, CATL failed to provide information about their Thuringian site's manufacturing capacity and material flows, especially when it came to the development of the RLC. A cooperation partner states that CATL employees were repeatedly asked, 'What kind of goods are coming in? What are the material flows? Again we said, show us your volumes so that we can understand what we need to plan for now. The answer was "Oh, that's not certain yet, and we don't have that information"' (ARO9, 2023). This lack of commitment led to political escalation and meetings involving CATL and Wolfgang Tiefensee, Thuringia's Minister of Economic Affairs, Science and Digital Society. Ultimately, the RLC plans failed, officially attributed to a restructuring within CATL in January 2023.

Another conflict source was the failure to uphold contracts and agreements. CATL's lack of commitment regarding the RLC planning caused controversies with Volkswagen (VW), whose supply chains largely depend on rail freight transportation. Promised rail deliveries of battery cells could not be fulfilled due to the RLC's failure, 'which led to massive tensions at VW as well [...] so that VW increased pressure [on CATL] from their side and said, we need this [rail freight]. Please make sure you get it done. How, we don't care. You guaranteed it in the contract' (ARO9, 2023). However, the problems

with the RLC also originated from inaccurate assurances made by the State Development Corporation of Thuringia during the project's coupling phase, as CATL was promised an existing railway connection that later proved unsuitable. Nevertheless, this dilemma was mainly triggered by CATL themselves, as they 'did not think much about logistics and did not adapt to how logistics work in Europe, especially in the automotive sector' (ARO8, 2023), leading them to underestimate the issue and enter into agreements that they couldn't entirely fulfil.

Another issue that further exacerbated tensions was the failure to meet payment deadlines. Whereas CATL settled accruing costs for approval procedures and certificates in Arnstadt-Ichtershausen only after multiple reminders, invoices in Bitterfeld-Wolfen went partially unpaid. A local planning firm commissioned by Farasis stopped work due to non-payment (BW04-06, 2023). Another contracted planning firm also terminated cooperation with Farasis in 2019 because of similar issues: 'We actually had the contract with the German subsidiary, but it turned out that they didn't have any money, yet they were still entering into contracts. And eventually, the Chinese main firm was unwilling to pay for the fees' (BW07, 2023). However, according to involved parties, outstanding payments were settled only after a lengthy legal dispute. This shows that the German subsidiaries of the Chinese investors in both cases had limited authority, and their cooperation with partners was always dependent on decisions and payments from the firms' headquarters in China.

### **Tracing temporary power coalitions and the emergence of new conflict lines**

Conflicts in the two Sino-German projects highlight moments of tense negotiation among planning, administration, and policy professionals and their partners. Embedded in complex 'project ecologies' (Grabher and Ibert, 2011), these involve federal, district, and local authorities, Chinese investors, Chinese and German planning firms, German car manufacturers, and subcontractors. While they act on behalf of their institutions, and their interactions are shaped by institutional and legal frameworks and routines, their practices are also influenced by personal ties, interests, and experiences. By viewing the identified conflictual situations as 'genuine ethnographic moments' (Adam and Vonderau, 2014: 24), my ethnographically inspired approach traces these mul-

tiple connections and thus the ways 'power creates webs and relations between actors, institutions, and discourses across time and space' (Shore and Weight, 1997: 14). In the following, I map the formation of two temporary power coalitions that both underlay the Sino-German conflicts and resulted from how those conflicts were handled. These coalitions significantly impacted project implementation and led to the entrenchment of new lines of conflict.

In the case of Arnstadt-Ichtershausen, the first temporary coalition was formed between CATL's operational management and Thuringian state authorities, particularly the State Development Corporation. Initially, state officials focused on building rapport at top decision-making levels and personally travelled to Ningde with the Thuringian Minister for Economic Affairs, Science and Digital Society to advocate directly with CATL's management (AR02, 2023). A bilateral investment agreement encouraged close ties, providing practical support such as a 150-square-metre shared office space at the development corporation's office building in Erfurt (AR03, 2023). This partnership extended to shared daily routines such as having lunch together, allowing state-level actors to oversee critical implementation points in a more informal setting. Ministry-led working groups regularly brought together planning professionals, CATL managers, and stakeholders to address key issues, resulting in significant adjustments. These included transitioning to a specialized German planning firm, engaging a cost-effective German construction firm known from previous cooperations with the State Development Corporation, and the Thuringian Ministry of Economic Affairs, Science and Digital Society issuing official letters to Chinese authorities to facilitate unrestricted travel for over 1,400 Chinese engineers during Covid-19 restrictions (AR03, 2023).

The powerful coalition between Thuringian state-level actors and CATL thus facilitated a range of necessary adjustments for successful project implementation but resulted in neglecting the demands of other actors, particularly at the local level. Local municipal officials complained about the lack of understanding for their positions, which were brushed aside by state-level authorities without response (AR04, 2023). The demands of both the Amt Wachsenburg municipality and the town of Arnstadt were repeatedly disregarded, leading to aborted negotiations. Local officials in Amt Wachsenburg have viewed the top-down planning approval procedure regarding the overhead high-voltage power line as a state-led intentional circumvention of local planning decisions, feeling their planning autonomy was violated, and thus developed a list of demands to be met (AR01, 2023). State-level officials, on the other hand, have felt validated in their approach and express incomprehension

towards the local demands (AR03, 2023). The conflict eventually escalated into court proceedings.

In contrast, in Saxony-Anhalt, a temporary power coalition emerged between state-, district-, and local-level officials and their German cooperation partners, following failure and subsequent lessons learned. In this case, officials struggled to establish a strong connection with Farasis's management at any stage of the project. Their efforts seemed almost futile, as conversations with the investor's representatives yielded no tangible results (BWO8, 2023). Despite continuous attempts, they could not identify the right stakeholders and were often unable to gauge the intentions of their counterpart (*ibid.*). As a result, local authorities now insist on having on-site project teams for future Chinese investments, with communication in German or English, plus specific contract terms to prevent land speculation (BWO2, 2023). At the ministerial level, a strong commitment to negotiating binding investment agreements and conducting thorough company assessments emerged, particularly regarding ties to Chinese state-owned enterprises (BWO8, 2023). And the involved planning firm demanded prepaid arrangements for further cooperation with Chinese partners (BWO7, 2023). Subsequently, the new coalition exhibited a critical evaluation of their own actions, accompanied by growing scepticism and 'China-as-threat' rhetoric (Rogelja and Tsimonis, 2020) towards Chinese investors.

In sum, the analysis underscores that the project implementations have depended on both the intervening role of host state actors as well as the flexibility of Chinese investors in adapting to the respective contexts (Lee, 2017; Tsimonis et al., 2019). Both projects' planning and approval processes were significantly shaped by interventions by actors from the federal state level, with differing outcomes. While in Thuringia, professionals from state ministries and authorities were able to achieve a series of adjustments for successful project implementation by forming a coalition with the Chinese investor, state-level officials in Saxony-Anhalt, despite significant efforts, were unable to exert much influence on the project's progress. Their attempts to build a closer partnership with the investor failed, fuelled by the latter's lack of flexibility and willingness to adapt to the context. Instead, a coalition of host state professionals and German cooperation partners became increasingly hostile to the project. Concurrently, officials in Thuringia and Saxony-Anhalt adjusted to aspects of Chinese 'speed urbanism' (Chien and Woodworth, 2018), which involves speculative investment with heightened demands on host state decision-makers. This has fuelled intense competition between states for

the speed of project implementations. Interventions by host state actors are thus pivotal in facilitating large-scale Chinese projects and infrastructures as ‘capital fixes’ outside mainland China (Wiig and Silver, 2019).

## Conclusion

This chapter examines planning conflicts that have arisen during Sino-German cooperation in both a successful and a failed implementation of Chinese battery cell factories and associated infrastructures in Eastern Germany. By focusing on the projects’ formal planning and approval procedures, the study leverages emerging conflicts to grasp the underlying interests and power relations among planning, administration, and policy professionals and their cooperation partners such as Chinese investors, subcontractors, and German car manufacturers. The chapter thus brings agonistic planning theory and qualitative policy research into closer dialogue with each other to productively enhance our conceptual and analytical capabilities for unpacking the dynamic nature of power that shapes the implementation of large-scale projects.

The analysis highlights that both projects have had disruptive effects on local planning and approval procedures, with host state actors – particularly federal state ministries and authorities – actively intervening in the processes. While interventions by host state actors are also evident in other, non-Chinese, infrastructure projects, typically due to their economic and political relevance and cost overruns, interventions in the cases studied differ primarily in terms of nature and scope. Here, due to the inexperience and lack of preparedness of Chinese investors, federal state officials have gone beyond their usual responsibilities, such as bargaining, concluding investment agreements, or engaging in political advocacy. Instead, driven by ongoing conflicts in Sino-German cooperation and the constant threat of project failure, they have aimed at creating and cultivating close partnerships with Chinese investors and planning firms, with measures ranging from ministerial directives to shared on-site offices.

However, these interventions have had different effects in the two cases studied, leading to the emergence of diverging temporary power coalitions that, in turn, create new conflict lines. In Thuringia, a close alliance between federal state authorities and the Chinese investor has led to the latter adapting to local planning conditions, thus becoming an important component in the project’s success. At the same time, the coalition has resulted in increasing disregard for local demands and an open conflict between local- and state-

level authorities, which hardened over the course of the project's implementation. In contrast, in Saxony-Anhalt, despite extensive efforts, federal state actors failed to counteract the Chinese investor's lack of commitment. Instead, the project's failure has led to a coalition between officials at the federal state, district, and local levels which is constituted by self-assurance in their own actions, a critical assessment of shared futures, and growing opposition to Chinese investors.

In conclusion, using planning conflicts as analytical windows exposes dynamic, improvised, and often covert interactions among professionals and their multinational partners. These interactions shape, expand, and sometimes challenge formal planning procedures. Applying an ethnographic approach to the analysis of planning conflicts thus complements the conceptual considerations of agonistic planning theory in several ways. First, it sheds light on the often-elusive interactions and decision-making processes of professionals and their cooperation partners within and across institutional settings. This addresses agonistic planning's limitation in advocating for an open-ended and publicly inclusive negotiation of interests that is usually in conflict with actual decision-making on the ground (Hesse and Kühn, 2023). Second, it transcends specific conflict sites, offering a multi-scalar and multi-temporal analysis of interactions. Third, by scrutinizing planning conflicts as empirical moments, it unveils underlying power dynamics and interests, clarifying who does and does not benefit from the projects' implementation. This study's findings underscore the role of host state actors in project implementation, as they use their influence to advance interests and thereby strengthen entrepreneurial and technocratic planning (Raco and Savini, 2019). This, in turn, raises doubts about the transparency of outcomes in large-scale projects and intensifies the need to balance interests during the projects' implementation (Kühn, 2023). As global green investments rise, future planning research should boldly pursue ethnographic inquiries into planning and governance in order to reveal complex transnational power dynamics often obscured behind the closed doors of authorities, investors, and planning firms.

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## Appendix

All interviews were conducted by the author between January 2023 and June 2024. The interviews were semi-structured and lasted on average 90 minutes. Quotes from the interviews are presented in anonymous and non-attributable form. The following chart provides an overview about the interviews, referencing either the Arnstadt-Ichtershausen (AR) case or the Bitterfeld-Wolfen (BW) case.

Code	Pers.	Date	Position
BW01	1	19 January 2023	Local policy, representative
BW02	1	16 February 2023	Local administration, division manager
AR01	1	02 March 2023	Local policy, representative
BW03	1	17 March 2023	Federal state administration, division manager
BW04-06	3	07 March 2023	Local administration, planners
AR02	1	03 April 2023	Private planning firm, division manager
AR03	1	04 April 2023	Private planning firm, division manager
BW07	1	13 April 2023	Private construction company, engineer
BW08	1	13 April 2023	Federal state policy, representative
AR04	1	02 May 2023	Local policy, representative
AR05	1	03 May 2023	District administration, division manager
AR06	1	03 May 2023	District administration, division manager
AR07	1	14 June 2023	Federal state administration, staff
BW09	1	30 June 2023	Federal state policy, representative
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 planning firm, lead engineer
AR13	1	19 April 2024	Private battery company, logistics planner
AR14	1	17 June 2024	Private planning firm, manager
AR15	1	27 June 2024	Private construction company, division manager

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# ‘Left-behind’ amid the ‘boom’? Large-scale green technology projects and reinforced peripheralisation in Eastern Germany

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## Abstract

Driven by the recent investment surge in large-scale green technology projects, the European Union’s shift towards climate neutrality has sparked new development in formerly ‘left-behind’ places across Europe. This article critically revisits the core of extended urbanisation theory to explore how peripheralisation dynamics evolve and are reinforced when ‘left behind’ places become new centres of urban and economic development linked to Europe’s green transition. Drawing empirically on the implementation of a Chinese gigafactory for electric vehicle battery cells and associated infrastructure in Thuringia, Eastern Germany, the article explores three dimensions of centralisation-peripheralisation dynamics (economic, infrastructural and institutional) that reveal how the project’s implementation has led to (1) outward-oriented value flows with limited local benefit; (2) large-scale infrastructure that fails to address socio-ecological needs on-site and (3) exacerbated power imbalances between state institutions and local planning, administration and policy professionals. Challenging the prevailing assumption that large-scale projects and associated built infrastructure inevitably drive the development of ‘left-behind’ places, the article demonstrates that the rise in transnational capital and reinforced peripheralisation are closely intertwined across scales and time spans. Overall, it seeks to inspire a relational framework that combines the multi-scalar dimension of extended urbanisation in Europe’s peripheries with a grounded analysis of (trans)local histories and power relations.

## Keywords

Eastern Germany, extended urbanisation, green transition, large-scale projects, left-behind places, peripheralisation

This is an investment of unprecedented scale. [. . .] The technology enabling the German and European mobility transition will now come from Thuringia, [. . .] propelling us toward becoming the future world-leading hub and value-creation centre for electric vehicle battery technology in the heart of Europe.<sup>1</sup>

chains post-COVID-19 have sparked a major investment surge in formerly ‘left-behind’ places across Europe, including Eastern Germany. Whether it be offshore and onshore wind farms, solar photovoltaic and solar thermal technologies, green hydrogen and hydropower plants, or battery manufacturing and

## Introduction

Recent efforts in the European Union’s (EU) shift towards climate neutrality and diversified supply

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recycling facilities, a growing number of large-scale green technology projects, spurred by transnational investment, are being envisioned as key development drivers. Propelled by the political-economic ambitions of local officials, these projects are considered development ‘frontiers’ poised to foster new concentrations of employment, value creation, infrastructure development and transnational connectivity.

The increase of green technology projects and associated built infrastructure in Europe’s formerly bypassed regions echoes what scholars in urban and regional studies have (re)called the ‘peripheral turn’ (Ren, 2021), pointing out the epistemological, economic, socio-spatial and ecological relevance of peripheries within the production of the contemporary urban (Phelps et al., 2022). These efforts align with debates on extended urbanisation (Brenner, 2014), which contain a larger research initiative on ‘global suburbanisms’ (Güney et al., 2019) and ‘post-suburbanization’ (Charmes and Keil, 2015). Others refer to metabolic approaches interrogating the deployment of peripheral infrastructure projects as globally networked urbanising frontiers that serve the world’s urban centres at the expense of ever-expanding ‘operational landscapes’ under urbanisation with ‘planetary’ scale (Arboleda, 2020; Brenner and Katsikis, 2020). Collectively, the literature pushes forward the shared attempt to grasp conditions of the contemporary urban beyond the methodological and empirical boundaries of cities (Angelo and Wachsmuth, 2015) by focusing on and theorising from peripheries and thus ‘from the outside in’ (Keil, 2018a).

In parallel, since the 2008 financial crisis, a renewed interest in peripheries has been developed among economic geographers and urban policymakers, with the term ‘left-behind’ places gaining particular prominence (Fiorentino et al., 2024; Rodríguez-Pose, 2018). Recent works explore the term’s origin and diverse meanings (Pike et al., 2024), related geographies of discontent (De Ruyter et al., 2021), including their alleged political revenge (Förtner et al., 2021) and dialectics of embitterment and hope (MacKinnon et al., 2024). More policy-focused initiatives address urban development responses (MacKinnon et al., 2022), or question whether infrastructure investments truly support

levelling-up ‘left-behind’ places (Gansauer et al., 2024). However, extended urbanisation literature and recent inquiries into ‘left-behind’ places rarely intersect. Instead, the latter remains entrenched in spatial imaginaries of uneven development, characterised by interconnected yet geographically distant regions of growth and underperformance that result from broader processes of peripheralisation and metropolitanisation (Lang et al., 2015). But what does this relational approach mean for ‘left-behind’ places that are themselves about to become new centralities? Research on extended urbanisation also struggles to address this question adequately. While some argue that peripheralisation – and thus conditions of being ‘left behind’ – is intrinsic to the extended urban fabric (Schmid, 2019: 161), there is still a lack of robust empirical and methodological evidence on how centralisation–peripheralisation dynamics manifest spatially in the same place and beyond.

This article examines how recent deployments of large-scale green technology projects in Europe’s ‘left-behind’ places are linked with extended urbanisation, including the varying ways of how the multi-scalar processes of centralisation and peripheralisation interconnect over space and time. Given Europe’s ongoing reliance on East Asian, especially Chinese, corporations for key technologies and critical resources essential to the green transition (MERICS, 2022), the empirical focus of this article lies on a recent large-scale Chinese investment in a new gigafactory for the manufacturing of electric vehicle (EV) battery cells and associated built infrastructure in the town of Arnstadt-Ichtershausen in Thuringia, Eastern Germany. Positioned as a politically endorsed ‘green flagship project’, the investment serves as a model for envisioning new economic opportunities and prosperity, thereby raising the region’s entire profile. At the same time, the region integrates into far-reaching networks of China’s EV supply chain that increase multiple relations between dominance and dependence, thus reinforcing peripheralisation within the region and beyond.

The article challenges the widespread assumption that green technology projects and their associated built infrastructure create new economic centralities and inevitably drive the development of ‘left-behind’

places. Rather, it demonstrates that the new surge in transnational investment and reinforced peripheralisation dynamics are closely intertwined across various scales and time spans. Through revisiting the conceptual core of extended urbanisation theory, the article develops a multi-scalar framework that allows for exploring the varied and partly contradictory centralisation–peripheralisation dynamics that occur in light of recent developments surrounding the gigafactory project. Therefore, the article deploys three key dimensions (economic, infrastructural and institutional) that reveal how centralisation efforts in the project’s deployment have led to outward-oriented value flows with limited local benefit, large-scale infrastructure that fails to meet socio-ecological needs on-site, and exacerbated power imbalances between state institutions and local actors in planning and administration. The findings indicate that the Thuringian state government has mainly shaped these relational processes by leveraging infrastructure investments to attract transnational capital and thus govern futurity. In parallel, it is also the structural constraints and the lack of local resources that drive the disadvantage on the local level.

In the next sections, I first examine the literature on peripheralisation, outlining why a new link between peripheralisation and extended urbanisation is important to study. I then introduce my selected case in the town of Arnstadt-Ichtershausen, before I deploy empirical findings to discuss three identified dimensions of centralisation-peripheralisation dynamics – *economic*, *infrastructural* and *institutional* – that occur in the context of the project’s implementation. The concluding section evaluates the conceptual relevance of the empirical findings.

### **From ‘left-behind’ places to centralisation–peripheralisation under extended urbanisation**

Following the 2008 financial crisis, the term ‘left-behind’ places has gained increasing attention in urban disciplines, particularly describing post-industrial regions, cities and towns suffering from economic underperformance and decline (Rodríguez-Pose, 2018). In Germany, referred to as *Abgehängte Regionen* (suspended regions), the term is closely

linked to spatial imaginaries of negatively connoted places that are geographically distant from economically successful and growing regions, cities or city-regions. This relational construction (Massey, 1979) reflects a general focus on geographic inequalities resulting from processes of peripheralisation and metropolitanisation (Lang et al., 2015). However, while the term ‘left-behind’ places is relatively new, its underlying processes have been addressed since the late 1990s through the relational and multidimensional concept of ‘peripheralization’ (Fischer-Tahir and Naumann, 2013; Nitz, 1997).

In contrast to the rather static notion of periphery, peripheralisation addresses the variegated dynamics behind processes through which peripheries are produced (Kühn, 2015). This moves away from a purely spatial understanding, highlighting the economic, political, social and/or communicative dimensions of peripheral change. Peripheralisation, and thus the emergence of ‘left-behind’ places, is to be understood more as the result of political, economic and societal relations and less as the product of spatial differences. Rather, it constitutes a relational concept to interrogate the polarisation between the access to and exclusion from, for example, economic and social resources or power and decision-making processes (Kühn et al., 2017).

Such understanding was increasingly evoked in the context of the post-socialist transformation following 1989 and the concomitant reintegration of Central and Eastern Europe (CEE) into the global capitalist system. Social and economic crisis led to regional polarisation on the sub-national level where the dynamics of spatial and economic centralisation in urban centres determined the peripheralisation of small towns and rural areas in the wider region (Ehrlich et al., 2012). As a result, focusing on Eastern Germany, peripheralisation processes have been witnessed that are linked to, for instance, out-migration (Keim, 2001), weak infrastructural provision and a qualitative and quantitative decline of public services (Naumann and Reichert-Schick, 2013), the shrinkage of cities (Oswalt, 2005), the discursive stigmatisation of ‘left-behind places’ (Lang, 2012; Meyer and Miggelbrink, 2013) and the construction of East German identities through media representation (Hörschelmann, 2001).

This rich bulk of urban research has undoubtedly contributed to a more profound understanding of uneven socio-spatial development across CEE regions. However, although the concept of peripheralisation aims to take into account multi-scalar (local, regional, national, global) relations (Ehrlich et al., 2012), previous studies are primarily limited to peripheralisation processes in dependence to one or more metropolitan core regions. Such ‘metrocentricity’ (Bunnell and Maringanti, 2010) follows a dualistic understanding that distinguishes metropolitan growth centres and resulting processes of peripheralisation mainly referring to the decline of outlying places of the wider metropolitan region (Kühn and Lang, 2017). Recent inquiries into the concept of ‘left-behind’ places also problematise such scale-based fixation, emphasising the need to consider multiple interrelations with other near and far locations in the analysis of the plurality of conditions that characterise these places (Martin et al., 2021). Rather than driving forward the homogenising tendency of the term – which risks obscuring the differing dimensions, predicaments and potentials of ‘left-behind’ places – scholars call for more place-specific investigations in various spatial and temporal settings (Kinossian, 2019). Given that formerly peripheralised regions are now becoming new economic hubs of the EU’s energy transition, such multi-scalar and place-sensitive investigations become all the more important to examine the mutually influencing centralisation–peripheralisation dynamics that occur in the same place and beyond.

Linking peripheralisation with the concept of *extended urbanisation* sees the opportunity to overcome the metro-centric scale of previous work and, instead, consider the variegated and partly contradictory dynamics of urbanisation linked to large-scale green technology projects in Europe’s peripheries. Extended urbanisation was first introduced by urbanist Monte-Mór as part of his work on industrialised urban spaces and networks in the rural Brazilian Amazon. According to him, ‘extended urbanisation assumes diverse forms: it includes the dynamic metropolitan centres and, increasingly, distant peripheries that are linked dialectically back to the centres and subcenters of the capitalist system’ (2014: 112). This conceptualisation builds on Lefebvre’s (2003 [1970]) notion of the ‘urban zone’ describing the

dialectical relationship between ‘urban centres’ (implosion) and ‘urban fabrics’ (explosion) as the result of vast industrial expansion and spatial re-configuration of entire territories under global capitalism. Besides Soja (2012), who applied the term in the context of regional urbanisation, it is Brenner and Schmid (Brenner, 2014; Brenner and Schmid, 2015) who elevate the approach to the analytic foundation of ‘planetary’ urbanisation. By referring to Lefebvre’s notion of implosion/explosion, according to them, contemporary planetary urban conditions consist of two relational parts. ‘Concentrated’ urbanisation refers to dense urban agglomerations linked to the centralisation of economic centres as it has been conceptualised with the global cities formation. Conversely, an extended form of urbanisation

denotes the production and perpetual reorganization of broader operational landscapes – including infrastructures for resource extraction, logistics and communication, energy and food production, water provision and management, waste disposal and environmental planning – that at once support and result from the dynamics of urban agglomeration. (Brenner, 2017: 201)

This hierarchical structuring between concentrated (cities, city-regions, megacities) and extended (operational landscapes, hinterlands) forms of the urban, paired with the subsuming of these categories under the notion of the planetary, falls short in two important points.

First, as Lefebvre’s notion of the urban revolution emphasises, the moment of implosion and thus the key condition for creating ‘centrality’ can also and crucially evolve across ‘non-urban’ places distant from urban agglomerations (see Keil, 2018b; Langguth, 2022; Vogelpohl, 2011). This is contrary to the conceptualisation of concentration as described with the planetary urbanisation thesis. Against the backdrop of 20th-century globalisation, centrality according to Lefebvre describes the foundational characteristics of a ‘completely urbanised society’ and its relational connections to the world through, for instance, global circuits of information, social relations or cultural goods. Thus, the essence of centrality enables the development of open spaces of ‘difference’, which is the prerequisite for everyday

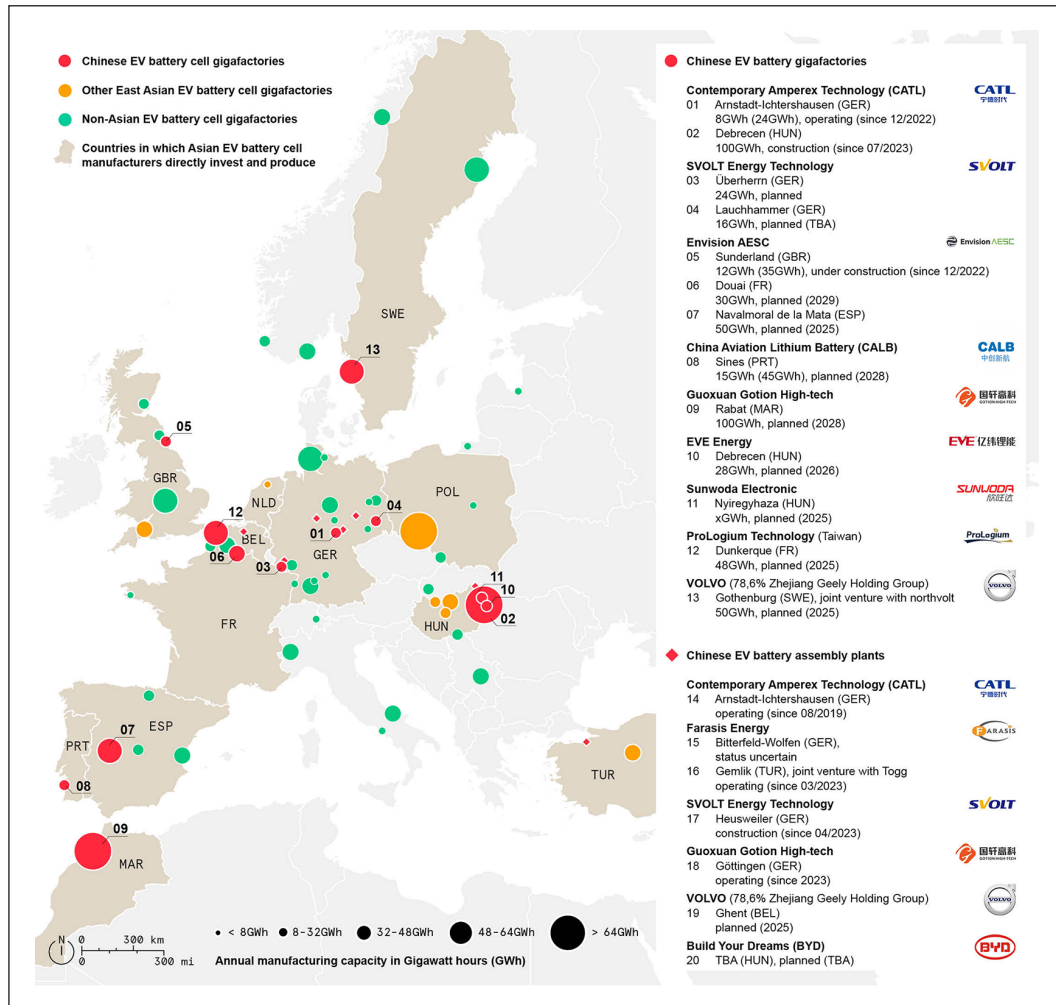
encounters, political co-creation and the emergence of something new (Lefebvre, 2003 [1970]). In what ways differences are produced, for example, through multiple lifeworlds, development plans, imaginaries or interests, depends on how these elements are socially constructed and represented.

Second, as Keil (2018c) has recently elaborated, the moment of implosion represents a ‘singular and unified’ aspect equated with concentration. In contrast, the moment of explosion results in ‘numerous, disjunct elements’. Encompassing the diversity of such disjunct elements under the label of the ‘planetary’ would oversimplify and overlook the varied relations, imaginaries and lived realities inherent in the urban explosion moment, including its multiple socio-spatial formations and multi-scalar relations. In other words, perceiving the deployment of new large-scale green technology projects in formerly bypassed regions as a multifaceted and relational interplay of ‘implosion-explosion’, allows for an unbiased framework that does justice to today’s multi-scalar complexity of extended urbanisation in peripheries. Such perspective moves away from dominant approaches to examining peripheries in relation to one or more urban centres on metropolitan scale. Rather, it interrogates the ever-changing processes between the creation of new ‘centrality’ and modes of ‘peripheralization’ *in* and *from* peripheries, including their multi-scalar relations that shape these places. As Keil states in his recent invocation, ‘there is much to learn by foregrounding the explosion antithesis conceptually and recognizing its own differentiated dynamics of multiple and multifarious implosions–explosions’ (Keil, 2018c: 500). Viewing recent green technology developments as forms of extended urbanisation thus implies recognising the emergence of new centralities (implosions) in previously bypassed places, such as economic growth and employment opportunities. However, it also allows to acknowledge the emergence and/or reinforcement of multi-scalar dependencies (explosions), including associated dynamics of socio-spatial peripheralisation and exclusion in the same place and beyond. Before exploring these interrelations based on the empirical data, I will first provide an overview of recent Chinese investments in Europe’s EV battery cell market, particularly focusing on the case of Arnstadt-Ichtershausen in Thuringia, Eastern Germany.

## **Chinese outbound investment in Europe’s EV battery cell market: the case of Arnstadt-Ichtershausen**

As of August 2023, a total of 58 gigafactories for the manufacturing of EV battery cells were planned, under construction, or operational in the EU and neighbouring countries such as the United Kingdom and Turkey (Figure 1). Of these, 13 are financed by Chinese firms, which, in comparison with the other projects, are the most advanced and have the highest manufacturing capacity. This can be attributed to Chinese firms’ leading role in the global EV battery cell market and the EU’s continued dependence on this sector (MERICS, 2022). In addition, seven Chinese EV battery component manufacturing sites have either been planned or in operation. While the global COVID-19 pandemic led to an abrupt decline in China’s outbound investment in the European EV industry in 2020, investment rebounded quickly and, by late 2022, constituted the mainstay of China’s investments in Europe (Rhodium Group and MERICS, 2023). Gigafactories have become the main driver for the shift of Chinese capital from previous mergers and acquisitions (M&A) to new green-field projects (Rhodium Group and MERICS, 2023), which highlights the increasing role of gigafactories for European urban planning and governance.

In October 2019, the groundbreaking ceremony for the largest single investment in Thuringia’s history took place at the 439 hectares Erfurter Kreuz industrial park near Arnstadt, a town of 28,000 inhabitants, 40 km southwest of Erfurt (Figure 2). With an initial cost of €1.8 billion, later exceeding €2 billion, CATL built Europe’s first Chinese EV battery gigafactory in 3 years on a 34-hectare plot. The facility, measuring 540 m by 220 m, is part of a larger 70-hectare site reserved for expansion (Figure 3). The investor, Contemporary Amperex Technology Thuringia GmbH (CATT), is a subsidiary of the Chinese EV battery cell world market leader Chinese Contemporary Amperex Technology (CATL), headquartered in Ningde, Fujian Province. Initially planned as a three-stage expansion project with a total manufacturing capacity of 60 GWh per year, it was announced in December 2023 that the project would conclude after

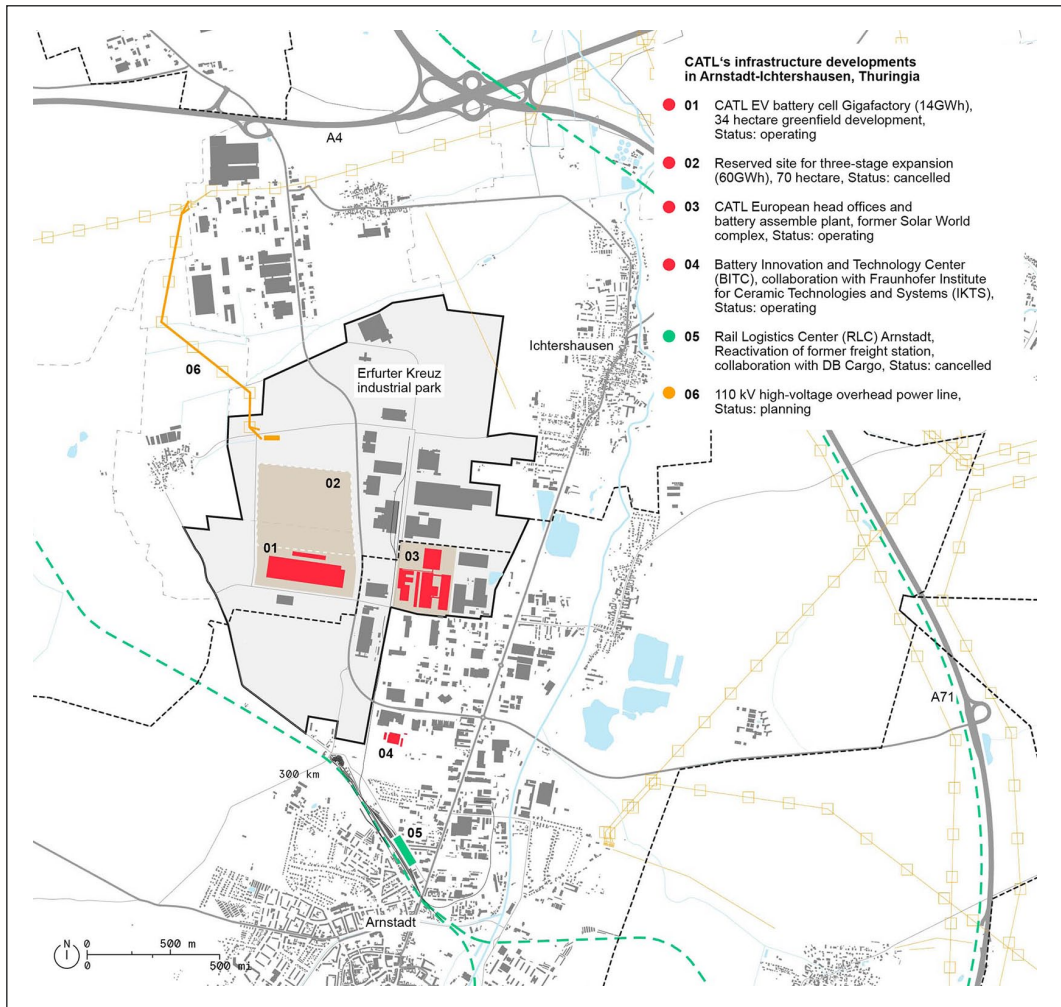


**Figure 1.** EV battery cell gigafactories and battery assembly plants in Europe, August 2023; Graphic: Author (based on battery-atlas.eu by PEM RWTH Aachen University, 2022 and own research), no claim of completeness.

phase 1, reaching up to 14 GWh. In January 2020, plans were revealed for a 2.15-km-long 110 kV high-voltage overhead power line with an additional transformer station, which would extend across the northern area.

In addition to the gigafactory development, in 2019, CATL acquired a vacant factory and office complex of former Solar World. This site now serves as CATL's European head office and a bonded warehouse for untaxed storage of commodities and battery cell modules, delivered to customers such as BMW, Volkswagen (VW), and Mercedes-Benz,

whose proximity influenced the location choice. CATL also partnered with the Fraunhofer Institute for Ceramic Technologies and Systems (IKTS) to establish a Battery Innovation and Technology Center (BITC) near the gigafactory. Plans for a Rail Logistics Center (RLC) at Arnstadt's former freight station, including tracks, cranes, and lorry facilities, were cancelled in 2023 due to CATL's failure to commit to minimum freight volumes. Additional warehouses in Erfurt and Magdeburg store imports from China, transported by lorry or via the freight terminal in Eisenach. CATL employs 700 local



**Figure 2.** Site plan of CATL's infrastructure developments at the Erfurter Kreuz industrial park in Arnstadt-Ichtershausen; Graphic: Author (based on © GDI-Th, DL-DE BY 2.0, <https://geoportal.thuringen.de/gdith/download-offene-geodaten>).

workers and 750 Chinese staff, who oversee manufacturing, train the workforce, and strengthen European supply chains.

My research builds on fieldwork I conducted between spring 2021 and summer 2024. Starting from the actions of and cooperation among local planning, administration, and policy professionals, central to my exploration was the question of which multidimensional dynamics of centralisation and peripheralisation are shaped by the planning and implementation of the project and its associated infrastructures, and

how these manifest socio-spatially in the region and beyond. To foreground the situated actions of professionals and its (trans)local implications and relations, I chose a qualitative approach based on institutional ethnography (Smith, 2006), which I adopted in the field of urban studies. It bears the potential to effectively address the multi-scalar dimensions of complex project ecologies by examining professionals' actions as well as the institutional, legal, societal, and discursive frameworks that shape and coordinate them (Billo and Mountz, 2015).



**Figure 3.** Construction site of CATL's EV battery cell gigafactory at the Erfurter Kreuz industrial park in Arnstadt-Ichtershausen, Thuringia; Image: Marcus Glahn, 2024.

In practice, this involved 14 in-depth interviews with 15 professionals from local and state authorities, ministries, planning firms, consultancies, and Chinese firms (see Appendix 1). Interviewees for the semi-structured sessions, averaging 1.5 hours each, were selected through initial conversations, observations, and snowball sampling. This was enriched by background discussions and participatory observations at planning meetings, information events, town halls, trade fairs and conferences. Following a mobile ethnography (Streule, 2020), the method of walking also proved essential in my embodied and sensual examination of the project's actual implementation progress on-site, including its socio-spatial impacts and symbolic dimension for local town development. In addition, my analysis incorporated diverse textual sources, including architectural plans, land use policies, FDI data, directories, media reports, local gazettes, and social media. The data were evaluated using qualitative content analysis.

### Emerging centrality and reinforced dimensions of peripheralisation

My analysis identifies three key dimensions (economic, infrastructural and institutional) of peripheralisation dynamics that are being reinforced as part of new economic centralisation efforts in the wake of CATLs gigafactory development in Arnstadt-Ichtershausen. The three dimensions are not all-encompassing or absolute, neither do they work in isolation from each other. Rather, they are interconnected, partly overlapping and vary across scales and time spans. Despite local variations, all the three dimensions are linked to broader relationships between processes of economic value creation and extraction. The first dimension highlights the region's economic 'left-behindness', rooted in profound structural changes following Germany's reunification in 1989/1990, leading to the region's

ongoing dependency on transnational investment with outward-oriented value flows and minimal local benefit. The second dimension addresses the physical-spatial imprints of the project's built infrastructure, which primarily serve value extraction and neglect the actual social-infrastructure needs on-site. The third dimension underscores the exclusion of local actors and institutions, marked by state-led paternalism and a lack of transparency in planning, paired with the hierarchical corporate management structures of the inward investing Chinese firms.

### *Economic: between short-term local gains and the dominance of outward-oriented value flows*

May 2024, I stand in front of a 10-storey GDR-era residential block in Arnstadt East. The beige-toned façade is punctuated by an expansive grid of uniform windows, interrupted only by three bold orange stripes marking the building's entrances. At the central door I notice a large intercom panel with around 50 different doorbell labels. Mostly Chinese surnames catch my eye. Some labels, hastily taped over older ones, show up to three names, organised as Entrance C/left, C/right, D/left and so on. An elderly resident exits, allowing me inside. The stairwell appears grey and worn, the narrow corridors are functional and somewhat uninviting. In stark contrast, a few apartment doors display ornately decorated door couplets, with bright and eye-catching Chinese characters offering greetings to those entering, such as 'peace across all seasons'.

The building block is owned by Arnstadt's municipal housing company, with a significant portion rented to an agency that secures accommodation on behalf of CATL for its Chinese employees (AR13, 2024). When asked about the rental arrangement, a local policy representative, who serves on the housing company's supervisory board, highlights the direct benefits for the housing provider, noting that they can now invest considerably more in the units than usual, further stating:

We can afford to invest more because we have rented out entire sections of the block to CATL, at a rental price we would typically never consider. It was a

CATL-specific rate. I knew they would practically pay any rent, even for apartments where you would think, 'Well, maybe we should renovate first, but alright, let us see what happens'. And they accepted everything; this is fixed for five years now. (AR04, 2023)

Envisioned short-term local gains were a key factor following the public announcement of CATL's investment in 2018, widely impacting on the region's real estate market during the following years. Between 2021 and 2023, property prices in Arnstadt surged by 147%, with international, partly Chinese, investors buying apartments, multi-family houses, and even a vacant hotel in the town and nearby municipalities to accommodate CATL employees (AR01, 2023). Other sectors adapted too. Arnstadt's food and hospitality offerings expanded for a growing Chinese clientele, with new Chinese family-owned restaurants and an East Asian food distribution network. While this reflects value-extracting processes typical of China's global expansion (see Apostolopoulou, 2021), speculative value-creation measures were also pursued by a range of local actors. For example, the Thuringian tourism agency introduced Chinese-language brochures and guidance systems at regional attractions, such as the Leuchtenburg Kahla near Arnstadt, and the Arnstadt town authority sent local tourism staff for training focused on a yet untapped Chinese tourism market (AR04, 2023).

Although, over the past 5 years, CATL's significant influx of capital has generated a range of short-term economic opportunities and speculative investments in the wider area, interviews highlight concerns about sustainable value circulation and CATL's long-term commitment within the region. By the end of 2023, according to official figures, CATL has created around 1500 jobs in Arnstadt-Ichtershausen. However, a substantial portion consists of temporary positions held by specialist engineers from the Chinese parent company, typically staying for just 1–2 years, alongside flexible labour supplied by temporary employment agencies. A state-level division manager involved in negotiating the initial investment agreement explains that it was only through determined deliberations and persuasive efforts that they were able to prevent CATL

from operating solely with Chinese workers in Thuringia:

We repeatedly had to explain to them [CATL] that Chinese specialists are too costly long-term. There's housing, transfers, and ultimately, knowledge drain – because every two years, they return to China, taking their training, expertise, and German language skills with them. New staff arrive and have to learn the context all over again. However, they could only be partially dissuaded from their plan to hire only Chinese employees. (AR03, 2023)

The lack of regional value creation is anticipated to persist due to the absence of business tax revenues for local municipalities in the foreseeable future. Regarding CATL's high tax deductions resulting from the large investment sums, a local policy representative says:

Given the scale of the investment, a larger impact was expected, and that expectation remains unmet to this day. [. . .] When you know the size of the investment and can roughly estimate the revenue and profits, there will be no business tax in the coming years. I don't expect a single concrete euro of business tax solely due to the firm's presence in town. (AR04, 2023).

CATL operates in Thuringia with a well-developed network of Chinese and international partners, which continues to have value-extracting effects locally. While CATL's initial attempt to implement the new gigafactory in cooperation with a Chinese planning company failed due to Germany's complex planning system (AR12, 2024), CATL continues to work with Chinese partner firms and their subsidiaries in many other areas, such as factory equipment, automation technology, commodity sourcing, packaging and logistics, and daily employee transport between the manufacturing site and places of accommodation (AR13, 2024).

However, outward-oriented value flows fostered by transnational firms are by no means new to the region. CATL's recent presence aligns with the region's path dependency on foreign industrial investments dating to the post-reunification era of the 1990s/2000s. During this period, the restructuring of land and corporate ownership in the former GDR led to the absorption or dismantling of industries by West

German and international firms, resulting in prolonged industrial recovery, high unemployment, brain drain, population decline and socio-economic deterioration (Lang, 2012). As public funds waned, local municipalities sold land to the newly established State Development Corporation of Thuringia, overseen by the Thuringian Ministry of Economic Affairs. This marked the beginning of almost three decades that have been defined by the State Development Corporation's ongoing commitment to attracting large-scale, globally appealing industries featuring cutting-edge technology (AR06 2023).

Post-reunification restructuring and peripheralisation entrenched a dominance of outward-oriented value flows, decisively conditioned by state-led initiatives to provide essential infrastructure and attract corporate investment from transnational firms (Halseth, 2017). As a result, the region has been repeatedly exposed to global market volatility and cycles of boom and bust, as last seen in the failed solar cell industry push of the 2010s (Dunford et al., 2012). This persistent instability has compelled local industries to repeatedly seek new foreign capital to mitigate recurring structural breaks and transformations, perpetuating a locked-in regional economy that 'constrain[s] *in-situ* value retention' (Gansauer et al., 2024: 396). Such a dilemma aligns with recent analyses of regional political-economic shifts based on global infrastructure development (Wiig and Silver, 2019), thus exposing the contradictions inherent in triggering regional growth through transnational investment in 'left-behind' places.

### *Infrastructural: between transnational connectivity and infrastructural decay*

Early morning, December 2022. I make my way to CATL's new gigafactory, under construction in the Erfurter Kreuz industrial park's western extension. Walking along Thöreyer Straße, I spot cranes on the horizon erecting a colossal power transformer station. On the opposite side of the road, 15 to 20 workers, clad in yellow CATL-branded safety vests, move in small groups. The air is filled with a deafening roar as cars and lorries rush past. The latter – specialised container chassis – bear bold markings of Cosco Shipping, China's state-owned fleet. The

workers and I cross a busy traffic-light-controlled junction. On the other site, we arrive at the vast construction site. Ahead, a windowless industrial complex stretches for hundreds of metres, its structure largely scaffolded, looming over the surrounding fields. Dozens of material and office containers lie scattered in front of it, bustling with activity as workers move between them.

CATL's developments have become materialised and graspable in the wider region, but its benefits to the local public and the environment remain little. While local development plans and regulatory requirements mandated general environmental and safety measures – such as the creation of green noise-reduction hillsides, a helicopter emergency landing site and a CATL in-house emergency response team – the project has caused new environmental pressures and worsened existing issues. Among others, this implies high traffic volumes and the strain on local road infrastructure around the Erfurter Kreuz industrial park. A local policy representative expresses disappointment with the Thuringian state government, which has failed to advance necessary main road expansion, leaving the municipalities to manage the problems and costs on their own:

We are fighting hard with the [Thuringian] state authorities to get the key roads expanded. [. . .] There is no understanding of our position. Our concerns are dismissed and ignored. And we simply lack the funds to at least expand our own municipal roads. (AR04, 2023)

The feeling of being 'left alone' to shoulder the burdens of the project intensified, ultimately culminating in legal disputes. By late 2023, the local municipality of Ichtershausen, together with local landowners, filed a complaint with the Thuringian State Administrative Court. The dispute centred on the construction of the high-voltage overhead power line, which cuts through an area originally designated for environmental compensation. The municipality views the state-initiated overruling planning procedure of the power line as a violation of its local planning authority and, in response, issued a set of demands, making further development contingent on their fulfilment. These demands included, among

other things, financial support and improvements to local public infrastructure, particularly in the areas of housing, childcare and schools (AR01, 2023).

However, the lack of improvements to local infrastructure stemmed not only from insufficient state support but also from the CATL's inadequate preparation for operating in the German context (Langguth, 2024). Engineers from a partnering transport company noted that CATL failed to consider European logistics practices, worsening local traffic due to heavy lorry reliance (AR08, 2023). To address this, Deutsche Bahn Cargo proposed reactivating Arnstadt's former freight station as a new Rail Logistics Centre. Despite the project's high-profile launch, with local and regional politicians touting it as a solution to the troublemaking traffic issue, the project failed and left the local traffic issue unsolved. Consequently, the rail freight project became a speculative venture for Deutsche Bahn Cargo, which had already invested around €3 million prepayment into its development (AR08, 2023).

Another issue concerns the mono-functional built infrastructure developments, whose long lifespan contrasts sharply with the relatively short temporal rhythms of the global EV market on which they depend. A local policy representative highlights the future scenario of underused and potentially redundant industrial facilities as a genuine concern for the local population:

If the Chinese feel that this is not profitable in the medium term or if the hurdles become too great, they just pack up and leave immediately [. . .]. That was a clear statement [from CATL] already in 2019. [. . .] And this has made local politicians very alert. We're talking about massive built infrastructures that are difficult to repurpose – 110 kV power lines designed to last not just five or ten years, but 80 to 100 years, along with substations built specifically for the factory's needs. Other companies, whether in logistics or production, wouldn't require such infrastructure, yet these structures remain in the landscape. (AR01, 2023)

In early 2024, local officials' concerns grew as signs of withdrawal and downsizing took shape. Due to a lack of orders, CATL placed many employees on short-time work or furloughed them. At the same time, the firm announced that it would no longer pursue the originally planned three-phase 60 GWh

expansion of the gigafactory, opting instead to maintain the current 8 GWh manufacturing capacity while investing in a new 100 GWh facility in Debrecen, Hungary. The result is a vast, underutilised facility in Arnstadt-Ichtershausen, unfinished and far below its manufacturing targets. An engineer from a planning firm working with CATL wonders:

Inside the factory, there's a yawning emptiness. Equipment is incomplete or entirely missing. I don't understand how the firm [CATL] is making any money with this factory. (AR12, 2024)

This highlights the Janus-faced nature of new infrastructure developments driven by transnational investments, which are heavily dependent on the fluctuating and often short-lived dynamics of global capital and profit-making. While the new manufacturing, transport and logistics infrastructure have enhanced the region's transnational connectivity, embedding it into broader networks of global resource extraction and consumption (Schindler and Kanai, 2021), they remain disconnected from the lived realities and socio-ecological needs on the ground, in parts even exacerbating these issues (Schouten and Bachmann, 2022). Moreover, the fast-paced logics of global markets contrast sharply with the long lifespan of built infrastructure, which materialises as spatially fixed capital assets that require continuous maintenance and investment to keep functional (Howe et al., 2016). As soon as industrial activity declines, profits dwindle and capital withdraws, the region remains 'left-behind', facing a growing risk of vacant and deteriorating facilities and built infrastructure, often forcing the public to shoulder associated costs (Carse and Kneas, 2019).

### *Institutional: between stabilising state-led actions and growing state paternalism*

In late October 2021, on a cool autumn day, I step into a tent on the partially cleared site of the former Arnstadt freight station. With wooden flooring, chandeliers and standing tables, it resembles a festive marquee, though no celebration is taking place. Instead, display boards are set up, and a few visitors and suited individuals engage in conversation. The

event, hosted by Deutsche Bahn Cargo and the State Development Corporation of Thuringia, was announced as a citizens' dialogue to present plans for a new Rail Logistics Centre that supports CATL's gigafactory development. I speak with a young logistics planner who highlights the project's innovation, including CO<sub>2</sub>-neutral terminal operations and electric lorries, to enable fully sustainable freight transport for the final mile. In a later interview, another logistics planner present at the event recalls:

Residents came to us and said, 'Thank you, Deutsche Bahn Cargo, for talking to us. Thank you for holding information events because we know nothing about what's happening'. [...] we figured out that it wasn't really about the RLC [*Rail Logistic Centre*], where we expected tough questions. Instead, it was more about what CATL is doing. The event felt like a lightning rod for many visitors. [...] Many issues came to light that weren't directly related to the project's scope but rather to how it was being carried out. (AR09, 2023)

A lack of transparency and the absence of local stakeholder involvement were persistent issues during the implementation of CATL's developments. While a state-level division manager admits that 'regional acceptance doesn't concern the firm [CATL] at all' (AR03, 2023), a local division manager reports that CATL's secrecy led to insufficient public information, heightening uncertainty among residents as well as local planning, administration and policy professionals (AR06, 2023). This became evident in summer 2019, when the construction of the high-voltage overhead power line was officially announced shortly after one of CATL's information events, where public concerns about the need for and potential impacts of new energy infrastructure were dismissed by both the investor and the State Development Corporation as unfounded. A local policy representative reflects,

Perhaps 14 days after [...] we suddenly received the formal planning approval for the 110 kV high-voltage power line. From that point on, everything changed – community groups started forming, initially opposing the high-voltage power line project itself, but soon becoming very critical of CATL's entire presence in the area. (AR01, 2024)

Even within CATL's institutional operations, the company's hierarchical structures provided local engineers and planners with only the information that was absolutely necessary. A former senior employee of CATL describes a lack of transparency regarding the firm's management and its objectives, further stating, 'We didn't receive the information. [. . .] all of us at the local office were kept at a distance' (AR13, 2024). Instead of involving their employees on-site, they were mainly given top-down directives from the distant and opaque CATL headquarter in Ningde, China. Combined with a high workload and intense pressure for success, the working conditions, especially in the initial years, were described as largely disempowering (AR13, 2024).

However, the lack of local stakeholder involvement is also rooted in site-specific legacies, which gradually strengthened the power of host-state institutions, particularly at the federal state level. Following post-reunification restructuring – as outlined above – the State Development Corporation acquired ownership of the development land, distinguishing it from similar corporations in other Eastern German states, which typically market land on behalf of individual owners. This gave the State Development Corporation a strong negotiating position with investors, at the same time leading to significant one-sided concessions in the case of CATL. To persuade the Chinese firm to abandon their original investment plans for Debrecen, Hungary, and invest in Thuringia, electricity costs were drastically reduced for CATL (AR03, 2023), and the massive expansion of local transport and energy infrastructure, at the expense of municipal budgets, was not prevented (AR04, 2023). Instead, local officials only encountered the project's specific conditions after the investment agreements were signed.

The State Development Corporation's strong position led to significant tensions and conflicts, especially at the municipal level. Local policy representatives felt their concerns were often ignored and dismissed, particularly due to the patronising manner in which the State Development Corporation operated (AR01, 2023). Regarding the dispute over the implementation of the high-voltage overhead power line, where local officials perceived a state-led deliberate bypassing of established local

development rules, a state-level division manager comments,

They [local municipalities] won't be able to avoid this. They've to and they'll realise it. And once it's built, they'll see that no one will even notice the overhead power line. (AR03, 2023)

This underscores the importance of place-specific histories in understanding centralisation–peripheralisation dynamics. Past decisions have shaped hierarchical roles and unequal power relations between host-state institutions (MacKinnon et al., 2009), in this case leading to an ambivalent role for state-level actors. Bolstered by their institutional status – largely shaped by post-reunification restructuring – federal state officials have responded swiftly and thus stabilised regional economic crises, leveraging their direct and strong negotiating position with investors. At the same time, the centralised authority has bypassed local interests and needs, fostering a growing paternalism in state-level actions. This resonates to broader geographic studies on uneven power geographies stemming from 'left-behind' places' dependence on economic and political decision-making centres (Ek and Rauhut, 2024). In this context, the marginalisation of local planning, administration, and policy professionals is further exacerbated, as they are confronted with faits accomplis and thus increasingly struggle to reconcile economic, political, ecological, and socio-infrastructure concerns at the local level.

## Conclusion

This article explores how peripheralisation dynamics in formerly 'left-behind' regions evolve and are reinforced when these places themselves become new economic centralities. It therefore examines the recent investment surge in large-scale green technology projects at Europe's peripheries as processes of extended urbanisation driven by global capitalist markets. Using the case of a new Chinese EV battery cell gigafactory and associated infrastructure in Thuringia, Eastern Germany, the study highlights how centralisation efforts surrounding the project's deployment have led to outward-oriented value

flows and limited value retention within the region; large-scale built infrastructure that barely address the actual socio-ecological needs on-site; and the exacerbation of unequal power relations between federal state institutions and local planning, policy and administration professionals. The article thus challenges the prevailing assumption that investments by transnational firms automatically drive development in ‘left-behind’ places. Instead, it demonstrates that the influx of capital and peripheralisation dynamics is intricately linked across scales and time spans.

The analysis of empirical findings reveals, first, that the region’s power relations with federal state institutions have gradually been built up over time, enabling its transformation into a new economic centrality. However, these processes of forging centrality have significantly heightened the region’s dependency on both near and distant economic and political decision-making centres, thereby reinforcing economic, infrastructural and institutional peripheralisation. Second, the reinforcement of peripheralisation is not exclusively the result of the dominance of economic and political decision-making centres but also stems from a lack of local resources. This hinders local authorities from influencing decision-making processes effectively (Kühn et al., 2017), as decades of institutional and land ownership restructuring have led to job and responsibility cuts in municipalities, financial constraints due to austerity policies, the shortage of skilled personnel and a lack of audacity to pursue alternative development paths.

Future urban and regional research on ‘left-behind’ places should bring both the role of lower state-level actors and the structural deficiency of local resources in decision-making back into the equation. This would prevent the binary view of peripheralised regions as being solely dominated by metropolitan centres or external political and economic forces, as indicated by much of the existing literature. Instead, peripheralisation and disadvantage are co-produced and reinforced at the local level, which implies questions about local agency in coping and/or exacerbating path dependencies and peripheralisation (see Bosák et al., 2024). This is associated with urgent questions that arise regarding

the recent electoral victories of the right-wing Alternative for Germany (AfD) in Thuringia (strongest party with 32.8% of the vote in September 2024), Saxony and Brandenburg (second strongest in both), and their influence on future large-scale project investments. While scholars highlight that the far right endangers future investments and the immigration of skilled workers (André et al., 2020), the AfD has claimed a direct link between its electoral successes and increased investment in Eastern Germany.<sup>2</sup> This underscores the appropriation of large-scale green technology projects as locally contested arenas around the rise of the far right (see Beveridge et al., 2024; Nettelbladt, 2025), a focus that future research should further examine.

My inquiry concludes that critically revisiting the core of extended urbanisation theory offers untapped potential for applying a relational, multi-dimensional and multi-scalar approach to studying ever-changing centralisation–peripheralisation processes *in* and *from* peripheries, respectively, ‘left-behind’ places. The article demonstrates that such a framework contains the ability to zoom in on the local level, addressing the situational planning and development of large-scale projects, while also accounting for broader urbanisation dynamics. Compared to previous binary-focused approaches to peripheralisation – contrasting metropolitan cores and decision-making centres – extended urbanisation thus provides a critical lens for examining how modes of governance surrounding centralisation efforts within formerly ‘left-behind’ places perpetuate peripheralisation at the same place and beyond (Gansauer et al., 2024). Overall, the article speaks to broader efforts of understanding the role of power and the state in consolidating uneven development by inspiring a relational framework that combines the multi-scalar dimension of extended urbanisation in Europe’s peripheries with a grounded analysis of (trans)local histories and power relations.

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### Notes

1. The public statement was made by the Thuringian Minister for Economic Affairs, Science, and Digital Society in October 2019, during the groundbreaking ceremony for Europe’s first Chinese gigafactory dedicated to manufacturing EV battery cells. The investment was made by the Chinese firm Contemporary Amperex Technology Limited (CATL) in the Erfurter Kreuz industrial park, in close proximity of the small Thuringian town of Arnstadt and its neighbouring municipality of Ichtershausen. The full press release of the project’s groundbreaking ceremony, issued by the State Development Corporation of Thuringia, can be accessed under <https://www.standortmanagement-thueringen.de/news/news-details/news/baustart-fuer-catl-batteriewerk-am-erfurter-kreuz/>
2. In October 2023, the leadership of the right-wing party Alternative for Germany (AfD) submitted a parliamentary inquiry [kleine Anfrage] to the German Bundestag, questioning whether and to what extent the AfD’s increasing electoral success in Eastern Germany played a role in the negotiation for the CATL investment in Thuringia (Deutscher Bundestag, 2023). The inquiry revealed that the issue

was not raised in any way by the negotiating parties involved in this particular case. The AfD used this response to argue that a strong AfD does not deter investments by transnational firms and, instead, even claimed a direct connection between its electoral successes and the rise in green technology project investments.

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**Appendix 1.** All interviews were conducted by the author between March 2023 and June 2024. The interviews were semi-structured and lasted on average 90 minutes. Quotes from the interviews are presented in anonymous and non-attributable form. The following chart provides an overview about the interviews.

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