The space, the time, and the money. Wind energy politics in East Germany

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ABSTRACT

The transition to renewable energy generates significant conflicts over time when technical innovations allowing larger wind turbine construction coincides with spatial regimentation as energy governance. The interplay of space, time and money, we argue, is crucial for understanding these conflicts. Wind energy's spatial advantage of potential social co-existence of energy generation and farming gets eaten up by differently constituted chronoscapes and regional planning, resulting in local perception of renewable energy as a threat and encroachment and experts working against a renewable energy transition. Drawing on the example of Brandenburg in East Germany, we demonstrate that financial means is next to space and time the third utmost relevant factor for local attitudes towards renewable energy.

"If someone comes to me and asks me to have a wind turbine on my land, I'd be more than happy to say yes. It would mean less work on the fields, and I'd be less dependant on the crop and its market value." We sit with Michael, a farmer in his early forties, in the courtyard of his four-sided farmyard. Some of the roofs of the red brick buildings are covered with solar panels; a large linden tree provides shade in the summer sun. Michael tills 180 hectares of fields as a conventional farmer. He has inherited some from his parents, the rest is leased. He tills the fields independently and without employees. Working on his fields, Michael can see wind turbines, especially to the north and northeast. There are no wind turbines on his own fields, as the state of Brandenburg's planning restrictions don't designate them as wind suitability areas. But a little unusually, Michael says he likes the sight of them, even at night. "When I work at night, during sowing or harvest, I like to see the synchronized blinking of the lights. There is something reassuring to it, and it also gives me a sort of city-like feeling."[1]

A few months later, in early 2020, the situation has changed slightly. Michael is in a position to sign a tentative agreement to lease the small patch of forest he owns to a wind company. The forest is adjacent to the next village, about a kilometre from his. The company plans to erect a wind farm with a maximum of 21 wind turbines; a cable or substation would be likely to stand on, or cross, the part of the forest he owns. The wind turbines would be up to 240 meters in height - 80 metres higher than Cologne cathedral, and only one kilometre from the nearest village, where his parents and some of his other relatives live. Michael is not sure if that's not too close for them, and not so sure about signing the lease.

Closer, denser, bigger

Michael's situation is just one example of how people's attitudes towards wind energy can change as wind energy advances into the landscapes where they live. Wind energy is highly distributed, can co-exist with other forms of land use such as agriculture, and does not destroy the landscape and people's livelihoods in the way that, for example, coal mining has done across parts of Brandenburg since the 19th century. But the advantage which wind, as a spatially distributed source of energy generation, has over other energy sources, is being steadily undermined by its increasing concentration in the landscape, as a result of regulation and planning processes, and the increasing height of the wind turbines themselves. To people in particular places and regions wind farms appear closer, denser and bigger, increasing the potential for conflict.

In the following article we consider a range of voices from Michael and other residents of Brandenburg, a state in East Germany with a high density of wind energy. At the time of writing, Brandenburg had the second highest installed capacity of wind power of any German Federal State with 3894 wind plants installed generating 7332 megawatts, and in 2020 installed more new net capacity than any state except North-Rhine Westphalia (Bundesverband Windenergie 2020a). But there are also significant conflicts over wind energy in Brandenburg, which have been developing and intensifying over the last decade, and which are now exerting a growing influence on policy makers (Bues 2020). In 2019 the state parliament declared a 2-year moratorium on further wind development in regions which have no currently valid regional plan.

Understanding these conflicts, and how and why they arise, is all the more important because the future of Germany's energy transition or *Energiewende*, and its emission reduction goals, are at a crucial juncture. For the first time in 2019, wind energy beat lignite (brown coal) to become the number one source of electricity in Germany, contributing 24.6% to net public electricity generation in Germany, as opposed to 19.7% for lignite (Fraunhofer ISE 2020). Overall, renewable energy now contributes around 43% of gross German electricity consumption, but that figure needs to rise to 65% by 2030 if Germany is to reach the national climate goals mandated in the German Climate Protection Law of 2019 (Bundesministerium für Wirtschaft und Energie (BMWi) 2020; Löschel *et al.* 2021). This target, and the broader target of a 55% reduction in emissions agreed in a recent resolution of the European Council, will be impossible to meet without an even more rapid expansion of onshore wind energy.

At present, however, the wind appears to be blowing in the opposite direction. After increasing steadily since the early 2000s and reaching a peak in 2017, the amount of newly installed onshore wind capacity in Germany fell sharply, rebounding in 2020, but nowhere near enough to reach 2017 levels (Deutsche Windguard 2020, see also Regionalplanungsstelle 2020). The Expert Commission "Energy of the Future", which monitors the progress of the *Energiewende*, sees "very considerable challenges" for further expansion of onshore wind, citing a speeding-up of the approvals process, the increasing frequency of legal challenges to such approvals, and clarification of problems surrounding species protection and aircraft flight paths as just some of the issues which urgently need to be addressed (Löschel *et al.* 2021: 25). Noting the generally high levels of public support for the energy transition, the Commission argues that strengthening the social acceptance of wind energy installations in the countryside will be decisive for achieving the necessary expansion of wind energy, and with it, Germany's climate and energy goals (ibid.).

Attitudes to renewable energy, and wind in particular, are not static, and do not divide neatly into 'general acceptance' versus 'local opposition' (Reusswig *et al.* 2016). Michael, and his fellow citizens whom we interviewed in our research, are not predisposed to oppose or support particular forms of energy: rather, their positions and arguments are formed over time and shaped by the dynamics of local conflict; they are "emergent, negotiated and shifting" (Futrell 2003: 360). As Becker and Naumann argue, in order to resolve conflicts over energy policy and politics, we need "a detailed and differentiated understanding of what is at stake" and to clarify "who is involved, what is being fought over, and in which arenas the conflicts play out" (Becker and Naumann 2018: 512). The landscape or "energyscape" (Appadurai 1990) of Teltow-Fläming, the region where Michael lives, has become a site of "shifting local arenas for the social making of arguments, instead of being only the static 'scenery' for displaying pre-disposed attitudes" (Reusswig *et al.* 2016: 226).

This article presents an ethnographic approach to understanding how these "shifting local arenas" shape and influence the "social making of arguments" about wind energy. Our analysis is based on extensive fieldwork in Teltow-Fläming,[2] a district where the scale and density of wind farms has increased steadily in recent years, leading to opposition from some (but not all) local residents. As Michael's example illustrates, people may be sympathetic in principle to wind energy, and the goals of the *Energiewende* overall, but find their attitudes change when confronted with specific projects in the places where they live and work. It is not NIMBYism at play here, but the everyday experience of wind energy in people's own shifting local arena which is decisive. These local arenas are now the principal forum in which the future of the German energy transition is played out, because it is at the local level, and in response to concrete renewable energy projects, that the social legitimacy of the energy transition is produced. Understanding the factors which influence the social making of arguments, and create or undermine legitimacy at a local level, will be crucial to strengthening social acceptance of the *Energiewende* at a broader level, especially at a time when significant concerns are emerging about who bears the burden of implementing it (Wolf, 2020). We argue that the interplay of space, time and money is crucial in shaping people's perceptions of wind energy and their everyday experience of how it affects their lives. In the next section, we summarize the broad context of existing research in the field, and how our approach sits within it.

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[2] All names of interlocutors have been changed. Due to ongoing negotiation and planning processes, we do not go into further detail as regards the place of our study.

Existing literature

There is an extensive scholarly literature on energy conflicts and the development of wind energy in Germany. Noting that attempts to implement the goals of the *Energiewende*, and reduce Germany reliance on fossil fuels and nuclear energy have led to a multitude of small-scale, locally- and regionally-based conflicts, Becker and Naumann produced a useful typology. They identify five kinds of energy conflicts: distributional, around who benefits from the financial rewards of new renewable energy projects; procedural, involving planning and decision-making processes, access to information, and opportunities for participation and transparency; locational, where the use of land for energy projects and its consequences for the appearance of the landscape are at stake; identity conflicts, which affect the perception of a region and its distinctive identity by locals and outsiders (for example as an energy, tourism or health region); and fundamental conflicts over the use or rejection of particular sources of energy, for example, coal or nuclear (Becker and Naumann 2018: 511–13).

While majority public opinion in Germany is consistently in favour of renewables as an energy source, recent polling shows significant differences in attitudes to wind energy, both between urban and rural households, and between Western and Eastern Germany (Renn, Wolf, Setton 2020). Researchers have examined the reasons for acceptance of, or opposition to, wind energy (Reusswig *et al.* 2016), the heterogenous distribution of wind power across Germany (Goetzke and Rave 2016), the role of public participation in encouraging acceptance (Langer *et al.* 2017; Schroeter *et al.* 2016), the role of planning processes and "landscape governance" (Leibenath and Lintz 2018), and have recently begun to give greater attention to the socio-spatial dimensions of wind and renewable energy more broadly (Gailing *et al.* 2019). Until recently, however, much of this literature focused on Western Germany, where the first wind power projects were installed in the late 1980s.

Over the last five years, researchers have begun to pay more attention to energy conflicts and the development of wind energy in Eastern Germany. A number of studies have taken a case-study-based approach focused on particular localities. Leibenath *et al.* looked at informal participatory planning in the Upper Elbe Valley/East Ore Mountains region of Saxony, identifying the discursive frames employed by different groups involved in the process, and concluding that "building trust, disseminating information, making the intricate procedures of spatial planning transparent, and explaining the overall rationale of the Energy Transition seem to be crucial" (Leibenath *et al.* 2016: 212). Gailing *et al.* compared the socio-spatial dimensions of energy transitions in three "regional energy spaces" in Bavaria, Baden-Württemberg and Brandenburg, concluding that place is a fundamental category for understanding energy transitions, because both energy generation and energy governance have become decentralized. Proponents of transition may label a region a "clean energy region" or a city "green city" as a way of discursively legitimizing renewable energy development, while opponents employ 'place-protection' strategies which seek to preserve the existing countryside and characterize their places as natural or pristine (Gailing *et al.* 2019: 5, 14).

Bues (2020) conducted an in-depth study of wind energy conflicts and anti-wind groups in Brandenburg, seeking to understand how "discourses and frames on energy transitions impact the discursive strength of anti-wind movements", and how these interact with and influence the existing formal institutional system (Bues 2020: 4). Bues interviewed local grassroots anti-wind organizations, regional and town planners, municipal representatives and locally active wind energy companies over two years, concluding that the discursive strategies of the anti-wind movement had been successful in getting the Brandenburg government to take their demands seriously. Bues notes the emergence of "populist forces" such as the AfD (Alternative for Germany) which seek to appropriate the concerns of anti-wind groups for their own ends, and which she believes have the potential to "challenge the foundation for further decarbonization projects" (Bues 2020: 9).

Each of these studies pays attention to the discursive aspects of energy transitions, grounded in Hajer's approach to discourse analysis and discourse coalitions and Schmidt's notion of "discursive institutionalism" (Hajer et al. 1993; Schmidt 2008). Our own approach and these studies have some commonalities. Embedded in the larger, comparative and interdisciplinary research projects "The Coal Rush and Beyond" and "Decarbonising Electricity",[3] we have been studying local energy conflicts in Germany since 2014, focusing on struggles against the expansion of coal mining in the Eastern German region of the Lausitz (Lusatia), and more recently, controversy over new wind energy projects in Brandenburg. This article draws on around twenty formally recorded interviews with people proposing and opposing wind development, including administrative officers, local politicians, regional planners, wind developers, farmers, teachers, business people, and pensioners. To go beyond analysing careful wording in interview situations and written statements, we base our analysis in anthropological research in and with communities on the ground. Our set of data comprises countless informal conversations during field visits to the region of Teltow-Fläming between 2018 and today. We practised extensive participant observation and deep hanging out (Geert 1998) in order to gain a more profound understandings of how wind energy production is made sense of and experienced on the ground; we observed and participated in council meetings, public hearings, village fetes, information meetings, site visits, and simply in everyday life.

Hence we see our research relating and contributing to in-depth anthropological energy research, such as Howe & Boyer's collaborative, interdisciplinary study of "aeolian politics" on the Isthmus of Tehuantepec in the Mexican state of Oaxaca, Strauss & Reeser's study of wind energy in Wyoming, or Bakke's study of the American electricity grid, which argues that not only the technology but also the "culture of electricity-making" has to be transformed in the transition to an energy system based in distributed renewable energy (Boyer 2019: xii; Strauss & Reeser 2013; Bakke 2016: 4). Our methodological approach differs from these studies, however, in that it involves an interdisciplinary collaboration between anthropology and journalism, combining ethnographic methods of

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[3] www.coalrush.net and www.decarbenergy.net, based at the University of Technology Sydney and funded by the Australian Research Council.

long-term field research and participant observation with the journalistic methods of long-form radio documentary production (see Müller and Morton 2018).[4]

To our knowledge, ours is the first intensive ethnographic study of wind energy conflicts in Eastern Germany. Our previous research on coal conflicts in the Lausitz informs and illuminates our work in Brandenburg: while the two cases may, at first glance, appear very different, they are linked by a common discursive frame or 'script', the German *Energiewende*. Opponents of the new coal mines in Lusatia seek to legitimize their struggle and delegitimize coal by framing "themselves as advocates of the energy transition, confronting an industry mired in the industrial past" (Morton and Müller 2016: 281). The contest over coal in Lusatia can be seen as a contest between competing modernities, one urban, regional and industrial, in which the coal industry continues to sustain employment and prosperity and nourish a sense of pride and identity, and one bucolic, localized and post-industrial, in which the energy transition has become integrated into the fabric of rural life (ibid).

The contrast with our current case study is instructive, because it raises the question of why at least some of the residents of Teltow-Fläming do not perceive the energy transition as integrated into the fabric of rural life, but rather as a disruptive or discordant element. One answer to this question is simply that the scale, height and density of wind power in the landscape is much greater than it is around the villages in the Lausitz where we worked.

Our research, however, suggests that the reasons are more complex than this. While previous studies have analysed the spatial dimensions of wind energy conflicts (Gailing *et al.* 2019), or focused on their procedural or distributional aspects (Radtke *et al.* 2020; Becker and Naumann 2018; Reusswig *et al.* 2016), we explore three dimensions – spatial, temporal, and economic – which emerge from our ethnographic material as essential in shaping people's perceptions of wind energy.

In the next part of this article, therefore, we focus on the spatial dimensions of wind energy in Brandenburg, and the corresponding forms of energy governance. We examine the processual character of wind planning and installation, and how that changed over time. In particular, we focus on the role of regional planning bodies, because these are now the principal vehicle through which the German energy transition (or at least on-shore wind energy's contribution to it) is governed and regulated.[5]

In the following part of the article we focus on time, in our view a hitherto under-researched dimension of energy politics. We argue that time and space are deeply intertwined, and that a more nuanced understanding of how stakeholders experience the "time" of energy transition is needed, in particular in response to colliding time scales and a discordant chronoscape.

The third factor in our analysis is money. Money significantly co-constitutes whether people understand their relationship to wind energy in terms of coexistence or conflict, especially in East Germany where the development of wealth accumulation and economic expertise is subject to structural injustices. These, again, are central aspects determining how local residents experience and situate themselves in relation to the changing spatial configuration of wind energy.

In the subsequent discussion we explore each of these dimensions separately, and then draw them together, showing how they intertwine and mutually influence each other in the social making of arguments about wind energy and its future.

Spatial dimensions

Take the local train from Berlin towards the countryside – any direction will do – and you will soon see many wind turbines, sometimes less densely set up, sometimes strung together. Whether you go to the Uckermark in the north, the Nauener Platte in the west, the hill chain of Fläming in the south, or towards the Spree Forest in the south-east – the state of Brandenburg, enclosing Berlin, has held the *Leitstern* or "guiding star" for being Germany's state being strongest in developing renewable energy three times in a row.[6]

Villages, farms and forests did not need to make way for these wind farms. Constructing them required temporary access roads, stands for cranes to set them up, and the installation of cables (above or underground) and transformers. Compared to coal mining, hydro-power dams or even large-scale solar arrays, however, once wind turbines have been installed they are minimally invasive and allow for multiple and simultaneous land uses. As the space actually needed for a single wind turbine - about ½ ha – is comparatively small, even a large-scale wind park generating several megawatts leaves plenty of space on the ground for farming, forestry or other forms of land use. Wind turbines' rotor blades take up space, but do so 50 to 200 meters above ground: they can 'harvest' wind while crop and animal farming can continue underneath. A wind farm can co-exist with agriculture, and with human settlement in nearby villages and towns, but the degree of proximity people will accept to their towns or villages is subject to change, and processes of social negotiation. This "social co-existence" of wind, other forms of land use, and everyday life is an unfolding process in which people's positions and arguments are formed over time and shaped by the dynamics of local conflict.

Caroline is a case in point: she is in her early thirties, and together with her husband runs an animal and crop farm about 15 km from Michael's house. They are currently in the process of shifting from conventional to organic farming, and thus to something they think is more sustainable. Nonetheless, Caroline is a member of a citizens initiative active in the area that opposes further expansion of wind energy:

> Well, it does disturb me, that the way the landscape looks is being destroyed [by wind turbines]. I thought I'd get used to them with time, and I try not to see them or take notice of them at all, but of course, that's difficult, just because they're relatively large, and not so easy to overlook (Caroline, Interview 2019)

And Caroline, who is a keen horse-rider, adds

> We often ride through the forest, and it's not the same now as it used to be. Five years ago, when we went riding there, it was all still green and natural, and today it feels like every hundred and fifty metres you find a wind turbine in between the trees.

Forests have been a focus for the anti-wind movement in Brandenburg, and according to one of Bues' informants a decision in 2011 by the state parliament to allow wind suitability areas to include forests was a tipping point, causing citizens' initiatives to spring up like mushrooms (Bues 2020: 93). What Caroline and her neighbours perceive as 'natural' in the Brandenburg forest has, in fact, been altered and shaped by human action over thousands of years (Küster 2010). Landscapes, and 'nature' itself, are socially constructed (Cronon 1995: 25), and the forest has complex and politically charged meanings in German cultural history. For contemporary climate activists involved in the struggle to protect the Hambacher Forst, the forest is a symbol of resistance to the coal-industrial complex (Heidtmann 2018). During the Nazi period, however, the "German forest" functioned as a symbol of racial identity, creating an opposition between the Germans as a "forest people" and the hostile "steppe- and desert races" to the East (Zechner 2018). As Reusswig *et al.* argue, landscapes, and in this case forests, are not "static 'scenery' for displaying pre-disposed attitudes"; they are cultural objects which can be mobilized discursively in the social making of arguments (Reusswig *et al.* 2016: 226). Some scholarship even sees the landscape itself as an actor in energy conflicts (Chezel and Labussière 2017).

Nonetheless, increasing construction activity has changed Caroline's attitude towards wind energy. Wind, like other sources of energy "flows through socio-cultural systems and switches in the social circuitry of power and meaning-making" (Strauss *et al.* 2013: 12). Being a form of cultural meaning-making, the social co-existence between wind installations and residents determines how space is perceived, and what kinds of values and meanings people ascribe to the energyscape they find themselves inhabiting. It shifts and changes over time and is constantly renegotiated as wind plants expand into the landscape.

The spatial governance of wind energy, however, has created increasing tensions in this social co-existence, undermining wind's advantage over other energy resources in Brandenburg – especially lignite. What was previously perceived as an acceptable proximity between wind plants and dwellings is increasingly experienced as a threat, as encroachment on and even destruction of the landscape.

The decision-making bodies which calculate distances between wind plants and settlements, and plan and map "wind suitability areas" (*Windeignungsgebiete),* pay heed to social co-existence between wind energy production and residents primarily in two dimensions: width and length. Height, the third spatial dimension, and density, however, are increasingly important factors in wind energy conflicts in Brandenburg. The height of turbines plays a central role in how residents perceive their surroundings in terms of views from windows, when driving by wind parks on their way home, or walking or riding in the forest. Height, however, is only taken into consideration in the planning procedures and regulations as it impacts on air traffic or acoustic emissions, but not as regards spatial co-existence. With technical innovation, ever larger wind turbines are being build and installed, and with sites for new wind farms becoming scarcer, wind turbines increase in height, also through the process of repowering, i.e. replacing an old wind turbine by a new, usually higher one on an existing site.

As mentioned above, the planned wind farm near Michael's place will be 240 metres in height. Hence, Michael, like some of his neighbours, questions whether co-existence is possible, even at a distance of one kilometre – although such a distance complies with the current technical and bureaucratic requirements for distancing from settlements, calculated, amongst other criteria, on sound propagation and casting of shadows.

Stephanie, who lives in a village about 10 km from Michael's, also refers to density and height, when voicing concern about wind plants:

> As long as it was only three or four turbines it was still all well and good. Of course one doesn't like it. It's disturbing. But even if it was just the number of turbines that are there already, 33 of them in all, let's say, I could come to terms with that. But what really annoys me is that right here, in our neighbourhood, within the boundaries of our shire, there are supposed to be eight new turbines put up. And they're going to be 1 ½ to 2 kilometres closer and considerably higher than the ones that are there already. And I have to say I'm a bit frightened of that. (Stephanie, Interview 2019)

This increasing density and height of wind installations – and the consequent scrutiny of social co-existence – are closely linked to questions of energy governance.

Energy governance to spatially regulate wind energy production

When onshore wind energy production started in Brandenburg in the 1990s, it did so mostly as individual construction of single

wind plants and 'uncontrolled' development. Feldheim, a village about 30 km from Michael's place, is probably the most famous example for wind energy in Teltow-Fläming, known today as an energy-autonomous village with 55 wind plants, their own grid and storage system. Starting in 1997, the company *Energiequelle*, in close cooperation with the inhabitants of Feldheim, installed wind turbines and set up a local heating and electricity network, owned by the inhabitants, *Energiequelle*, and the municipality to which the village belongs. The first five turbines were sited at a spot where the wind was most favourable (Torben, Interview 2019).

In the beginning there was little regulation in Brandenburg as to where wind farms could be set up. Local administrative offices granted permits to individuals or companies planning to erect a wind turbine. Their decisions were influenced by a federal building law passed in 1997 which privileged wind energy development in outlying areas. Sometimes local mayors or municipal councils developed a legally binding *Flächennutzungsplan* ("land utilization plan"), determining their development plans for the community as regards commercial areas, residential areas, recreational areas and others. A land utilization plan can be changed if needed, subject only to a decision of the local council. The passing of new regional planning laws (*Gesetz zur Regionalplanung und zur Braunkohlen- und Sanierungsplanung*[7]) intervened in favour of area planning and allowed for designating wind suitability areas for a whole region. The state of Brandenburg installed regional planning bodies as early as 1993 to regulate the use of land, yet it was only in the early 2000s that they started to assign wind suitability areas, limiting wind energy production to those areas (regional planning body, Interview 2020). Brandenburg is therefore divided into five regions with a regional planning body each (*Regionalplanungsstelle*), consisting mostly of geographers. These geographers map and plan the region, designating areas for farming or flood control, for example, and for wind energy production. The maps the geographers of the regional planning bodies draw and publish are a legal basis for all building activities in Brandenburg. They are relevant for building permissions and land utilization plans made by municipalities.

The maps are created according to so called "hard" and "soft" factors, for example environmental protection or distance to buildings. Once these factors have been taken into account, the remaining areas of land available for wind farms are dispersed and fragmented, and amount to just over 2% of the total land surface area of Brandenburg.[8] It is worth noting that these wind suitability areas are not necessarily in locations with the strongest or most reliable wind. They are the result of geographical planning, of political will and negotiations within the regional planning assembly, and of the need to balance wind development with social, economic and ecological considerations. To define the precise form of this balance in accordance with the will of the assembly becomes the main task of regional planning bodies.

There are a number of other scales and agencies which come into play in new renewable energy developments in Brandenburg and Germany (such as EU and federal laws and regulations, state development plans, communal lay-out plans and court rulings). However, *in practice and as experienced on the ground*, the regional planning bodies, where geographical planning and political deliberation come together, are the principal vehicle through which the energy transition, at least in relation to onshore wind energy development, is governed and regulated. They are the primary forum for agitation, negotiation and decision making for the centrally important and highly contested process of wind energy allocation – and hence decisive for the energy transition's success or failure.

Regional planning assemblies are a way of taking the social dimension and "human drivers" of the energy transition into account, allowing for "conscious governance" and the involvement of a wide variety of actors (Renn 2011, Kern and Rogge 2016). Regional planning also tries to tackle the question of social legitimacy of renewable energy production. By including not only political delegates of larger communities, but also (on application) representatives from unions, environmental NGOs and other civic stakeholders, they aim at raising "social acceptance", so that those involved in, and affected by the process of energy transition feel they have a stake in the process or the outcome of installing wind plants (Renn *et al.* 2020).

Local residents also experience these changes in energy governance as a way of informing themselves and as options for participating. Impact assessments are a prerequisite for wind planning, including the monitoring of flora and fauna in the proposed wind park area and its surroundings, as well as calculating noise emissions and shadows cast on nearby settlements. A public hearing, or *Erörterung*, is obligatory for every wind park consisting of four or more wind turbines. For the public hearing, written submissions and concerns that anyone can raise within an assigned timeframe are discussed with the project developer, the permission granting authority, concerned agencies (for water protection, forestry, or fire brigades, for example), and the public. Some local residents have developed an expertise in the formal procedures of wind approval. Stephanie, a member of the local citizen initiative against wind in Teltow-Fläming, refers to the slow increase of the local public's participation in wind governance.

> I think it was around the beginning of 2000 when the first wind turbines began to appear in the area around [a close-by village], although we only really realized it was happening when the towers were there all of a sudden. No one had spoken to us about it beforehand, at least not here in our municipality, or in the local consultative assembly, nothing was said, and so it was more or less something which just crept up on us. (Stephanie, Interview 2019)

Dissatisfied with not being heard, and with the limited opportunities to influence wind development through public hearings, Stephanie and other locals have learned what are more promising, albeit time-consuming means of intervening (for example monitoring wildlife and reporting these findings to environmental authorities) and consequently of influencing how wind energy development is governed. Stephanie and one of her fellows managed to win two seats in local council elections, which allowed them to acquire more information at earlier stages though participating in closed meetings, boards and committees. The citizens' initiative developed its tactics from attending public consultations and information sessions, to petitioning the State parliament, and attempting

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[7] https://bravors.brandenburg.de/gesetze/regbkplg; https://gl.berlin-brandenburg.de/regionalplanung/themen/windenergie/
[8] https://gl.berlin-brandenburg.de/regionalplanung/themen/windenergie/

to coordinate opposition to wind power across Brandenburg.

The increased regulation of the *Energiewende* can be read as an attempt to manage and govern an unmanageable crisis (what Goodman (2016) calls the climate dialectic), and as an attempt to decarbonise the energy sector while balancing all needs and concerns of involved stakeholders through regulations, specifications and provisions. This ensures on the one hand options for involvement and allows for ordinary people (as well as industry professionals) to participate. Regional planning processes play a key role in regulating space and configuring landscape. Paradoxically, however, in seeking to protect certain areas on the basis of the aforementioned hard and soft factors, they have led to a concentration of wind energy production in other areas, thereby increasing the density of wind turbines and the perceived discomfort and burden for residents. What Gailing *et al.* (2019) summarized as the *Energiewende*'s wide-ranging impacts on the spatial structures of the energy sector, finds its precise expression through amplification in numbers and height of wind turbines, as well as objections and protest. It is a spurious argument to play down or minimize the importance of these protests because they tend to arise only where wind energy production is most concentrated (i.e. to say that 'they do not arise everywhere'). To do so not only absolves us of any moral obligation to ensure a just energy transition, in which costs and benefits are shared equally, but also diminishes the spatial advantage that renewable energy production has over fossil fuels: wind energy production does not require sacrifice zones, but can socially co-exist with local residents, their businesses and ideas of a good life. If spatial regulation pays little attention to increasing density and height, it risks undermining local acceptance of the energy transition, and its social legitimacy in and beyond affected communities, who make themselves heard in committees and assemblies and as civil society organisations.

Temporal politics and colliding time-scales

Expanding and altering the regulation of the *Energiewende*, and wind energy production in particular, has also influenced its temporal politics. This has happened not just as a result of changes in regional planning law, but also evolving European, federal and state law (see Bundesministerium für Wirtschaft und Energie (BMWi) 2021), As Sovacool (2016) has argued, based on a number of historical case studies, it is not inevitable that energy transitions take a long time; some can occur rather speedily. However, they mostly do not develop in an exponential line, but rather display a punctuated equilibrium which dips and rises (Sovacool 2016: 207). Becker and Naumann have identified temporality - the history of how a conflict develops and unfolds, the pathways it takes and any possible turning points - as an important dimension of energy conflicts (Becker and Naumann 2018: 515). We attempt to deepen this analysis by considering the colliding time-scales of wind energy development in Germany: "bureaucratic time", "climate time", and the temporal agendas of wind companies and citizens.

The legal and bureaucratic process for approving new projects has become increasingly arduous. This applies at a regional, at a state, and at a federal level. Changes and amendments to renewable energy laws and regulations at all levels have entailed an increasingly complex application and bidding process, leading, in combination with economic calculation and increasing costs, to a deceleration of wind energy development (Deutsche Windguard 2020). In Brandenburg, and Teltow-Fläming in particular, we currently observe a both a decline in the actual number of new projects, and a deceleration in their progress, which is arguably also due to Brandenburg's moratorium and the increased costs and hurdles in approval procedures (Bundesverband Windenergie 2020b). Only every fourth application for erecting wind turbines between 2014 and 2019 has been successful (Regionale Planungsgemeinschaft 2020). The wind park near Michael's village, for example, will also go through an approval process of several years. While planning started in 2019, it is envisioned to be set up and connected to the grid by 2025 – and that's a very optimistic time frame, according to the planning company.

While the Expert Commission which monitors the progress of the *Energiewende* warns that it must speed up dramatically in order to meet German and European climate policy goals (Löschel *et al.* 2021), on the ground in Brandenburg, it is becoming slower and slower, bogged down in bureaucratic time. Thus climate time – the time-scale of the sweeping changes needed to meet the goals of the 2015 Paris climate summit – necessarily collides with bureaucratic time, and bureaucratic time-scale, in turn, collides with the time-scale of the project developers and wind energy companies. Faced with the long time-frames for approval, they need to plan ahead with ever more speculative projects. The proposed wind park near Michael's, for example, is not currently part of a wind suitability area. The proposal is a product of 'white planning', i.e. targeting an area that the company and its geographers and planners have calculated is likely to be designated as suitable for wind development in future regional plans. In short, companies and their geographers and planners study maps of the local area and bet on the creation of new wind suitability areas. They then approach landholders in those areas to sign pre-contracts, so that if and when a new wind suitability area is created, the negotiation with landholders is already done, and they can move swiftly to the next phase. This would potentially speed up the completion of a future project, but it will still need surveys and environmental assessments, applications and evaluation, and the involvement and informing of the public.

A fourth time-scale which comes into play is that of citizens' initiatives and residents who are increasingly uneasy with the abovementioned spatial developments. Initiatives like the one that Stephanie is engaged in, have been turning into active and relevant stakeholders with expert knowledge of the procedures and information politics around wind energy installation, and they certainly make use of this expertise. They intervene in the already prolonged time-scale of project development. Stephanie, Caroline and their campaigners from the local citizens' initiative in Teltow-Fläming knew from the start that they would need to prolong the planning process, bringing their time-scale into the equation. As they told a local newspaper, "We have to start making a noise [...] because if we

can delay the planning process as long as possible, hopefully the political situation will change at a Federal level."[9]

For the citizens' initiative this initially meant writing protest notes to various local authorities, parties, politicians or NGOs, and collecting interventions against local land-use plans. When these interventions had little immediate effect and decision makers registered, but in the end overruled their concerns, citizens' initiatives started employing similar means to the ones Müller (2018) identified in coal mining protests: people play for time, trying to prolong decision-making processes, speculating that political conditions will change or economic investments run dry. Approvals for the erection of wind turbines can also be denied in Brandenburg (and beyond) on the grounds of environmental protection, so citizens' initiatives closely monitor fauna and habitats which may be affected by new projects (Geiselmann 2018, Müller and Morton, 2021).

Opponents of coal mining can frame their strategy of "waiting and delaying" as a positive contribution to the goals of the *Energiewende* and Germany's climate policy (Müller 2018). Prolonging bureaucratic time for wind parks works in the opposite direction; in the process, however, citizens also change knowledge hierarchies by getting elected into local parliament – which could be seen as one of the positive effects of energy conflicts which Becker and Naumann (2018) identify. More broadly, we can see how much the attempts to govern energy transitions and the climate crisis feed into the localized dynamics of planning renewable energy production. The time-scales of climate policy, bureaucracy and administration, the renewable industry and residents confronted with condensed wind development collide and are sometimes diametrically opposed.

The energyscape as chronoscape

This leads us to one further, perhaps more speculative aspect of the temporal politics of wind energy. As Strauss *et al.* (2013) assert, energy is not simply a physical phenomenon: it flows (or blows, in this case) through socio-cultural systems of meaning-making. The energyscape of Teltow-Fläming does not have a stable set of cultural meanings. Wind turbines represent the material culture of an industrial post-modernity to which people such as Caroline have not (yet) formed a relationship. Wind power is still in the process of local and regional socio-cultural meaning-making. Its physical manifestation is not (yet) embedded into cultural protocols or a landscape perceived also as an energyscape, and it would be presumptuous to expect such a process to happen within a few years. The physical manifestations of coal mining and coal-fired power, by contrast, had more than a hundred years from their beginnings in the 19th century to develop cultural meanings: coal is identified with the rise and continuity of industrial modernity and security of energy supply. The wind turbines are not (yet) imbued with the assigned cultural meaning of tackling climate change through energy transition. For some people, they have become the physical embodiment of a future which cannot come fast enough; at least some of the residents of Teltow-Fläming, however, perceive them as manifestations of an alien *chronoscape*.

The term *chronoscape* is used by the historian Christopher Clark to capture the way in which particular "forms of historicity [are] appropriated and articulated by those who wield political power" (Clark 2019: 14). By historicity, he means a set of assumptions about how the past, the present, and the future are connected. These assumptions underpin the rhetorical strategies, the metaphors and figures of speech through which power is exercised, and the cultural forms and public rituals in which it is embodied. Particularly interesting for our purposes is the distinction Clark makes between historicity and temporality:

If historicity is rooted in a set of assumptions about the relationships between past, present, and future, temporality captures something less reflected and more immediate: a feeling for the motion of time. Is the future moving towards the present or receding away from it? Does the past threaten to encroach on the present, or does it fall away towards the edges of awareness? (Clark 2019: 18)

Temporality denotes our subjective experience: a sense of time that "possesses an intuited shape or timescape, depending upon which parts of the past are felt to be near and related intimately with the present and which are perceived as alien and remote." (ibid.) Clark uses the terms 'timescape' and 'chronoscape' interchangeably: describing a chronoscape as "an intuited shape" in the subjective experience of time, depending, in this case, upon which parts of the future are felt to be near and related intimately with the present, and which are perceived as alien and remote. In localities such as Teltow-Fläming, the increasing presence of wind turbines is experienced as a discordant chronoscape, in which the future is not only moving rapidly towards the present, but is already encroaching on it in the shape of technological artefacts – the wind turbines – which get closer, denser, and higher. Moreover, the need for this future to arrive *even faster* is stressed by policy makers, supporters of the *Energiewende* and climate activists.

The *historicity* of the energy transition, therefore, is framed by policy-makers as a responsibility that we in the present have towards the future: the urgent imperative to move to a decarbonized energy system in order to avert catastrophic climate change. But the *temporality* of this process is experienced subjectively as discordant. This subjective experience – whether the motion of time is perceived as too fast, too slow, whether one feels at home, or a stranger in the chronoscape one inhabits – also factors in the social acceptance of wind energy, and the capacity to arrive at social co-existence.

The economic dimension

Thinking about the chronoscape as shaped by those who wield power invites us to consider the influential and powerful dimension of economic capital. While energy economics are often treated only as calculations of efficiency and profitability of renewable energy production, money is also relevant in terms of the socialisation of costs and the privatisation of profits in energy production, in particular as regards distributional justice and localised surplus (Gawel *et al.* 2015; Benhmad and Percebois 2018). The need for an

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[9] https://www.maz-online.de/Lokales/Teltow-Flaeming/Windkraftgegner-machen-mobil

accelerated energy transition often glosses over not only power imbalances between states, but also imbalances in economic capital and the capacity to invest in self-determining modes of wind energy development. People in Brandenburg, as in other parts of East Germany, have experienced very different trajectories of historical and economic development to their cousins in the West. The former GDR's forty-year history as a socialist country that got integrated into a capitalist system thirty years ago still resonates here. The collectivization of land during the socialist period and the subsequent decollectivisation and market adaptations seem like a long time ago, but economically Brandenburg is still below the German average, reflected in the yearly per-capita income of roughly 20,000 Euro, and in substandard wealth accumulation and wages (see Mau 2019). Michael, who also teaches young farmers doing their master's certificate, claims that he can clearly mark out which of his students come from West Germany and which come from the East.

It is not only, or not so much that capital might be missing for investments, but they [from the East] lack some … some entrepreneurial spirit. It's not so much that they couldn't set up something larger or that they are not smart or the like. But the farming students from the East just wouldn't risk it or even think of it. (Private conversation 2020).

The economic disadvantage that Mau (2019) tried to capture numerically, and with regard to East Germany and the process of reunification as a whole, is what Michael expresses in describing his experience at the local level.

This lack of social as well as economic capital is what companies like the one planning the wind park near Michael's farm make use of. The company has just finished negotiating with landowners and signing tentative agreements for a 21-turbine wind park. They presented the financial revenue plans to the landowners as collectively orientated, in an 80–20 model. 80% of the profits will be spread evenly across the owners according to the size of their property within the demarcated forest area. Only 20% will be distributed amongst the people who actually have a wind turbine on their stretch of land.

What on one hand might appear a more solidarity-orientated approach aimed at decreasing envy amongst the villagers, is on the other a way to get people in rural areas on board, as proponents might put pressure on their neighbours to agree, too. The refusal of only one landowner, who might not even have a turbine situated on his land, and hence might not profit, but still has to agree to rotor blades or service roads crossing his land, can make the project less profitable, unviable or impossible.

Furthermore, the economic prospects are not as bright as they appear at first glance, especially when compared to other models in place. The 80–20 model does not offer opportunities for public participation through project shareholding.[10] Shareholding might eliminate non-affluent members of society, but through options to allow very small shareholdings local people can be included. Local ownership and a consequent localisation of profits could help to overcome some of the distributional aspects of energy conflicts identified by Becker and Naumann (2018), leading to a higher degree of identification, and reducing opposition, which is often intensified in rural contexts through tightly knit social networks.

The lower levels of income and wealth in East Germany, and the arguably lower entrepreneurial spirit are but two of the reasons for Brandenburg having almost no citizen wind parks (*Bürgerwindparks*), i.e. wind parks owned by local residents. When Jungjohann and Morris (2016) describe the German *Energiewende* as an energy democratisation, they rely on examples almost exclusively from West Germany. In Brandenburg, out of the 350 wind parks and altogether 3890 wind turbines, less than 10 wind parks can be called citizen wind parks.[11] Wind energy companies capitalize on this disparity. If local residents in East Germany demand less (economic) participation than their counterparts in energy regions in West Germany, they will also be offered less. The economic capital generated in renewable energy production depends on expertise as well as financial investment. This expertise is not gained if large companies with cash-rich investors from outside the region or state plan, set up and run wind farms, instead of local residents in economic cooperation or with (majority) shares. Moreover, the increased marketization of wind energy production throughout Germany further impedes citizen wind parks, so that "until a few years ago, practically every second wind energy project in Germany was citizen-owned, but the cost pressures of the reverse-auction system have meant a massive decline" (Federal wind energy association, Interview 2019). Small scale citizen wind energy initiatives will be less likely to gain ground under these conditions, leaving it to rather large companies that can spread the risk or cross-finance projects.

Conclusion: The space, the time, and the money

Space, time and money interweave in shaping local people's everyday experience of wind energy in Teltow-Fläming, and in the social making of arguments about its development. Wind energy production has rightly been analysed in terms of spatial politics, where space is governed through realigning energyscapes (Gailing *et al.* 2019). As we have shown, spatial planning procedures aimed at concentrating wind turbines and reducing conflicts have actually had the opposite effect: agglomeration and increasing height erode wind energy's potential advantages for social co-existence. Instead, it is perceived as an encroaching, threatening presence in the landscape.

With protests taking shape, the spatial dimension intertwines with the temporal dimension of wind energy. In trying to keep wind turbines at a distance, stakeholders make use of the processes of distributed governance through intervening in planning procedures. Citizens' initiatives try *keeping*-at-a-distance as both a spatial and temporal strategy: they confront the spatial compression of wind – its increasing density – by slowing down or prolonging approval processes and thus seeking to keep it at a distance in time. In consequence, we see on the ground in Teltow-Fläming the colliding time-scales of Germany's *Energiewende* and climate policy, of

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[10] Technically, it is possible to hold shares in the company, because it functions a cooperative. But with tens of thousands of shareholders, this might not be regarded significant participation in the project.
[11] Depending on the definition of citizen wind parks, i.e. how narrow or broad local (co-)ownership is defined, between one and nine wind parks in Brandenburg qualify as *Bürgerwindpark*.

bureaucratic procedures, of wind planners and citizens. Some local residents experience a sense of alienation from the chronoscape of everyday life.

People in regions like Teltow-Fläming, we could say, have a different orientation towards the future, to that of their not-so-distant neighbours in the Lausitz. For villagers in the Lausitz, wind turbines are a welcome sign that the future is already here, and the industrial past represented by coal-mining is being superseded (Morton and Müller 2016). In Teltow-Fläming, wind turbines represent a future which has already arrived, but in which some people do not feel at home, and whose cultural meanings they are not able to share.

Distributional factors further exacerbate resistance to wind energy in close proximity to settlements. Ownership, and the financial benefits residents gain from wind energy, can influence how they experience the spatial dimension of wind energy and its presence in the landscape, and how they understand their relationship to it, in terms of coexistence or conflict, identification or alienation. Money intertwines with time, as prolonging approval processes can increase costs and diminish profits. Limited financial leeway for locals decreases their willingness and ability to adjust to spatial reconfigurations and increases the drift between time-scales.

Taken together, it is the this unequal distribution of financial and social capital, spatially expressed burdens, and non-aligning time-scales that affect the social legitimacy of wind energy. It is not a NIMBYism of noise pollution or visual distraction that people in regions such as Teltow-Fläming fall back on when criticising wind energy, but a disadvantageous interplay of financial, spatial and temporal developments that subverts the advantages wind energy production has over other energy resources.

In consequence, some people in Brandenburg over time acquired expertise in the planning, financial, environmental and technical aspects of wind energy. However, they do not use this expertise to better their position in energy partnerships, but rather to target and stop, or at least slow down wind projects. These forms of resistance appear to have had some political effect, exemplified by the 2-year moratorium on further wind development declared by the state parliament of Brandenburg in 2019.[12] The Wind Energy Association of Brandenburg argues that the moratorium and other factors such as the relative age of many of the wind plants in Brandenburg will make it impossible to reach the target set by the state's own energy strategy of 10,5 gigawatt installed capacity by 2030.[13] Also in 2019, in an attempt to address the unequal economic benefits of wind development, the Brandenburg state government introduced a compulsory fee for every new wind turbine of 10.000 Euros per year payable to the relevant municipality. Given the lack of support for citizen owned energy projects, it comes as no surprise that some local people dismiss this as an attempt to buy consent.

All these are not purely academic questions. The future of the *Energiewende* is being played out in regions like Teltow-Fläming, in the offices of municipal planners, at community meetings in village halls, in the villages and fields themselves. Understanding what is at stake in local conflicts over wind energy, what shapes peoples' attitudes as they develop over time, and what might make them more likely to accept a great density and height of new wind installations in the places where they live, will be crucial to achieving the expansion of wind energy necessary for both Brandenburg and Germany to achieve their climate goals. We believe it would be advisable to include height as a dimension in spatial planning, to pay greater attention to people's experience of, and reactions to, the different and dissonant time-scales of transition, and to stipulate a level of economic participation by local residents. Local processes of negotiation and deliberation should draw in local experts, and draw on the expertise they have developed, allowing them to participate in shaping the *Energiewende* from the ground up, rather than having them work against it. Failing to do so runs the risk of further marginalizing people affected by local energy conflicts in East Germany. This would be a lost opportunity to create more self-reliant renewable energy regions, and thereby strengthen the social legitimacy of the energy transition.

Declaration of Competing Interest

Acknowledgement

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[12] https://www.erneuerbareenergien.de/brandenburg-leitet-zweites-moratorium-gegen-windparks-ein
[13] https://www.maz-online.de/Brandenburg/Ausbau-der-Windenergie-in-Brandenburg-stockt

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