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# **Climate Change and the Labour Process.**

## The Case of Construction Work

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**Abstract**

Drawing on a case study of construction work in Switzerland, this article explores the potentials of labour process theory (LPT) for analyzing conflicts that arise in the world of work due to climate change. A multi-level analysis can contribute to an understanding of how politics at the level of the workplace and at the level of institutional regulation interact in mediating causes as well as effects of climate change. For example, precarious employment and precarious residence status produce vulnerability of workers to heat stress. Furthermore, an LPT approach can help understand corporate practices of maladaptation as well as their contestation. The article also suggests ways in which LPT can be expanded in order to systematically take into account the ecological dimension of the labour process.

**Key words**

**collective bargaining, environment, labour process theory, migrant work, organisational misbehavior, politics of production, Switzerland**

## Introduction

Climate change has substantial effects on work all over the globe. While all work depends on natural resources, around 40 percent of global employment is in industries that rely heavily on natural processes, which are disrupted by climate change. The effects of climate change such as heat waves reduce productivity and working hours through the deterioration of the health of employees themselves and of care work at home (Montt et al., 2018). Thus, climate change threatens the biophysical basis of the labour process. One study projects that future climate change will reduce global total labour in the 18 to 24.8 percent (Dasgupta et al., 2021). Climate change and mitigation policies also affect employment relations e.g. through deindustrialisation or transition of jobs to renewable energies and the “green” economy (Goods, 2017; Lipsig-Mummé & McBride, 2015).

Thus, climate change plays an increasing role in the organisation and regulation of work across the globe. While there is a growing field of research on the role of unions in “green transitions” (for an overview see: Rätzel et al., 2021), the implications of climate change for labour processes themselves remain largely unexplored. Yet, it is clear that the effects of climate change, as well as organisational responses to it, are producing new conflicts within workplaces, for example over risk exposure or the larger question of who bears the cost of declining profitability of production (e.g. Newman & Humphrys, 2020). This article asks, how the analytical framework of Labour Process Theory (LPT) can be applied to analyse workplace conflicts over climate change and a socio-ecological transformation. The starting point of this exploration is the observation that the emphasis on the entanglement of politics at the level of the labour process and at the level of in-

stitutional regulation – a trademark feature of LPT (explicated most prominently in Burawoy, 1985) – offers a particularly promising multi-level heuristic for understanding the political dimension of climate mitigation and (mal)adaptation in the world of work. Yet, the article also asks how LPT itself needs to evolve in order to systematically take into account ecological factors.

This discussion of the relationship between climate change and the labour process, draws on a qualitative case study of construction work in Switzerland. This industry is particularly well suited for such an endeavour as it is simultaneously among the major polluters and among the industries most affected by climate change. In Switzerland, the construction sector accounts for about 25 percent of domestic CO<sub>2</sub> emissions. This positions the industry at the centre of environmental conflicts, which manifest centrally in the world of work. As construction consists primarily of physically demanding outdoor work it is also highly vulnerable to the effects of climate change, such as heatwaves (ILO, 2019).

The article proceeds as follows: Section 1 briefly reviews how the sociology of work has responded to climate change and then sketches the core ideas of LPT in order to position them as a heuristic for analysing work-related conflicts over climate change. Section 2 outlines the empirical basis of the article and explains the methods used in data collection and analysis. Next, following the notion of the politics of production, the empirical results are presented according to the distinction between labour process and political regulation. The discussion of the empirical results are combined with a further discussion of the literature, in order to identify potentials and limits of LPT in analysing workplace conflicts over

climate change. Thus, section 3 demonstrates the role of climate change in politics at the level of the labour process, showing, for example, how vulnerability to heat stress is mediated by employment practices and how workers deal with this situation. Section 4 does the same on the level of regulation, for example by analysing the negotiation of a collective bargaining agreement that reacted to the effects of climate change on construction. The conclusion argues that LPT needs to take into account climate change if it wants to grasp new workplace conflicts and that research on climate change adaptation can profit from an LPT heuristic.

### **1. Climate Change Labour Process Theory**

The sociology of work has developed several notable approaches to the ecological crisis. A strand of literature on “sustainable work” has produced several promising normative approaches on how environmentalism and issues of work could be conjoined (Baldry & Hyman, 2022; Bottazzi, 2019; Litig, 2018). Management research has dealt with the question of how organisations could encourage “organisational citizenship behaviour directed towards the environment” (Ciocirlan, 2017; Norton, Parker, Zacher, & Ashkanasy, 2015; Temminck, Mearns, & Fruhen, 2015). Probably closest to an LPT perspective, under the header of “environmental labour studies” (ELS) (Räthzel et al., 2021), a subfield of research is emerging that analyses trade union policies in relation to environmental issues. The primary subject of interest is the question of how trade unions can escape their “jobs versus environment dilemma” (Räthzel & Uzzell, 2011), i.e. the problem that many unionists in principal support environmentalism, but are also tasked with protecting jobs even in environmentally destructive industries like fossil fuel

extraction. Thus, ELS has developed a rich literature on how issues of trade unionism and environmentalism are connected (Clarke & Lipsig-Mummé, 2020; Hampton, 2015; Silverman, 2004; Stevis, 2011), what oppositions might arise (Houeland & Jordhus-Lier, 2022; Obach, 2004; Siegmann, 1985), and which coalitions between trade unions and environmentalism are possible (Barca, 2012; Cha, Holgate, & Yon, 2018; Snell, 2021; Stevis, Uzzell, & Räthzel, 2018). While ELS very rarely reference LPT concepts, their questions are very close to an LPT approach: They consider the organisation of work as the result of political struggles, which they analyse empirically. However, they do so with an almost exclusive focus on trade union activities. From an LPT perspective, this neglects the political nature of the workplace itself, where the effects of climate change as well as transitions towards more sustainable production are likely to produce new conflicts (cf. Allan and Robinson, 2022; Houeland and Jordhus-Lier, 2022; Newman and Humphrys, 2020).

The founding work of LPT, Braverman’s (Braverman, 1974) “Labour and monopoly capital”, argues that the capital-labour relationship should be understood through analyses of the concrete organisation of production. His main theme was to show how capital rationalised work by organising it in a way that was increasingly independent from craft skills but instead relied on standardized tasks that follow the rhythm of machines. Thereby, he builds on Marx (Marx, 1976) who argued that “formal subsumption” of labour under capital occurs as soon as labour is sold as a commodity and “real subsumption” occurs when labour is organised according to the needs of capital via technical and organisational rationalisation. Another foundational work of the LPT tradition is Edwards’ (Edwards, 1979) “Contested Terrain”. He emphasizes

that the concrete forms this organisation takes is the result of a dialectic of control and resistance. Thus, he conceptualizes workers' agency at the workplace as a driving force behind the organisation of production.

Current LPT developed a diversity of approaches to analyse the power relations that constitute the labour process. There have been efforts to identify a "core theory" that lies at the heart of the different approaches. The starting point of this core is the observation that labour as a commodity has to be transformed into actual work. Market mechanisms alone cannot ensure the utilisation of labour power. Instead, this utilisation requires technical and managerial control over the labour process. However, this control cannot "solve" the transformation problem definitively but is continuously contested and evolving (Friedman, 1990; Jaros, 2000; Thompson, 1990).

Probably one of the most important features of LPT is its emphasis on the entanglement of politics at the level of the labour process and at the level of political regulation. Burawoy (1985) formulates three axes along which this entanglement can be analysed: the difference between the politics of production and the political institutions that shape politics; the limitations imposed on both the labour process and on market forces; and third, the different modes in which politics and institutions at the level of production relate to politics and institutions at the level of the state. In this sense, the concept of the politics of production focuses on the interactions between production and its institutional framework.

We will see below that these LPT concepts can potentially be very useful for analysing how politics of production shape the way in which production impacts climate and the broader environment as well as how climate adaptation and mitigation is mediated by workplace politics. However, LPT has only engaged marginally with issues of climate change or the natural environment in general, as can be seen in the absence of climate or the natural environment in the "Labour Process Book Series" (recently: Briken et al., 2017; Hammer and Fishwick, 2020; Thompson and Smith, 2017).<sup>1</sup> This is especially striking if we consider that already Marx, on whom most LPT builds, emphasised that the labour process is the locus of the social metabolism with nature (for reconstructions see: Burkett, 1999; Foster, 1999; Moore, 2015). This means that all politics of production are also environmental politics. Therefore, the remainder of this article will argue not only for an application of LPT in the analysis of work-related causes and effects of climate change, but also for a more systematic engagement with ecological questions within LPT. The presentation of the empirical results will be combined with a further discussion of the literature.

## 2. Methods

In order to do justice to the explorative character of this research and to remain open to unexpected entanglements of the labour process and the ecological crisis, a qualitative approach is necessary. Therefore, this article is based on a combination of document analysis and a series of 27 comprehensive interviews (Kaufmann, 2011). This method emphasizes openness

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<sup>1</sup> A similar absence can be observed in the broader sociology of work. For example, the major English handbook of the sociology of work does not address

the natural environment (Edgell, Gottfried, & Granter, 2015).

towards and comprehension of the respondents' narratives. Firstly, this means that the interview guide is restricted to few broad questions in order to prevent limiting the respondents' narrative into preconceived topics. Secondly, the method emphasizes responsive inquiries into aspects of the interviewees' narrative that are especially relevant to the research. Thus, the method aims to balance empirical openness and comprehensive analysis. The interviews were conducted between October 2022 and September 2023. On the one hand, we interviewed five union officials to generate an overview of the field, the relevance of climate change, and current collective bargaining efforts. On the other hand, we conducted 22 interviews with construction workers. This includes masons, crane operators, carpenters, street builders, foremen, and workers without specialist training. These were recruited based on theoretical sampling. Firstly, to take into account weather experiences, only persons who work outdoors were selected. Secondly, as union membership can be expected to influence respondents' political stance, half of the interviewees were union members, and the other half were non-members. Thirdly, previous research has shown that construction is characterised by a large share of migrants among the workforce, which impacts workers' agency (Bagnardi, Sacchetto, & Vianello, 2024; Fellini, Ferro, & Fullin, 2007; Haakestad & Friberg, 2020). Therefore, 10 of the respondents are non-Swiss. As construction work is very much male-dominated (Ness, 2012), only two of the respondents are women (for a detailed table of the interviews see appendix 1).

The first entry point for recruitment was a large union protest event. This was used to

recruit union members. Due to the presence of a large number of workers, we were able to balance our sample with regard to age as well as employment and residence status. The second wave of recruitment was aimed at non-union members in order to prevent selection bias. Again, workers from different occupational, age, and nationality groups were recruited. The workers were asked open questions about the role of weather in their work, their thoughts on climate change, and the organisation of their labour process.

The document analysis reviewed policy documents from the union Unia and the sectoral trade- and employers' association Baumeisterverband (BMV),<sup>2</sup> as well as regulatory documents obtained from the Swiss ministry of economic affairs. The purpose of the document analysis was to understand the role of climate change in the institutional regulation of labour (referenced documents are listed in appendix 2). The documents as well as the interviews were analysed according to the standards of qualitative content analysis (Kohlbacher, 2006), in order to identify patterns of the negotiation of climate change on different levels of the politics of production.

### 3. The Climate of the Labour Process

An LPT perspective on construction would focus on the rationalisation of work in the context of the transformation problem. While earlier studies claimed that LPT would not apply to construction because it was dominated by a craft orientation (Steiger & Form, 1991), more recent studies have identified forms of de-skilling and control that are very similar to other sectors

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<sup>2</sup> The Baumeisterverband did not answer to our repeated request for an interview.



(Haakestad & Friberg, 2020). The modern labour process in construction is nearly synonymous with working concrete. Consequently, the material properties of concrete shape to a large extent how our respondents experience their work. This is not limited to the content of the work and the skills that the handling of concrete demands, but extends to the organisation of the labour process itself. Here, the most important point that repeatedly occurs in the interviews is that “the concrete has to stay fluid ... you just have to keep going, there is no way around it” (I#24). Another respondent explains this with regards to bad weather: “Most of the times we continue to work. Unless it's too cold, but it's not about people being too cold, but rather that the concrete just does not harden. Yes. So it's actually more about the fact that under certain temperatures you simply can't pour concrete anymore. [...] Heat does not count as bad weather.” (I#4). Thus, concrete, like the assembly line, seems to dictate the rhythm of construction work in a way that prohibits taking breaks or slowing down. In fact, the two technologies share some crucial aspects with regard to the labour process. Braverman has shown that the assembly line was at the core of “deskilling” the labour force in manufacturing. Reinforced concrete fulfilled this function in construction. It was patented in 1892 by François Hennebique in Paris. This gave him a virtual monopoly on the construction of concrete buildings throughout Europe for the following decades. Reinforced concrete allowed construction companies to cut labour costs, because it largely erased the traditional craft occupation of the skilled bricklayer: Walls were now simply cast in moulds. Moreover, sand could now be used as the basic material instead of expensive stones (Jappe, 2023).

Most industrial technology replace human labour and skill by the expense of large

amounts of fossil fuels. In concrete, this takes an especially extreme dimension: It consists of three components: sand, water, and cement. The latter is based on clinker, a mixture of lime and clay. In order to solidify it and then grind it into powder, it must first be heated to 1450°C. This makes the production of cement enormously energy intensive. Therefore, today's ubiquity of concrete only began in 1950 when fossil fuels became massively cheaper. Since energy is no longer a barrier, reinforced concrete is the cheapest construction method. Today, concrete is the most used substance in the world after water. Over four billion tons are produced every year. Worldwide, the production of cement alone emits 2.8 billion metric tons of CO<sub>2</sub> annually. If the cement industry were a country, its emissions would only be exceeded by China and the USA. Overall, concrete production accounts for around 8 percent of global CO<sub>2</sub> emissions. Furthermore, soil sealing is not only one of the main causes of the global decline in biodiversity. It also prevents water from draining away after floods. Hurricanes Katrina in New Orleans and Harvey in Houston were so destructive mainly because concrete had virtually turned cities into giant swimming pools where water could not seep away. When the sun shines, on the other hand, heat islands form over concrete surfaces. Thus, concrete is not only one of the main causes of climate change, but also a reason why we handle its consequences so badly (Schaupp, 2024).

This underlines that the rationalisation of work has an often forgotten ecological dimension that becomes increasingly important in the age of ecological crises (Carrillo & Pellow, 2021). For the prototypical technical rationalisation, the steam-powered factory, Malm (2016) has shown how coal-fired steam engines had been introduced not because they were more cost-efficient than water mills but because they

gave capital greater power over labour. This was the case because factories could thus be moved to where labour was cheapest and work could be de-skilled more effectively, breaking labour shortages and thereby the power of (illegal) unions. For the organisational side, Daggett has shown how the methods of scientific management relied on the science of thermodynamics developed as the basis to governing steam during the industrial revolution. Thus, the famous “time and motion studies” aimed to translate work into “foot-pounds of energy”, establishing “energy” and “efficiency”, which had been established as universal measures of the age of fossil fuels: “As a measurable unit, energy could integrate the two existing modes of labour discipline: piecework and wage labour, one dealing with time and the other with matter. Energy provided a more granular unit by which to measure labourers’ efforts – how much energy did they convert toward commodifiable forms, and how efficiently?” (Daggett, 2019, p. 89)

A Bravermanian perspective that analyses choices in the organisation of production as an expression of the subsumption of labour under capital can provide a heuristic for understanding the persistence of environmentally harmful methods of production as well as their symbolic significance. However, an expanded concept of subsumption is needed to systematically account for its ecological dimension. This can build on theories of ecological Marxism, which have transferred Marx’ concept of the subsumption of labour to nature (Burkett, 1999; Moore, 2015; Smith, 2007). They argue that nature is “formally subsumed” under capital as soon as it is sold as private property and “really subsumed” under capital if it is altered through breeding, engineering or genetic manipulation for the purpose of capital accumulation. However, the subsumption of labour and nature

should not be understood as separate processes but form a necessary unity. This is clearly demonstrated in Malm’s reconstruction of the transition to coal-fired factories but also in the case of rationalising construction through vast amounts of sand and fossil fuels.

Yet, construction is not only one of the major polluters but also among the industries that suffer the greatest risks from climate change as it is highly vulnerable to extreme weather events like snow, rain, or thunderstorms, and especially heat. Exposure to excessive heat levels can lead to heatstroke and further serious health damages. On days with temperature higher than 30°C, the risk of accidents on construction sites is increased by seven percent, according to the Swiss insurance company SUVA (Swissinfo, 2017). For our respondents, heat stress is a relevant object of contention at their jobs. A mason and crane operator, for example, reported working on the slab formwork of a house: “Around eleven you realize the pressure of the sun. After lunch break, you would want to go home. After half an hour then sun is really burning, you sweat, you are exhausted, your body does not work anymore. Concentration vanishes. And accordingly, you just make mistakes” (I#7) Another one adds: “With 38 degrees you just have to take a break. You would like to continue to work, to accept the weather, but your body just tells you: This does not work.” (I#19) Workers in road construction report the worst experiences with heat:

„You work for 8, 10, 12 hours with the asphalt. This comes out of the machine at 170, 180 degrees. This means the machine is hot as well, and the roller and everything. All the machines are heated up. And that means 12 hours [...] is just a bit too much. Especially if it is like 40 degrees and sunshine, that is extreme. I have realized

myself that concentration just drops after three or half past three. And you can go and see for yourself: construction workers after three o'clock: they walk like sick men. This is the consequence of the sun and the heat of the machines." (I#6)

Those who have worked in the construction industry for longer report an increase in such extreme weather situations, "You notice that. In the last 20 years, it's changed a lot. Whether it's about the drought or the rain, whether it's about the temperatures. It's warm. It's extreme." (I#8)

It is beyond doubt that issues of occupational safety and health (OSH) will become more important due to climate change (ILO, 2019). The main question will be whether employers will be made responsible to ensure a safe workplace or if workers themselves will be blamed for health and safety issues. A foreman emphasized that everybody is "responsible for themselves" and that he was glad that there are not more regulations (I#18). Another one adds:

„With heat, it's clear what to do: You need to drink enough. We stick to the Suva protective measures. And we have our own. For example, people need to use sunscreen. And protect themselves from the sun. We tell that to everybody. If its winter or summer, we always address these topics with our people. But the performance does not change. We are even more motivated in summer. The days are longer. Everybody wants to do something in summer. And you are just, let's say, you are feeling the happiness. " (I#14)

This is in line with the position of the BMV. It argues that workers are responsible for their own safety and spreads the slogan: "In any weather: We can best protect ourselves" (D#7-BMV2210). Among the workers, especially those who are not union

members, this view is also widespread. For example, one of them thinks: "It's an attitude thing more than anything else. Once you've come to terms with the fact that it's okay to be wet, or that it's okay to be cold, and you just keep working anyway, then it's no problem." (I#19).

One mason, who is also a union activist, explained this with a "toxic macho culture" (I#3) that he found prevalent on many construction sites. This consists in an ideal of masculinity that emphasizes the stoic endurance of burdens and dangers. This view is supported by research on gender norms in the construction industry (Galea et al., 2022; Ness, 2012). The respondent blames this form of masculinity not only for undermining risk minimisation but also delegitimizing health and safety compliance and collective union action against hazards. This might contribute to the fact that 40 percent of Swiss construction workers are invalid before they turn 65 (Hug, 2017).

The interviewed officials of the union Unia named OSH as one of their most important topics in the construction sector: "The link between health, heat and climate protection was one that we pushed and said: 'So we'll take action, stop earlier on the construction sites, with a clear demand: We're not paying with our health for this climate crisis, it needs to change there.'" (I#27) More concretely, Unia insists on the rule that if temperatures rise above 32°C there have to be additional breaks of 5 to 10 minutes every 1 to 2 hours (D#6-UniaND). Similarly, research has suggested objective safety thresholds like a limit of 35 °C (Sherwood & Huber, 2010). However, such standards often coexist with performance demands which make it impossible to workers to comply with them. Under such circumstances, the central function of OSH standards is to free the employer from any responsibility (Gray, 2009). In this sense,

one of our respondents explains, why he “cannot afford” to comply with all OSH guidelines: “If your life is in danger, of course you can do something. But otherwise, you just have to keep going. That is due to the stress. It just has to be finished.” (I#24). Thus, our data shows that environmental factors like heat do not create problems by themselves but always in combination with organisational practices, specifically work intensification. A mason elaborates:

„The heat is a problem that you can adjust to up to a certain point. It’s the same thing with the rain. If it rains hard, but you could get in a shelter quickly for 15, 20 minutes, then it’s not so bad to work that day. But if you have such time pressure that you have to be outside all the time, can’t take the short breaks, then it becomes problematic. And that’s why I also find it difficult to say that these problems arise now because of the heat, because many accidents wouldn’t have happened if we had taken more time. And the heat is then simply a factor that makes the time pressure worse for us.” (I#3)

The respondent is not alone in his perception of increased time pressure on construction sites. In a survey of 12,000 Swiss construction workers in 2020, 73 percent said that time pressure and stress had increased. For 68 percent, this stress also has a negative impact on their private lives (Kelley, 2020). Accordingly, when asked what prevents them to protect themselves from environmental risks, almost all of our respondents say that it is time pressure. Most of the workers, on the other hand, blame their management for exposing them to heat stress. For example, a female carpenter reports a situation where “on the attic, under the metal sheets, we had 53 degrees. Of course, we said no. But they said, listen, you have to go work.” (I#16).

The intensification of work is connected to various forms of precarious employment. Only a small proportion of Swiss construction workers are employed by a main company. The majority are temporary workers subcontracted from agencies. The vast majority of temporary workers is laid off during the winter months when construction activity slows down. This, in turn, leads temps to try to work as many hours as possible in the spring, summer, and fall (Kelley, 2017, p. 156). This complicates any curtailment of work due to heat stress. LPTs analysis of employment regimes (Wood, 2020) can help understand how precarity fosters power relations at the workplace that hinder climate adaptation. In this sense, Newman and Humphrys (2020) speak of “climate precarity”, to underline that it is the precarious employment prevalent in construction that makes workers vulnerable against risks like heat waves. (Carrillo & Ipsen, 2021) make a similar argument regarding the vulnerability of precarious workers in US meatpacking to the Covid pandemic.

Yet, climate precarity is contested not only by the trade union but also by the workers themselves. The practice of “hiding” - both from the sun and from superiors - is particularly important: The shrewd construction worker finds a place on the construction site that is in the shade on the one hand and hidden from the supervisor's view on the other. Particularly suitable are places where, should they be discovered, they can make it look like they are busy. However, this strategy is seen by some interviewees as lacking solidarity, since someone has to do the work in the end (I#3, I#9). The LPT concept of “organisational misbehaviour” (Ackroyd & Thompson, 1999) can help understanding such individual strategies of climate adaptation. The term encompasses everything that employees do at work which they are not supposed to do, without

linking it automatically to resistance and thereby implying a political agenda. This concept can be of great value in analysing how employees navigate ecological risks and professional norms. A great example is Baines' (2023) study on Canadian care workers during the Covid pandemic that shows how hygienic regulations collided with workers' care ethics, producing various forms of organisational misbehaviour. Overall, this section showed that LPT concepts like the discussion on the subsumption of labour under capital, the analysis of employment regimes and their contestation can foster a better understanding of the political dimension of climate change at the level of the labour process. Yet, it also suggested how these concepts could be adapted in order to systematically take into account the environmental dimensions of the underlying phenomena.

#### **4. The Climate of Regulation**

Climate change becomes increasingly central to negotiations in the regulation of work. This is particularly evident in construction. Currently, adverse weather delays 45 percent of construction projects globally. Climate change is expected to significantly increase the frequency and intensity of weather conditions that cause these delays (Schuldt et al., 2021). Even more importantly, temperatures above 24–26°C are associated with reduced labour productivity. At 33–34°C, a worker operating at moderate work intensity loses 50 percent of their work capacity. While in 1995, construction accounted for only six percent of the hours lost to heat stress, this figure is projected to rise to 19 percent by 2030. In North America, Western Europe, Northern and Southern Europe, and the Arab states, the absolute majority of the productivity loss due to climate change will be attributable to the construction sector.

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At some point, this necessarily affects labour relations: Will companies decrease wages or extend working hours in order to compensate for the losses? Or will labour enforce paid leave and additional breaks in the case of extreme weather? These issues will be of growing importance for labour politics of the future, yet LPT did not systematically address them so far. While events like heatwaves are much less frequent in the temperate climate of Europe than in other parts of the world, even there, they are turning into an object of industrial contention. The renegotiation of the Landesmantelvertrag (LMV), the national collective bargaining agreement of the Swiss construction sector, presents an opportunity to study such conflicts.

The LMV is considered one of the most important collective agreements in Switzerland. Not only the approximately 80,000 employees in the main construction industry are subject to it, but it is also regarded as the lead agreement for other areas of the construction industry. Dealing with the effects of climate change became a central topic of the negotiations in 2022. The Baumeisterverband (BMV), which is the sectoral trade- and employers' association, attacked the current regulation for extreme weather events, which requires companies to pay 80 percent wage replacement for workdays missed due to inclement weather. Here it is important to note that it is up to the management of individual construction sites to “call bad weather”, i.e. send the workers home. Most of our informants have never experienced such a case. However, due to climate change, the

BMV expects 25 days of “bad weather” per year. Accordingly, for the new LMV, it demanded raising the maximum working hours to 12 per day and 58 per week, as well as more flexibility in the actual call-off of work (D#1-BMV2210; D#2-Unia2209). The trade union Unia, on the other hand, demanded better protection and clear rules for stopping work in bad weather and extreme heat (D#2-Unia2210). A mason and union activist explains in an interview:

„The builders’ association sees the problem in the same place as we do, that you should not work in this weather. We are talking about our health, for them there is too little profit. [...] One side is saying that we are not making enough profit and the other side is saying that we are dying. And I am on the side that thinks that we are dying. [...] And then it's simply a question of how much it hurts them until we can finally clarify the question of who pays for climate change in our construction industry.” (I#3)

Accordingly, Switzerland witnessed one of the biggest protest events by construction workers in recent decades in the wake of the negotiations of the LMV. In the end, the parties agreed that the working time of 45 hours per week will remain unchanged. In addition, so-called compensation days are to be made possible, on which no work is done at the request of the employer. In addition, weather-related interruptions are to be compensated for on an hourly basis. Negotiations on health protection and the organisation of working time are to be continued in a working group (D#4-Seco2304).

Beyond the negative economic effects of climate change itself, it becomes increasingly clear that climate change mitigation threatens the profitability of various economic sectors. Especially the severe restrictions in the use of fossil fuels that the

IPCC (2022) deems necessary present severe challenges, not only for the energy sector but for most fields of production. Therefore, business associations increasingly invest in lobbying for business-friendly climate mitigation. Recent studies found that even employers' associations put ever more resources in efforts to prevent environmental regulations that would hurt their sectors. They assess that this political field is rapidly gaining importance relative to the classical task of collective bargaining. Decreasing unionisation could further contribute to this shift (Flanagan & Goods, 2022; Goods & Ellem, 2022).

The BMV might be among the avant-garde of this trend. This is due to the direct-democratic elements of the Swiss governmental system, which gives a central role to referenda. The policy department of the BMV develops elaborate analyses and public statements on all referenda they deem relevant to their member companies. Climate policy is one of four policy fields that the BMV focusses on. For example, it lobbied against additional taxes on fossil fuels (D#4-BMV1504), against mandatory emissions reductions (D#5BMV, 2016), and for replacing energy-inefficient buildings with new buildings instead of renovating them (D#6-BMV2204). In general, Swiss employers’ associations are considered more powerful than their counterparts in other comparable economies (Eichenberger & Mach, 2011), which also indicates their weight in the countries’ climate policy.

Beyond the Swiss case, it is highly likely, that the effects of climate change will increasingly lead to re-negotiations in areas such as working hours, safety regulations, and wages. The fact that climate change undermines the profitability of production makes it very likely that these negotiations will become increasingly conflictual be-

cause the appeasement of industrial relations through high wages and comfortable working hours relies on high productivity and high profits. This emphasizes the relevance of climate change for industrial relations. While classical studies of industrial relations did not take into account ecological factors at any length, more recent scholarship addresses negotiations around climate change (Goods, 2017). Yet, these studies largely keep up the focus on narrowly defined employment relations against the “background” or “context” of climate change. The very nature of the ecological crisis fundamentally challenges the separation of a “system” of industrial relations (Dunlop, 1993; Kochan et al., 1986) from other spheres of politics, specifically environmental politics. The ecological crisis is to a large extent the result of decisions within the realm of production and industrial relations, but it affects all spheres of society. Conversely, most attempts at regulating the ecological crisis do not originate in the realm of IR, but do strongly affect its core concerns, such as workers’ purchasing power or the availability of jobs (Mikulewicz, 2021). This means that within industrial relations, environmental issues are increasingly imposing themselves on the “context” of narrowly defined employment relations, and indeed often become the object of negotiations themselves. These developments are witnessed at all levels of industrial relations: from company-level bargaining, to sectoral collective agreements, to employer association policy and legal regulation (Goods & Ellem, 2022; Hampton, 2015; Räthzel et al., 2021).

This means that natural processes can be understood as an autonomous force of industrial relations. This can be conceptualised in a similar way as the autonomy of labour in LPT: It is a core insight of LPT that the subsumption of labour under capital is

never complete. Instead, labour structurally maintains the autonomy to contest its subsumption (Edwards, 1979). Similarly, the ecological crisis underlines that the increasing subsumption of nature under capital brings to the fore the former’s autonomy. The causes of climate change, pandemics, loss in biodiversity etc. have been attributed to the structural unsustainability of the subsumption of nature under capital (Burkett, 1999; Foster, 1999; Wallace, 2020). This indicates a paradoxical relationship: The more nature is subsumed under capital, the more its autonomy strikes back on the realm of production – undermining the very productivity that this subsumption was meant to increase. The difference between nature and labour is that nature’s autonomy does not denote a strategic capacity, but an ontological and historical fact (Malm, 2018). This manifests in nature’s influence on the capital, labour, and the state, who are already and will be increasingly adapting their strategies to perceived and expected natural dynamics.

This emphasis on nature’s autonomy is not to be understood as an argument for a naturalist determinism. Instead, we have seen how the effects of nature’s autonomy on the world of work are always mediated by the organisation of the labour process. This is also true for the sphere of political regulation. One policy field that is of specific importance in this regard is the regulation of migration. Employment in the construction industry is characterized by a large share of migrant workers (Bagnardi et al., 2024; Fellini et al., 2007; Haakestad & Friberg, 2020). This is due to the below average wages in the sector as well as to its material properties. While most other industrialized activities with comparably low qualification requirements are outsourced to low-wage countries, this is not possible in construction. After all, buildings must al-

ways be erected at the site of their subsequent use. This means that the construction industry is experiencing a reverse globalisation of the division of labour: production is not brought to cheap labour, but cheap labour is brought to production.

In Switzerland, labour importation was organised until 2002 through the so-called seasonal worker statute. This law provided that a pre-defined contingent of labour migrants was granted temporary, seasonal work permits with no right to permanent residence. The quotas were determined according to the needs of individual industries, most prominently construction. Seasonal workers were often housed in barracks and had only limited legal rights. For example, they were not allowed to change their employer or residence during their stay. Due to pressure from the trade unions, the seasonal workers' statute was replaced in 2002 by a free movement agreement with the EU, which no longer defines fixed quotas for migrant workers. Still, today, at least 63 percent of construction workers are non-Swiss. In addition, there are workers with a migrant background who have since been naturalized. While construction work requires more formal qualifications than most jobs in agriculture or cleaning, at least one in three employees in the construction industry has no formal training at all. At least another third consists workers who were trained on the job to become machinists or crane operators. The industry therefore has a very high demand for low-skilled workers. It is precisely this demand that is being met by the migrant workforce. Thus, the vast majority of migrants are employed as “unskilled” or “semi-skilled” workers. In contrast, the vast majority of formally qualified masons, foremen, and equipment managers are Swiss nationals. Each year, between 8,000 and 10,000 new workers are actively recruited to Switzerland to compensate for

the industry's staff turnover (Kelley, 2017, pp. 125–141).

Unsurprisingly, our respondents explain that migrant workers are particularly vulnerable to extreme weather events. One of them explains that he feels like a “second-class human being” who must always perform the most dangerous jobs and is less likely to be allowed brakes in the event of heatwaves or storms. The respondent explains: “Not only is there racism between people of different origins but there is also racism in the way people are employed.” (I#4). This refers to the above-mentioned fact that migrant workers are usually employed on a temporary basis while Swiss nationals get permanent employment.

It is important to note that migrants do not form a homogenous block. Previous research has noted the high level of differentiation of residence status in Switzerland, especially for non-European migrants. This has considerable effects on the labour process. For example, migrants with a precarious residence status were found to be more likely to obey at work, because of an implicit alliance with the employer in the hope for a permanent residence status (Kalbermatter, 2020). Another diversifying factor of climate vulnerability on construction sites is that seasonal migrants are often eager to accumulate as many working hours as possible in a short amount of time. So even if there are official safety regulations, these workers are likely to ignore them in order to work more (I#1). The diversification is also present in the diversified group identities of the workers. For example, one of them explains that European migrants are no “real” migrants because their conditions are much better (I#9).

Thus, it becomes clear that climate precarity is not only a result of employment policies at the organisational level but also of



policies at the level of the state, the regulation of migration being a prime example for the latter. Previous research has shown that precarious residence status creates a “multiplication of labour” (Mezzadra & Neilson, 2013) in the sense of a diversified workforce that serves the need for cheap labour as well as for specialists. However, it also leads to a multiplication of risk in the double sense: Firstly, as it diversifies the vulnerability to environmental risks according to residence status; secondly the combination of precarious employment and precarious residence status multiply into increasing degrees of vulnerability. Multilevel heuristics for the analysis of the politics of production developed in LPT (Burawoy, 1985) can help addressing the ecological dimension of the regulation of work and its entanglement with politics at the level of the labour process. Yet, the concept of politics of production needs to be broadened beyond a narrowly defined system of industrial relations. For example, climate mitigation policies become an increasingly important aspect of the politics of production, as they directly influence the costs of production (e.g. through taxes on fossil fuels).

## 5. Conclusion

By drawing on the case of construction work in Switzerland, this article has shown that climate change influences all levels of the politics of production. At the level of the workplace, extreme weather events cause additional strains to workers, to which they react with new forms of “organisational misbehaviour”, like hiding from heat as well as the view of superiors. However, climate change also threatens the profitability of production, e.g. through weather-related delays of construction projects. Employers react to this with new forms of rationalisation, some of which (like prolonged working hours) adversely affect workers. This sparks new industrial

conflicts, like the protests and strikes around the new collective bargaining agreement of Swiss construction, which evolved mainly around (mal)adaptation to climate change. At the level of political regulation, the document analysis showed that climate change mitigation plays an increasing role in the lobby politics of the BMV, where it tries to prevent additional costs like taxes on CO<sub>2</sub> emissions and argues for ways of mitigation that profit the industry, like replacing energy-inefficient buildings with new ones. While the construction sector is particularly affected by climate change, it seems very unlikely that the ecological conflicts described here are limited to this particular branch of the economy. Therefore, LPT should systematically take into account ecological factors in its analyses. This means that nature cannot be conceptualised as static context to a separate politics of production but as an autonomous force. This autonomy of nature as witnessed in climate change or the Covid pandemic has the capacity to trigger industrial conflicts and forces all parties of the politics of production to adapt their strategies. Yet, the omission of nature in LPT does not just become problematic in times of climate change. Instead, this article has shown that the process of the subsumption of labour under capital, which is at the core of LPT, has always been connected to the subsumption of nature. Thus, taking into account ecological factors should not be limited to studies of “green transitions” but should be structurally integrated into LPT concepts.

Conversely, research on climate change adaptation and mitigation or socio-ecological transformation could also profit from including LPT heuristics. As work is the central locus of the transformation of nature, analysing it as a political field could contribute to a more comprehensive under-

standing of the underlying forces of continued investment in environmentally harmful production processes as well as identifying possible levers for its transformation. As we have seen above, there is already a growing field of research that develops such a perspective with regard to unions. However, this focus often misses politics at the level of the labour process that are key for the environmental effects of work. For example, we have seen here that one of the origins of today's ubiquity of environmentally problematic concrete is its role in deskilling construction work. An LPT perspective could also shed light on corporate practices of maladaptation to climate change. Research already identifies "institutional" and "behavioural" causes of maladaptation (Schipper, 2020), but situating them within the LPT framework of the "transformation problem" could enable a deeper understanding of structural constraints as well as agency in organisational practices. The conflict around the attempt to raise working hours in response to climate change is one example for maladaptation that was prevented through the collective agency of workers. A multi-level perspective that emphasizes the interaction of politics at the

level of the labour process and at the level of institutional regulation seems particularly fruitful for an assessment of climate change in the world of work. For example, we have seen above, that employment policies at the level of the workplace intersect with migration policies at the level of the state in producing a multiplication of environmental risks for specific groups of workers.

The insights generated here remain exploratory and merely touch upon different aspects into which an LPT perspective could generate new insights, yet all of these aspects need to be elaborated by further research. Such research would not only close gaps in scientific knowledge but could also contribute important insights for policy-making. Thus, an integrated perspective on work and climate change could help prevent the two being pitted against each other and support policies that conjoin issues of social justice and sustainability more thoroughly.

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