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# Unions, fossil fuel workers, and the energy transition: learning from plant closures in Finland and the U.S.

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**ABSTRACT**

Energy-related emissions account for nearly 85 percent of global carbon dioxide emissions. Consequently, the energy sector is a primary focus of climate policies aimed at mitigating global warming, and a transition to low-carbon and net-zero energy systems and economies is at the focus of many national and international decarbonization policies. Like other economic restructuring projects, the energy transition is not a singular process but instead is unfolding as multiple interdependent processes across geographical and temporal scales. In these processes, transitions to renewable and low-carbon energy sources also translate to transitioning away from hydrocarbons and their attendant socio-economic and socio-cultural production systems. In their most tangible form, these low-carbon transitions manifest themselves in local contexts as plant-level and industry closures that – unless carefully managed – have the potential to not only upend local socioeconomic realities but also to fuel discontent against the broader societal programme of the low-carbon transition. In this article, we take a focus on two such local low-carbon transitions – the closure of coal-fired Hanasaari power plant in Helsinki, Finland and the sudden closure of the Marathon Petroleum oil refinery in Contra Costa County, California, US – as case studies of plant-level closures that reflect several experienced transition injustices. However, our analysis goes beyond merely documenting and comparing injustices across these transition contexts. Against the backdrop of literatures on radical energy justice and the role of labour unions as just transition actors, our analysis sheds light on both the interpretations of justice labour unions work to advance and different ways in which union responses in individual plant closure contexts have broadened the unions' scope of interest and agency in just transition related broader political and societal agendas.

**Key policy insights**

- Failures in including labour in transition planning can contribute to mass unemployment of fossil-fuel workers, labour shortages in the green energy sector and resistance to the green transition and other sustainability reforms.
- The expertise of labour unions regarding their members' skills and needs should be incorporated into transition planning.
- Transition plans should grant labour and workers a formal role in the transition planning and implementation. This role may vary in different social and political contexts.
- Transition planning should include robust local and regional economic development plans that prioritize decent jobs that impart good wages and fair working conditions. These plans should be designed collaboratively with industry, government, local community and union representatives.

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## 1. Introduction

Energy-related emissions account for nearly 85 percent of all $CO_2$ emissions (IEA 2024, p. 17). Consequently, a key objective of decarbonization policies is the rapid transition to low-carbon energy systems and economies. These systems-level changes will have profound impacts on industries, livelihoods and workers, "with existing jobs changing, new jobs emerging, and different skills demanded" (Atkins, 2023, p. 3). While the low-carbon transition is expected to generate millions of new energy sector jobs in the coming decades, millions of jobs in the fossil-fuel industry are also bound to disappear. In many cases, new jobs created by the transition will not align with the skillsets or geographical locations of those formerly employed by the fossil-fuel industry. Unless managed proactively, this mismatch has the potential to contribute both to labour shortages in the green energy sector and to mass unemployment of fossil-fuel workers (IEA 2024, pp. 222–225).

While the optimism about renewable energy has captured the attention of policy makers and energy professionals, decarbonization also means transitioning *away* from hydrocarbons and their attendant socio-economic production systems. These transitions take different shapes and form across different resources, political and societal contexts, ranging from government-mandated industry shutdowns to individual plant closures (cf. e.g. Abram et al., 2022; Lempinen & Vainio, 2023; Carley & Konisky, 2020). Regions, communities, and workers dependent on the extraction, transportation, or refining of hydrocarbons – most significantly oil, gas, and coal – have been identified as "the most immediate and visible victims of the energy transition" (Cha et al., 2022, p. 5). Securing the income and well-being of those losing their livelihoods because of transition policies is instrumental to maintaining societal support for climate policies (Abram et al., 2022; Lempinen & Vainio, 2023). As such, implementing local energy transitions in a socially acceptable manner "co-determines not only the path of local democracy, but also that of global sustainability" (Herberg et al., 2023, p. 136).

Historically, trade unions have been important actors in introducing the concept of just transition to political and popular agendas (cf. Cha et al., 2022; Stevis & Felli, 2015). More recently, increasing awareness of the detrimental impacts of decarbonization efforts on fossil-fuel workers and their communities have led to renewed calls for including labour unions that represent them in planning the energy transition (cf. e.g. IEA 2024, p. 220, 224; Aklin, 2024: Atkins, 2023; Cha et al., 2022; ILO, 2015). Yet emphasizing the inclusion of labour unions in the transition policy process can have an uncomfortable relationship with labour unions' commitment to safeguarding the economic security of their members – a focus that has contributed to accusations of slowing down the green transition (Vachon & Brecher, 2016; Rähtzel & Uzzell, 2011). However, these interpretations fail to account for the long history labour unions have in working with environmental and social issues, including "two centuries of experience in managing complex political-economic situations and trying to produce more just alternatives to existing situations" (Stevis & Felli, 2015, p. 40; Snell & Fairbrother, 2010).

Our study re-focuses workers and labour at the centre of energy transition debates. We analyse two fossil-fuel plant closures as local manifestations of the low-carbon energy transition: the 2020 closure of the Marathon Petroleum Corporation oil refinery in Contra Costa County, California, US and the closure of energy company Hanasaari coal-fired power plant in Helsinki, Finland in 2023. The US case centres on the abrupt closure of an oil refinery that resulted in the loss of all of its 750 jobs. The refinery had been an important employer in the area, and the jobs it had offered had been mainly unionized, well-paid blue-collar positions. Meanwhile, the Finnish case study takes a focus on the closure of energy company Helen's Hanasaari coal-fired power plant which resulted in the outsourcing of nearly all of its 300 blue-collar employees. The local importance of Hanasaari as an employer had not been equally significant; however, its operations had provided stable, long-term jobs with good skills development opportunities. Both plant closures resulted directly from corporate decisions that were motivated by energy transition mandates: while the Marathon oil refinery would be converted to a renewable biofuel processing plant, the closure of Hanasaari was framed in terms of Helen's emission reduction targets. Together, the case studies provide an opportunity to shed light on worker and union experience, agency, and power in energy transitions in what on the outset appear quite different national policy – and climate policy – contexts.

Our case study analysis of these two plant closures has a twofold focus. First, we shed light on the experiences of (in)justice among fossil-fuel workers across two different resource and geographical contexts. Second,

we examine the role of labour unions as local transition actors. Our analysis of how the low-carbon transition is unfolding across two different resource contexts, political systems, and continents sheds light on the injustices experienced by fossil-fuel workers around the world and draws attention to the urgent need to develop frameworks to support 'frontline communities' (Cha et al., 2022, p. 2) impacted by clean energy transition policies. In line with the emerging scholarly approach of *radical energy justice* (cf. LaBelle et al., 2023), we also draw attention to the agency, structure, and power relations that actively produce and alleviate energy injustices. More specifically, our analysis focuses on the role that labour unions and the labour movement can have in steering transition policies and mediating the local impacts of transitions.

The following sections will first provide a review of contemporary scholarly debates revolving around justice in energy transitions with an explicit interest in the roles that labour unions and the labour movement have been depicted to play in transition contexts. After outlining our methodological choices and data selection, the results section delves into the injustices experienced by fossil-fuel workers in each case study context and local union responses to them. The discussion and conclusions contextualize our empirical findings within the growing field of literature on the complex and situated relations of labour unions and environmentalism in the era of accelerating climate change.

## 2. Just transitions at work

Although references to just transitions abound in political programmes and corporate strategies, what 'just' and 'transition' entail remains perspectival and contested. As summarized by Kalt (2021, p. 1136), "typologies locate just transitions on a spectrum from minimalist transitions that are shallow, narrowly worker-centred and status-quo oriented to transformative transitions that restructure and democratize political-economic systems and dismantle structures of oppression and discrimination" (also Harry et al., 2024). Unsurprisingly, contemporary political articulations tend to favour the former, framing just transitions in terms of implementing climate policies in a manner that is "just and inclusive while minimizing the[ir] negative social or economic impacts" (UNFCCC, 2022, p. 1).

Scholars have conceptualized justice in energy transitions in terms of fair distribution of benefit and harm (*distributive justice*); opportunities for participation and influence (*procedural justice*); acknowledgement of vulnerable groups and the losses suffered by them (*recognition justice*); and appropriately compensating for loss and harm (*restorative justice*) (Cha, 2020; Jenkins et al., 2016; McCauley & Heffron, 2018; Williams & Doyon, 2019). Recently, such tenet-based approaches to just transitions have become increasingly criticized for oversimplifying the inherently perspectival and situated nature of justice-related issues that arise in energy transitions (cf. e.g. Dunlap & Tornel, 2023; Flanagan & Goods, 2022; Van Uffelen et al., 2024; Wood, 2023). The definitions of justice in a given transition context depend on temporal and spatial framings of inquiry as well as on whose experienced (in)justice is prioritized (e.g. Cha, 2020; Golubchikov & O'Sullivan, 2020). This complexity makes justice much more a 'kaleidoscope' through which to make sense of the 'moral and spatial complexities' of energy transitions than a recipe that can be objectively implemented in local transition contexts (Herberg et al., 2023).

Indeed, both political and scholarly articulations of energy justice and just transitions have been accused of offering 'normative top-down framings' (LaBelle et al., 2023, p. 143) that are blind to local injustices and serve to present inherently power-laden transition policies as objective and apolitical (Banerjee & Schuitema, 2022; Stirling, 2014). By nature, equally the 'content' of transitions as well as the meanings of 'just' in them are 'not fixed but fought over in social struggles' (Kalt, 2021, p. 1150) in which different actors do not have equal say or capacity. Accounts of transition injustices also rarely seek to identify the actors or structures that are responsible for upholding unjust energy systems. For this reason, we build on the emerging scholarly approach of *radical energy justice* (cf. LaBelle et al., 2023) with the aim to 'identify points in structure, which prevent a more just energy system from developing', to identify those who can work as enablers of more just energy outcomes (LaBelle et al., 2023, p. 149) and to ask who is – or could, or should – be responsible for making the low-carbon energy transition just.

The labor movement has played a pivotal role in establishing the terminology of just transition to political agendas. While the idea of just transition can be traced back to local and national union efforts to defend the

interests of the workers employed by industries that suffered from the emergence of environmental regulation in the 1970s (Stevis & Felli, 2015, p. 32; Cha et al., 2022, p. 2), contemporary demands for justice in transitions have shifted from blocking or delaying the transition towards advocating a more socially just and ecologically sustainable global economy (Stevis & Felli, 2015; Harry et al., 2024; Abram et al., 2022, p. 10; Räthzel & Uzzell, 2011). In recent years, an "overwhelming focus of climate-industrial relations scholarship has been on the role that organied labour is playing or could play in climate action" (Flanagan & Goods, 2022, p. 485). These 'optimistic interpretations' (Flanagan & Goods, 2022, p. 497) have been framed not only in terms of the potential that unions have in contributing to more sustainable future societies but also the potential that the integration of climate and environmental considerations to union agendas can have in reversing the declining trends in union membership numbers and their societal influence (Rähtzel & Uzzell, 2011; Flanagan & Goods, 2022, p. 485).

Despite extensive examples of collaboration and coalition-building between labour and the environmental movement (e.g. Atkins, 2023, p. 4; Flanagan & Goods, 2022; Tattersall, 2005), the relationship between labour and climate remains complex. It is questionable whether labour union actors that are committed to promoting the interests of their membership within existing political and economic structures have the potential or the interest to push for the transformative systemic changes required for truly 'greening' the economy (Flanagan & Goods, 2022; Kalt, 2021; Vachon, 2021). At the same time, the labour movement – with expertise in their skills and desires of their membership and a longstanding interest in internal and external solidarity concerns and in seeking recognition, participation, and redistribution of benefit and harm (Lévesque & Murray, 2010; Stevis & Felli, 2015) – remains strategically positioned to mediate the impacts of transition policies and to participate in steering their innovation and implementation. The following case study analyses highlight two such instances of labour unions' just transition agency.

## 3. Data and method

The cases studied in this article were selected because they both provide data on worker impacts and labour union responses to sudden fossil-fuel job loss as a result of rapid-response research by local scholars. In both cases, researchers with interests in worker impacts and labour union activities began data collection efforts shortly after the plant closures. The comparison of cases was serendipitous; two of the authors met at an academic conference on a panel organized around issues of climate policy and employment change. The cases provide a compelling basis to begin identifying similarities and differences in worker and union experience, agency, and power across what on the outset appear quite different national policy – and climate policy – contexts.

We rely on a mixed-method approach combining quantitative and qualitative data collected through survey research, interviews, and participatory observation (cf. Morse, 2016; Östlund et al., 2011). We make use of multi-site data to "produce findings that are reflective of context, while also holding broader applicability across settings" (Jenkins et al., 2018, p. 1969; also Clarke, 2005). Such approaches that are simultaneously sensitive to local specificities and able to draw attention to commonalities across different contexts are essential for grasping the inherently situated dynamics of local energy transitions and labour union agency, as equally plant closures and labour union responses to them take place and shape in "particular moments of industrial relations in their respective countries" (Atkins, 2023, p. 4; also Flanagan & Goods, 2022, pp. 486 and 487).

For the Marathon Petroleum refinery closure case, the US-based research team surveyed the entire permanent, unionized workforce ($N = 345$) a year after layoff (December 2021 and March 2022) and carried out semi-structured interviews with a subset of survey respondents (Parks & Baran, 2024). The survey was designed to document post-layoff employment and wages. Additional questions asked about a range of layoff-related impacts, including job search, new employment conditions, relocation, household budgeting, and financial security. The survey response rate was 41% ($n = 140$). The survey was administered online (88% of completed surveys) and through the mail (12% of completed surveys). In addition, twenty-one workers participated in follow-up Zoom or telephone interviews. Interviews were semi-structured, allowing workers to expand upon the issues addressed in the survey. Interviews were transcribed and coded. Upon completion of the survey research, the US-based researchers have continued to research and document the adjacent policy-making

process through field notes, key informant interviews, media reports, and government and non-governmental websites.

For the Hanasaari power plant closure case, data were collected through participatory observation and open-ended interviews with local union representatives working at Helen. Two shop stewards and the union's bargaining specialist were interviewed. These data were complemented by media materials, company press releases and other communications published online, as well as informal discussions with the staff of JHL, the Trade Union for the Public and Welfare sectors representing many of the workers affected by the cooperation negotiations and the outsourcing. These interactions were documented in the form of field and interview notes. The researcher had a dual role as participant observer researcher and as an employed trade union specialist, with responsibility for following the climate change and just transition themes within the scope of JHL's work. This enabled access to information and informants that would otherwise not have been available. Particularly the analysis of JHL's response and consequent activities regarding climate change and just transition is based on participant observations from the point of view of the researcher as union specialist.

The interviews conducted in California and the data gathered in Hanasaari were analysed through the framework of thematic content analysis. As a methodology, thematic content analysis takes a systematic approach to (often textual) empirical materials with the aim to create a nuanced understanding of the key topics or themes that shape the discussion in the case(s) under scrutiny (Krippendorff, 2018; Tuomi & Sarajärvi, 2018). These analyses can be either empirically grounded or theoretically informed: our analysis represents the latter. In this process, conceptual and theoretical interests guide the process of analysis while still leaving room for the diversity of perspectives around these key themes are framed and addressed in the empirical materials (ibid.). As in this article we are interested both in the experienced injustices of fossil-fuel workers affected by plant closures as well as labour union agency in sudden transition events, we rely on the backdrop of scholarly literatures on just transitions and radical energy justice with an interest in (1) what kind of experiences and injustices the affected workers describe and (2) what kind of responses trade unions have relied on to secure the interests of their membership amidst the dramatic changes.

## 4. Results

### *4.1. Experienced injustices of workers affected by plant closures*

Marathon Petroleum's decision to close its Contra Costa County, California, US, refinery in October 2020 took workers by surprise. Beyond severance pay fought for by the union in emergency bargaining sessions, the refinery closure thrust workers into an unplanned, unexpected transition with little warning, few resources, and families to support. Special bargaining sessions with the union went into effect when the company first announced the plant closure in 2020, meeting the 90-day warming period required by US federal law. The union secured additional severance pay for workers but no additional terms such as job transfers or early retirement. In response, labour and community actors in the region initiated a coordinated effort to address the local impacts of climate decarbonization.

Jobs at the Marathon Petroleum refinery were well-paid blue-collar jobs. A longstanding unionized facility, refinery workers were represented by the United Steelworkers Local 5, an active labour union with a highly developed culture of democratic participation. Decades of union representation yielded high wages, a vigilant safety culture, and a strong occupational identity among refinery workers. Job benefits included robust retirement plans, family health benefits, and several weeks of paid vacation. The union facilitated a worker-to-worker model of formal and informal training across a broad scope of refinery operations, including basic protocol, health and safety, and emergency response. Workers could start at the refinery with few skills but develop a highly specialized skill set over time. Workers were guaranteed pay increases for job tenure and job advancement. The union provided additional training and leadership opportunities, as well as a democratic vehicle for decision-making and input. As a result, workers made lifetime careers at the refinery.

Following the refinery closure in October 2020, laid-off refinery workers were relatively successful in securing post-layoff employment but at a cost. Median hourly wages were 24 percent lower than the median refinery

wage. The median hourly wage at the refinery was $50, compared to a post-layoff median of $38. More than a quarter of all workers remained unemployed a year after layoff. Workers also reported more difficult working conditions at post-layoff jobs. Workers described hazardous worksites, heavy workloads, work speed-up, increased job responsibilities, and few opportunities for advancement. Above all, workers cited poor safety practices and increased worksite hazards as the most significant and alarming characteristics of degraded working conditions.

The process of finding these new jobs posed unforeseen challenges for workers. No coordinated job search assistance was available to workers through public or nonprofit programmes. Workers described two unexpected challenges when searching for new jobs on their own: (1) employers' lack of knowledge about refinery work and refinery workers' skills and (2) workers' inability to prove their skill or experience through certifications or a verification. Most of these blue-collar workers did not have a college or specialized educational degree to show employers, nor do certification programmes exist tied to their refinery positions. As a result, workers struggled to verify their skills and competencies to future employers. Lastly, workers reported anxiety about future economic stability. A full third of all workers described that they were 'falling behind financially' a year following the layoff compared to only 3% before the layoff. Workers reported struggling with depression.

In Finland, the closure of the Hanasaari coal-fired power plant led to an announcement of employee cooperation negotiations that concerned nearly 400 employees in late 2021. By the end of the negotiations, 288 workers would be targeted for reductions over a three-year period between 2022 and 2025. However, in practice all of Helen's blue-collar workers were outsourced already during the following year, when 250 operation and maintenance workers were transferred to Enersense, an energy company providing green energy services. A smaller number of employees were outsourced to another company, ISS. The employees transferred to Enersense became service providers for Helen, with an agreement between the two companies in effect for a minimum of three years. In total, Helen's workforce reduced by almost a third over the course of one year, from 1015 at the end of 2021 to 701 by the end of 2022. The workers outsourced in 2021–22 remain uncertain about their futures still at the time of writing this in late 2024.

Helen's outsourcing process came across as confusing and secretive from the perspective of the blue-collar employees, and the results of the employee cooperation negotiations and the later Enersense transfer came as a surprise (see e.g. Taleva, 2021). JHL worker representatives conveyed that Helen's outsourcings were viewed by workers not as a just and transparent chain of events but as a process characterized by unpredictability, secrecy, and uncertainty. Workers felt limited in their ability to influence the company's decisions or the implementation of those decisions. Additionally, the formerly strong coalition of unionized workers within Helen was fragmented and weakened by Helen's outsourcing, impacting the power relations and bargaining power within the company that extends beyond the context of ongoing outsourcing negotiations.

Many affected employees had a long work history with Helen, and they had been accustomed to opportunities for acquiring further training and skills development alongside their employment. However, training opportunities were discontinued in the time leading up to outsourcing. According to Helen's own statement, it had "agreed with the employee representatives on a change security scheme where every effort is made in cooperation to further mitigate the impacts on employees in the most responsible way", including "measures related to, e.g. personnel training, redeployment and job-seeking support" (Helen Ltd 2021). From the perspective of affected workers these promises were not, however, fulfilled.

Despite the overall worker experience of the outsourcing process being hurried and secretive, workers also expressed relief after the transfer process was complete because it ended a prolonged period of uncertainty. Contributing to this sense of relief was the fact that Enersense continued the collective agreement in place before outsourcing, resulting in no immediate changes to the workers' terms of employment. In 2024, a union representative from JHL described the period after outsourcing to Enersense as having gone 'calmly'. Both JHL's bargaining specialist in the energy sector and a worker representative stated that Enersense continued to maintain the same collective agreement for outsourced workers as a 'promise' to the employees.

The experience of outsourcing among Helen employees varied depending on workers' new employers. In a smaller outsourcing preceding the one to Enersense, some workers were transferred to the company ISS, triggering a change in collective agreements and the unions responsible negotiating them. The first year of work

for workers transferred to ISS continued much as it had before, according to a JHL worker representative. Later, workers were re-assigned to other Helen locations. For many, their workloads also increased. As a result of these changes, some workers have left their jobs and others were considering leaving. Some training has been provided, but not for everyone interested. The worker representative stated that many former Helen workers at ISS feel unmotivated and have lost interest in their work. At Enersense, the workers' futures also remain unclear: an interviewed workers' representative is 'hopeful' that there will be work even after coal use in Helen has ceased. Even as some tasks are likely to remain relatively unchanged, others may change significantly or even disappear, especially due to increased automation, as was pointed out also by the JHL bargaining specialist. It has not been made clear to workers what kind of changes are to be expected. There seems to be no information for workers on what kind of training may be needed or whether or at what point such training will be provided.

The experiences described by Californian oil refinery workers post-layoff and those reported by workers of the closed coal-fired power plant in Helsinki not only share similarities but also reflect energy transition injustices on several fronts. In both cases, workers suffered losses directly as a result of the closures: these losses ranged from measurable financial losses to loss of employment security, trust, identity, and community, constituting enmeshed distributive, recognitive and restorative transition injustices (cf. e.g. Jenkins et al., 2016; Lempinen & Vainio, 2023; Williams & Doyon, 2019). Sudden nature of the closures, limited opportunities for negotiation and secretive atmosphere that characterized the process highlight the shortcomings in delivering procedural justice to those affected by the transition (cf. Jenkins et al., 2016; Cha, 2020). The next section will focus on broader union responses that attempted to alleviate these injustices.

### *4.2. Trade union responses*

In both studied cases, involved labour unions responded to the closures in ways that did not only focus on improving the immediate situation of the workers that were affected by the sudden closures. In the wake of the layoff in California, the United Steelworkers union reached out to a group of stakeholders in the region to begin discussions about what future decarbonization initiatives would mean for local workers and 'fenceline communities'. These conversations yielded the Contra Costa Refinery Transition Partnership (CCRTP) initiative. The union engaged their longtime partners at the BlueGreen Alliance (a national labour-environmental alliance) to facilitate the effort, along with the local labour federation (Contra Costa Labor Council), a local environmental justice organization (Asian Pacific Environmental Network), the plumbers and pipefitters local union (UA Local 342) who perform significant maintenance work in the refineries, with additional support from the University of California Berkeley Labor Center and California Federation of Labor Unions and The partnership received funding through the State of California's High Road Training Partnership programme to support the CCRTP's work to strategically analyse and develop an equitable transition agenda for the region. Funded activities include the survey research presented in this paper; economic analyses identifying the size and significance of the current fossil-fuel sector to the local economy; future economic projections based on varying decarbonization scenarios; as well as extensive community and worker engagement efforts.

A critical objective of the CCRTP is policy generation aimed at achieving an equitable energy transition. The first tangible outcome of these efforts was informing the creation and design of the State of California's $40 million Displaced Oil and Gas Worker Fund. The state released a call for proposals in October 2023 with guidelines informed by the survey research discussed above. In February 2024, awards were announced, including a $9.8 million award to the Steelworkers Charitable and Educational Organization, USW's national nonprofit affiliate, to develop and provide transition support services for impacted oil workers throughout California.

Through its collaborative deliberations, the Contra Costa Refinery Transition Partnership links distributive, procedural, and social justice frames – one cannot be pursued independently of the other. Firstly, partners support each other's distributive justice claims – broader collective goals of climate protection should not come at the expense of those most directly impacted by the industrial and economic shifts necessary to achieve climate goals, whether residents or workers. The partners came together under the auspices of an incipient social justice agenda, articulating the shared fate of local community members and workers as well as the shared fate of the planet. Lastly, CCRTP members jointly applied for public funding to support their work in the

policy formation process on the grounds of procedural justice – those most directly impacted by the green transition should participate in planning and shaping the transition.

The coalition has engaged the policy formation process as the first step towards actualizing these goals. A grant from the State of California facilitated initial activities by providing funding for the coalition as the Contra Costa Refinery Transition Partnership to undertake its own planning and research. This funding furthers procedural justice goals by providing the resources necessary for local actors to participate meaningfully and substantively in the transition process. Additionally, the funding supported research, such as the survey described in this article, that identified worker-centred policy objectives, articulated by workers most directly affected by decarbonization displacement. Similar to the policy activities of Australian regional labour councils described by Snell and Fairbrother (2010), the CCRTP demonstrates how labour can generate "constructive approaches for a community transition to a green economy" (420) shaped by material concerns of economic security and fairness.

In Finland, Helen's employee cooperation negotiations coincided with JHL's internal work around climate change and just transition, which formed the first part of an ongoing project on the effect of large-scale trends for the union's work. The union published a report in spring 2021 on the effects of climate change with a focus on the main occupational sectors represented. Nationally, The Central Organisation of Finnish Trade Unions SAK – the organization of blue-collar unions – had actively promoted the topic in its national advocacy work already in preceding years, and the just transition discussion was beginning to gain ground within JHL as well. The emergence of just transition topics to union and unions' central organization agendas reflected an increasing understanding of the impacts that decarbonization policies are expected to have on workers and industries which – unless carefully and proactively managed through training and inclusion of affected workers – will lead to loss of employment and human capital (Björkbacka, 2020).

Despite the increasing awareness of the need to re-align union activities and goals with national decarbonization and just transition agendas, Helen's plans to outsource workers initially spurred more 'business-as-usual' reactions from JHL members: in an opinion piece published in October 2021, members of a JHL branch for energy sector workers voiced their dissatisfaction, stating profit-hunger and greed as the true reasons for the coming outsourcings (Mäki & Åhlberg, 2021). Soon after, internal discussions at JHL about the Helen case as a just transition case began, at least partly due to the above-mentioned union report published earlier in the year. In a press release published in December 2021 during the ongoing cooperation negotiations, JHL demanded Helen to take the principles of just transition into account in their decision-making (JHL, 2021). Through lobbying activity, JHL also reached out to a member of the Helen board, bringing both the worker representative perspective and the just transition argument to the fore.

The Helen case did not in itself, at least in the shorter term, play out as a success story for the union and its members. However, for JHL the case became a steppingstone into a wider discussion on energy transformation, just transition, and the role of labour unions in both. The Helen case has received a lot of attention through JHL, both nationally and abroad through various networks. It has been presented as an example of green transition implemented 'past' workers rather than in cooperation with them and, as such, as a transition case where the principles of just transition were not put into practice.

As for JHL's role in a just transition, one consulted bargaining specialist stressed a need for proactively influencing national legislation to ensure that workers' skills are kept up to date and trainings are provided in processes related to the green transition. Negotiations and collective agreements were mentioned only as a secondary means in this respect, and as one that may require strikes to advance. A worker representative in turn wished for more support from the union. Both considered the just transition topic as important for unions to prioritize, and JHL has continued to explore the range of possible approaches within the climate and just transition theme. The union has built connections with actors in academia and civil society and is planning to further involve membership in the formulation of climate-related goals. By the fall of 2024, JHL had added more concrete climate-related topics to the union's overall goals for the upcoming collective agreement negotiations, attempting to secure the worker perspective is taken into account in upcoming transition plans or other climate-related changes at the workplace (JHL, 2024) It is questionable whether JHL's efforts to advance just transition policies and integrate them in union work would have reached their current state without the experience of Helen's sped-up decarbonization process.

The case studies from California and Helsinki both demonstrate how the unexpected closures led to the involved labour unions in acting not only to secure benefits for their immediately affected members but also to take action beyond the sites affected by the closures. These responses, however, took slightly different directions. Whereas in California the union actively sought to form relations outside the labour movement with a range of different actors locally to better prepare for the impacts of the low-carbon transition within the regional context, in Finland the union's efforts were mostly targeted to shaping the agendas of the union itself and its central organization to be better positioned to safeguard the interests of workers in its national advocacy work. The different strategies can be taken to reflect the differences of societal and political contexts the unions operate in that motivated the Californian union actors to establish new relations with regional social and environmental justice actors and the Finnish JHL to leverage its formal negotiating positions in the Finnish political system (cf. Flanagan & Goods, 2022; Harry et al., 2024).

## 5. Discussion

The results from the two case studies demonstrate striking similarities between the ways in which the low-carbon transition is rolled out across different resource, geographical, and political contexts as well as they ways in which the 'transitions' were experienced by the workers directly affected by them. In both case study contexts, the announcements of closure came unexpectedly, giving workers little time to prepare and leaving the unions in a reactionary role trying to negotiate the best outcomes for the affected workers. The cases of Finnish coal-fired plant workers and California oil refinery workers also demonstrate the personal and economic losses that fossil-fuel workers experience due to decarbonization. Both cases reflect local inflections of the energy transition, yet both share similar experiences and concerns about economic livelihood, meaningful work, political agency, and fairness among individual workers that together constitute multifaceted energy injustices (cf. Jenkins et al., 2016; McCauley & Heffron, 2018; Williams & Doyon, 2019). Together, they contribute to the growing body of literature that highlights the unjust fate of many fossil-fuel workers amidst the low-carbon transition (e.g. Banerjee & Schuitema, 2022; LaBelle et al., 2023; Lempinen & Vainio, 2023).

Each case also reveals how labour unions work to advance interpretations of justice in local transition contexts – and beyond. Both highlight the significance of distributive justice claims made by workers and their labour unions: decarbonization must not come at the cost of economic security for workers in carbon-based jobs. In both the Finnish and the Californian case, unions concentrated their immediate efforts in attempting to secure the best possible outcomes for their affected members. While their ability to influence the plant-level outcomes beyond mediating the consequences of layoffs and outsourcing was limited, experiences from plant closures were reflected in the broader societal agendas of the union actors. While in Finland the blue-collar unions' central organization SAK had already begun developing their just transition agenda to promote fair, inclusive, and proactive climate policies for the nation's workers, this emerging policy emphasis was also more prominently adopted to JHL's own union agendas. Meanwhile, the California refinery closure served as a trigger for the refinery worker union (USW Local 5) to confront the energy transition proactively and in partnership with other stakeholders, including local 'fenceline' residential communities who both rely on the refinery economically but also have suffered the brunt of the refinery's negative environmental impacts. This regional collaboration yielded the Contra Costa Refinery Transition Partnership project. Two organizing principles guide this project: the recognition that climate decarbonization will happen and the need for equitable economic development. Similarly, these elements are also now integral to the Finnish union's (JHL) and its central organization SAK's just transition policy priorities.

The different strategies adopted by unions highlight the diverse nature of potential coalitions between labour unions and other societal actors and goals across different societal and economic contexts (cf. e.g. Atkins, 2023; Flanagan & Goods, 2022; Harry et al., 2024; Tattersall, 2005). They also reflect unique strategies in terms of targeting the 'points in structure' (LaBelle et al., 2023, p. 14) that promote more just energy systems or prevent them from developing: if local energy transitions continue to unfold as corporate-led and unilaterally announced plant-level closures that leave very little room for workers to negotiate, who or what can union actors turn to in order to move from 'reaction to proaction'? (Stevis & Felli, 2015, p. 33). Studied cases reflect different ways in which union responses in individual plant closure contexts have

broadened the unions' scope of interest and agency in just transition related broader political and societal agendas. At the same time, this new proactive emphasis focused primarily on securing the interests of union membership within the new green economy and maximizing the broader socioeconomic potential of the low-carbon transition leaves the potential of labour unions as transformative socio-ecological actors largely underutilized (cf. Cha et al., 2022; Vachon, 2021).

The mismatch between political efforts to decarbonize in the name of global climate justice and the local injustices experienced in this process also reflect the tensions inherent in the scholarly debates over what justice in transitions entails. How 'just' becomes understood remains dependent on the scale of justice, the timeframe in which justice is assessed, the perspectives of different actors and the knowledge they base their justice claims on (Van Uffelen et al., 2024). Integrating interspecies perspectives to so far largely anthropocentric justice considerations can further inform but at the same time also further complicate any justice-related debates (Gupta et al., 2023; Sayan, 2019). In any case, focusing solely on experiences of injustice among the communities directly impacted by the low-carbon transition policies is bound to ignore the wealth of injustices the contemporary hydrocarbon-based energy system both reproduces and is reliant on. These global and historical intertwinements of the networks of resource production, consumption, and ownership yet again call for "identifying points in structure, which prevent a more just energy system from developing" (LaBelle et al., 2023, p. 149; also Harry et al., 2024, p. 4) and call for more transformative agency also from the side of labour union actors.

Despite its undisputable urgency, the political project of the low-carbon energy transition has left behind a wake of social and cultural devastation, grievance, and uncertainty across communities that have depended on the extraction of fossil fuels (cf. e.g. Banerjee & Schuitema, 2022; Cha, 2020; LaBelle et al., 2023; Lempinen & Vainio, 2023). While these local experiences of injustice reflect the asymmetrical relations between the national and international centres of power and often rural and remote resource producing regions and communities, the ways in which localized discontent can channel itself into political protest against the broader societal project of the green transition shows that this power relationship is not unidirectional. The decisive role that societal support has for the future of the green and low-carbon transition underscores both why we should be concerned about the "loss of privilege and identities associated with the fossil fuel industry" (Herberg et al., 2023, p. 136) and its societal repercussions. Moreover, it underlines the importance that labour and community-led efforts have in securing the path to 'just post-carbon world' (Cha et al., 2022, p. 1; also Atkins, 2023, p. 4; IEA 2024, p. 200, 224).

## 6. Conclusions

This article has taken a focus on two plant closures as localized manifestations of the accelerating low-carbon transition. While both local transitions and union responses are always embedded in distinct societal, economic and political contexts that are situational and unique, some general conclusions and recommendations can be drawn based on our comparative analysis. Both cases – one located in the Nordic country of Finland, the other in the US – throw into sharp relief the multiple losses fossil-fuel workers are experiencing as their jobs are disappearing: material losses stemming from loss of work, loss of security, loss of occupational identity, loss of community. In both cases, displacement from their fossil-fuel-based livelihoods was sudden. From a transition perspective, these represent scenarios devoid of planning and help identify a range of outcomes for which policy interventions could be devised. Each case both provides concrete policy recommendations informed by distributive, procedural and recognitive justice claims and sheds light on the roles that union actors (could) have taken in making the transition more just for those at its frontlines, although at the expense of more transformative economic and structural change.

As demonstrated by the distributive injustices experienced by both Californian and Finnish fossil-fuel workers, any just transition plans must include financial and other support for workers to cover the income losses that result from the loss of their carbon-based livelihoods. Also non-financial losses – such as the loss of personal and social ties with the work and the working community – can have a fundamental impact on those affected and need to be taken into account. In both studied cases, closures also happened unexpectedly, leaving little room for workers to participate in steering the course of events or preparing for the drastic

changes in their lives. Workers must be provided with an adequate and a clearly defined timeline for transitioning to their new occupations and livelihoods.

In order to account for such procedural injustices, transition planning must enable and include workers, unions, and other local stakeholders' participation. Stakeholders should be supported to self-determine their role, acquire knowledge autonomously, and co-produce goals through a communicative process of sharing experiences, histories, and values. These activities are necessary to better ensure the meaningful participation of stakeholders in the policy formation process and to ensure both the availability of skilled workforce required by the low-carbon transition and continued societal support for the broader 'green' societal reform.

Labour is not a monolith yet is defined by its structural ability to exercise collective voice. In both the Californian and the Finnish case, labour exercised its collective voice to articulate distributive justice claims for displaced fossil-fuel workers. To varying degrees, labour in each case exercised its collective voice on behalf of or together with a wider set of stakeholders with a shared fate in the outcomes of the energy transition. This social unionism positionality is incipient and in flux across the two cases. Nevertheless, it points to an emerging role of labour in transition processes that is taking on a more nuanced and targeted approach to the broader political and policy process. As social justice actors, unions are strategically positioned to wield their collective voice to mobilize more transformative demands for a socially just and ecologically sustainable global economy.

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