The future ofwork defines the future of humanity and all living species

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Introduction

With the concept of climate change being replaced by many with the term "climate crisis" (see for example Carrington, 2019) and many countries, cities and towns across the globe declaring a climate emergency to signify that the time for incremental steps and small actions is over (Climate Emergency Declaration, 2019), the question of the position of labour and the labour movement towards the climate crisis and its role in solving it becomes more urgent than ever. Before we begin our discussion, we want to clarify the language we are using. We are replacing the term "environment" with the term "nature". Environment gives the impression that what we are talking about is a space that surrounds us, that may condition how we live, but of which we are not a part. Typically, in many public discourses the environment is distinguished from people. The term nature, although often used in the sense of a space "out there", a green space for recreation, encourages us at least to think that we are part of nature, as opposed to being outside it. In some contexts, we need to keep the term environment, as in "environmental labour studies", since "natural labour studies" would convey a different meaning.

When we first began to explore the relationships between labour and nature in 2006, we argued that unions – and workers in general – are in a privileged position to transcend the dichotomy between an anthropocentric and an ecocentric view of development, since workplaces, as the centres of production *and* as major consumers of natural resources, are the places where nature is transformed to produce our "second nature", the built environment, the materials we use. That is, workers are positioned at those key interfaces where nature is transformed to provide for human needs. Trade unions are social actors aiming to change the social conditions of production, and thus their contribution to challenge the threats to nature is crucial. The year 2009 marked a turning point in trade union engagements for the environment. While there had been organized engagement before, at the UN Commission on Sustainable Development, it was not until that year that employment issues appeared in the negotiation text for the United Nations Framework Convention on Climate Change (UNFCCC) for COP15 (Conference of the Parties) in Copenhagen (see Rosemberg, 2017). Before and afterwards, the International Labour Organization (ILO), the International Trade Union Confederation (ITUC), and the global unions conducted several research projects examining the employment effects of a green economy (see for example Poschen, 2012; Renner, Sweeney and Kubit, 2008; ITUC, 2012).

Although there is much that can be said concerning the achievements of the labour movement in developing their environmental positions, especially on the climate crisis over the past 13 years, only a few elements of these achievements will be presented in the first part of this article. In the second part we will offer a critical analysis of the way in which the term "just transition" is being translated into environmental policies, one which we hope

might support unions in developing an ambitious vision of the transformation needed in order to change our current mode of production from one that exploits workers and the earth into one that enables the thriving of workers and the earth alike.

Examples of successful environmental union policies

In order to explore and understand future possibilities for work and in particular the challenges that trade unions need to address in the face of the climate crisis, it might be worthwhile to provide a brief presentation of those policies and actions of trade unions which have struck us as being particularly useful. We draw on research projects undertaken by us between 2008 and 2015 to investigate the environmental policies of national and international trade union federations and confederations in countries of the global South and North: Brazil, India, South Africa, Spain, Sweden and the United Kingdom. During these years we concentrated our investigation on unions whose members we expected to be impacted by climate change measures: the metal workers' unions, and on those who were already impacted by the climate crisis itself: the unions of food and farm workers, as well as associations of small landowners and fishers. In the course of these projects we also included unions which we learnt had created particularly effective and far-reaching environmental policies, including the ITUC which has been an internationally significant force in bringing the issue of the environment to labour movements worldwide. We interviewed more than 100 unionists in national and international unions and analysed their policy and practice documents. We are still in the process of analysing our data, but some of our results have been published in six journals, two books and a special issue of *Globalizations* (see for example Uzzell, 2010; Räthzel and Uzzell, 2011 and 2013; Uzzell and Räthzel, 2013; Räthzel, Uzzell and Elliott, 2010).

In this article we discuss three trade unions which have produced important policies and initiatives and have engaged workers on the shop floor as well as reaching out to unions across the world: Comisiones Obreras (CCOO) in Spain, the Trades Union Congress (TUC) in the United Kingdom, and the National Union of Metal Workers of South Africa (NUMSA).

Pioneers of environmental trade union policies: Comisiones Obreras (Spain)

The CCOO came into being as a clandestine workers' movement during the dictatorship of Franco, with the aim to fight not only for workers' rights but to topple the dictatorship and achieve democracy and equality. Therefore, the CCOO has always had "one foot in the factory and the other foot in

society", as one of our interviewees put it. This means they have fought for the interests of workers as workers and as citizens, engaging in questions of education, health, transport and housing, among others. Therefore, for the CCOO it was not as difficult as for other European unions to recognize the environment as a trade union issue, although its importance was and is by no means uncontested. Notwithstanding this, in 1991 the CCOO appointed what was to be the first Secretary for Environment and Health in the world.

While health and safety and thus issues of toxic work environments (asbestos, toxic chemicals, toxic emissions, etc.) have always been high on the agenda of most of the world's unions, environmental issues which were not directly related to health and safety issues did not play such a central role. After studying environmental risks facing workers and having discussions with environmental organizations in Spain, the Secretary of the CCOO decided that there were three central areas that needed to be addressed: climate change and energy, clean production (relating particularly to chemical production), biodiversity and water.

Connecting environmental risks with risks for health and safety

The term "just transition" was not as familiar as it is today, and trade unions did not have any representatives for environmental issues. Thus, the CCOO worked to educate health and safety union representatives about the environment so that they could make links between and be responsible for both areas. The organization ended up organizing a network of 6,000 union representatives responsible for monitoring and acting upon health and environmental risks.

Having come so far, the next question was how to organize support for these representatives throughout the country. In 1995, the CCOO created the Union Institute of Work, Environment and Health (Instituto Sindical de Trabajo, Ambiente y Salud – ISTAS). At its peak the Institute comprised over 120 researchers and technicians, many of whom were placed in union offices across the country. In Madrid, ISTAS had about 50 members, including technicians, researchers, lawyers, doctors, all specializing in health and environmental risks. Unionists could consult these experts if they encountered any health or environmental risks in their workplace. Staff at the Institute helped workers to analyse the problem and find solutions, and supported them in negotiations with their employers. The Institute always ensured it trained unionists about health *and* environmental risks.

The CCOO recognized the need for trade unions to have a voice at the international level. Together with other union organizations, it created a team organizing the first international conference on trade unions and climate change, which took place in January 2006 in Nairobi, Kenya. It was significant that it was held on African soil, where the effects of the climate crisis were already felt by workers and farmers. Having interviewed environmentally engaged unionists in Brazil, Sweden and the United Kingdom, we found few who did not mention the important influence this conference had on their perception of the climate crisis, its urgency and the need to create mitigation as well as adaptation policies.

The conference was initiated by a small number of people who did not have organizational power or positions of seniority. As one of the members of the group recounts: "we were three young women, quite inexperienced concerning trade unions. So, we sat down with a map of the world and a list of all the trade unions and their addresses and we called them, asked to talk to the boss and told them there was an important conference taking place in Nairobi that they could not be missing." In the course of the organization process members from the United Nations Environment Programme (UNEP), the World Health Organization (WHO), and the ILO became involved. The event itself included participants from the trade unions and the three UN agencies. The preparatory work – both for the Assembly and the Workbook (UNEP, 2007) – included a significant number of ILO officials, who developed linkages with the ITUC and the International Labour Foundation for Sustainable Development (SustainLabour).

The CCOO had also played a key role in 2004 in setting up SustainLabour, with the aim of helping workers across the world identify, understand and challenge environmental threats. For over ten years SustainLabour worked with about 75 unions worldwide – from Uganda to Uruguay – supporting them in understanding and acting on climate change and chemical risks, helping waste collectors in Uruguay, truck drivers in Uganda, or farmers in East Africa.

What is exemplary in this Spanish case is the close collaboration between union representatives, engineers, researchers, political representatives and workers on the shop floor. No other union that we know of has managed to build structures ensuring this degree of synergy between different social actors. Members of SustainLabour and the CCOO were also decisive in informing the work of the ITUC, while also taking issues and ideas from the ITUC into their respective local unions. SustainLabour was responsible for developing training courses for unions on climate change in Asia, Latin America and Africa.

The effect of the 2008 financial crisis on Spain took its toll on the union's environmental achievements. High unemployment rates (up to 40 per

cent among young people) reduced the union's resources. The number of personnel was seriously reduced and SustainLabour was closed down in 2016. Spain also faced a political crisis. The centre-right Government of the Partido Popular (PP) was not committed to the mitigation of climate change and ended government support for the union's environmental activities. During the time of the centre-left government of the Partido Socialista de Obreros de España, the Socialist Party of Workers of Spain (PSOE), the CCOO had pressured the Government to create a roundtable in which employers, the Government, and environmental organizations could meet at least twice a year to discuss environmental policies. Under the PP these meetings ceased to exist.

Despite the cuts, the CCOO still features the environment on its website as one of the union's issues, and the subjects covered are broad. The demand for a just transition is centred on a just energy transition. They have now a secretariat only for the environment. Its new leadership, elected in 2017, declared that environmental policies and the reduction of the environmental impact of production needs to be at the centre of the union's struggles. The only trade union journal devoted to environmental issues and climate change in Europe, *Daphnia*, still exists.1 This, and the fact that the PP has now been ousted due to corruption scandals, provide hope that the imaginative work of the CCOO will resume and become an inspiration for environmental trade union policies across Europe and beyond.

Taking environmental action to the workplace, the case of the Trades Union Confederation (United Kingdom)

Under the auspices of the TUC, the Trade Union Sustainable Development Advisory Committee (TUSDAC) was established in 1998. After the International Trade Union Conference in Nairobi, UK trade union representatives attempted to develop more practical initiatives to reconcile jobs and livelihoods with climate mitigation and adaptation through the concept of just transition.

By 2005, the TUC had established a wide-ranging climate change strategy. Although the UK Government refuses to recognize the need in trade unions for environmental representatives, which means that unions working in this area are given no "facility time" (i.e. time within their working day to undertake environmental union work) thousands of unionists took on this role voluntarily and organized climate change activities in the workplace (TUC, 2014). Energy efficiency measures were negotiated with employers, such as the installation of solar panels, wind turbines, modifications

1. www.daphnia.es/inicio.

to heating and ventilation systems, and changes to IT systems. In addition, union representatives developed workplace green travel plans, cycle to work schemes and public transport subsidies, as well as recycling and waste reduction measures and green procurement policies (Hampton, 2015). The TUC trained more than 90 unionists on environmental issues and produced publications to advise unionists across all sectors as to how they could engage in environmental activities in their workplace. Funded by different UK institutions, they were able to develop efficient projects such as the Green Workplace project at the British Museum, which created energy savings of £700,000 (TUC, 2008). Some unions also organized agreements with employers in which the latter agreed to reduce carbon emissions with the help of union representatives (TUC, 2014). In 2011 the TUC launched a" green union" network for environmental representatives.

The TUC has also been influential in creating the Campaign against Climate Change Trade Union Group.[2] It developed the One Million Climate Jobs Campaign, which was then also taken up in South Africa and now includes unions across the world.[3]

Sadly, as in Spain, the pace has slowed down in the United Kingdom. The TUC representative for environmental issues retired and was not replaced. Reduced resources and changed priorities in a time of austerity has meant that environmental initiatives from the TUC and the unions have declined. However, support for the worldwide climate strike in September 2019 and subsequent events might be the beginning of a new engagement.

These two examples are important not only because they have made a difference in their respective countries but also because they have influenced unions in other parts of the world. However, what is also significant about both these cases is that priority given to environmental action within unions lessened when key individuals in the TUC and in the CCOO left their positions. Even though they had built structures within the unions to stabilize their environmental engagement, once the driving force of committed individuals disappeared, other considerations within the union and other individuals who had not seen the environment as a union issue in the first place became more influential and this, along with external conditions like the economic crisis, led to environmental activities dropping down the unions' agenda.

2. https://www.cacctu.org.uk/aboutus/whoweare.
3. http://www.globalclimatejobs.org.

Environmental engagement and societal transformation, the case of NUMSA in South Africa

Like many unions, the National Union of Mineworkers of South Africa (NUMSA) began its more serious engagement with climate change issues in anticipation of an international conference that was to take place in South Africa, the COP17 in 2011 held in Durban. The specific approach of NUMSA compared to all the other unions we have investigated is that, being a left-leaning union, it connected its environmental ambitions strongly to its political ambitions. Also, given its political orientation, NUMSA integrated its members into the development of its climate change policy. It developed a research and development group (RDG) bringing together workers from renewable technology production, coal-fired electricity generators and intensive energy users (Satgar, 2015). In addition, study groups were set up to inform members about climate change and to visit sites using renewable energies. NUMSA put much emphasis on developing a policy on the basis of climate justice. Its programme stated:

> This resolution explicitly commits the union to finding climate justice solutions from below as part of struggling for a deep transition to a low-carbon economy based on renewable energy sources. Central to the political economy of a just transition is a political commitment to build a socially owned renewable energy sector which is made up of different forms of socialized property – cooperatives, municipal ownership and socialised parastatals. Such a sector should also ensure the promotion of locally manufactured renewable energy. (Satgar, 2015, p. 272)

NUMSA went a long way toward ensuring that its membership understood the challenges of climate change and developed environmental goals that connected with its trade union and political identity. Nevertheless, as in the two cases above, political and economic developments had an impact upon its activities. NUMSA was expelled from COSATU, South Africa's National Union Federation, because it opposed what it saw as the neoliberal politics of the African National Congress (ANC) and therefore had called for COSATU to break the alliance with the ANC-led Government: "Numsa's biggest crime has been to democratically, in its own congress, argue for the political independence of the Federation, given the worsening material conditions of the working class as a result of neo-liberal ANC policies" (NUMSA, 2014). As a result, it engaged in developing an alternative confederation and took part in developing a new socialist party. Amidst those political tensions and the ongoing economic crisis (in which the South African unemployment rate is 25–35 per cent depending on the method of measurement), the enthusiasm for and engagement with a transformative climate change policy has been all but lost. The environment no longer features as an issue on the NUMSA website.

These three examples illustrate the diversity and ingenuity of trade union engagements in respect of environmental issues,4 but they also show that environmental engagement is not something that is achieved and then assured for the future. In times of crisis, climate change and environmental policies are often the first fatalities. This is perhaps understandable, since it is hard to persuade members to engage in policies that focus on a problem which, from their perspective, does not impact immediately on their working conditions – or might even threaten them.

To better understand the precarious position that environmental issues have in unions' everyday existence, we present a sample from our research of the ways in which environmentally engaged unionists perceive the relationship between labour and nature. These perceptions influence how unionists evaluate the urgency of protecting not only workers but nature as well.

Unionists' perceptions of the relationship between nature and labour

The examples we present here come from a range of countries in the global North and South. However, they are not specific to those countries. While there were many differences between trade unions, depending on the historical and political contexts in which the unions had emerged, perceptions of the nature–labour relationship were quite similar, the most widespread being a separation between labour and nature. We once described this as nature being labour's "other" (Räthzel and Uzzell, 2013). In the following we present some ways of articulating this separation.

The environment as a container

A unionist from India stated:

> We are protecting the environment for whom? For the next generation. Are we going to leave the next generation hungry? So, then we have people with low mental capacities because their parents were starved, and have a wonderful environment.

4. We have left out some examples of environmental engagement by unions such as, for example, the path-breaking document of the International Transport Workers Federation (ITF, 2010) – a document that is especially outstanding because it managed to outline a progressive path that connects workers' concerns for jobs with suggestions for an environmentally sound transformation of transport and mobility.

Apparently, creating a beautiful environment and feeding people are seen as mutually exclusive. At first sight, this seems like a strange conception, since we know that peoples' survival requires nature to be a resource. However, this sentence resonates with the oft-cited Brundtland intergenerational argument that we need to protect the environment "for the next generation". Such formulations assume that the effects of the climate crisis are yet to come. Even though climate change is more tangible these days than when the Brundtland concept was developed in 1987 (UN, 1987), these arguments generate the view that avoiding the climate crisis in the future has to be done at the expense of workers' lives today. Especially in India, this is an argument we heard quite often, illustrated by a unionist quoting his members as saying: "I will die quicker from unemployment than from climate change." Such statements are correct, and the question that haunts trade unions in both the global South and North is how to connect the immediate survival interests of workers with their interests to survive as a species. In an earlier article (Räthzel and Uzzell, 2011) we have presented some ways in which the International Transport Workers Federation have done this in their environmental policies.

Pristine nature

> Where it came from [her engagement for environmental policies in the union], I don't really know, it came from a general interest in nature, everything from horseback riding to flowers and the forest and, sort of a closeness to nature. Not so much from a social perspective, but more this other, more a romantic perspective, from a "not us" perspective. (Swedish trade unionist)

"Pristine nature" – the opposite of the city, of work, of the treadmill of production – is an image that is not only prominent with unionists but in our urbanized societies in general. The concept developed with urbanization, when people stopped living directly within nature and thus nature became the object of desire, of everything that is not part of urban life, and, as this unionist puts it quite aptly, "not us". In the countries of the global North, unionists would often trace their interest in environmental policies back to their childhood experiences with nature. Convincing as this might be, this still leaves nature outside the production process.

The environment as an add-on

Consequently, environmental policies appear as something that has to be added to the already immense in-tray of trade union tasks, as a unionist from South Africa explains:

> Another challenge is the fact that the world has become so much more complicated and the issues that the trade union movement is expected to tackle, from skills through to advancing employment equity, through to dealing with much more complicated wage systems, through to the political challenges – it's a huge range of issues. And then *you add to it environmental issues,* and it's really hard because everybody's already got so much on their plate.

Another South African unionist formulates the lack of connection between traditional trade union issues and the environment as a political–theoretical gap:

> The [environmental] issue must be taken in its own right, in terms of its own concerns. Because sometimes I feel that it could be climate change, it could be something else tomorrow, – as long as you can make the pol- itical points … Okay, maybe there *is* the issue about the environment, but really, it's the political points that want to be made. So, it's not really the environment, it's capitalism … And so, the issue is not really integrated into one perspective and outlook.

The failure to integrate "the environment" into a political vision, be it an understanding of the system as capitalism, or a free market, suggests that none of the ways in which the economy is perceived includes nature as an integral and indispensable part of the economic system. This is also evident in the Brundtland model where the three domains that need to be simultaneously cared for are defined as social equality, the environment, and the economy. Brundtland argued that you cannot have one without the other. In Brundtland's Venn diagram they overlap at the margins. However, while a relationship is acknowledged, the two domains are still seen as separate. In reality though, every economic action implies a transformation of nature.

We have presented these examples because we argue that the way in which the concept of *just transition* is being translated into trade union policies in international trade union documents today perpetuates this separation of nature and labour. As a result, it constructs workers as *reacting* to developments as opposed to becoming their *creators*.

Just transition and the separation of work and nature

Just transition is a concept that the labour movement has long aimed not only to popularize but also to introduce at the highest level of climate change policies. It has been the trades unions' "big idea", their key conceptual contribution. As far as researchers have been able to trace its history, the term was used first by Canadian unionists Brian Kohler and Les Leopold. A just transition strategy was first developed by Toni Mazzochi, a unionist from the Oil, Chemical, and Atomic Workers Union (OCAW) who claimed that caring for the environment and caring for workers should not be mutually exclusive (Stevis and Felli, 2015). Mazzochi argued that an environmentally sound production would create more jobs and that an unregulated capitalist development would shift negative externalities to workers and communities. In 1997 OCAW adopted a resolution calling for a just transition and in 2000 the Canadian Labour Congress adopted a programme under this heading (for a detailed analysis of the history and breadth of the concept and its applications see Morena, Krause and Stevis, 2019).

In the following we want to focus on two central documents published by the ETUC (European Trade Union Confederation) and the ITUC to discuss what we see as a problematic translation of "just transition" into trade union policies. It is not the aim of our discussion to criticize the concept, but to suggest how just transition policies might be strengthened. The achievement of the term is to connect the needs of nature with the needs of workers and vulnerable communities. However, as we will argue, in some of its translations into policies this connection does not materialize.

While just transition takes its point of departure as the need for a transition to environmentally viable production, it articulates the imminent threat to workers not as coming from environmental destruction and the climate crisis[5] itself, but from the possible effects that *measures against* environmental destruction will have on workers and their jobs.

5. We combine the climate crisis with the notion of environmental destruction, because land grabbing, extractivism, the loss of biodiversity and sea pollution are all forms of environmental destruction caused by the way we produce and then consume, which are sometimes contributing to the climate crisis or being caused by it, but sometimes not necessarily connected to it.

Workers as recipients, not as creators of a "transition"

Under the heading "Why should trade unions care about climate governance?" we read in a document of the ETUC (2018, p. 6):

> In many ways, the transition will trigger positive effects … To fully tap this economic potential, investment and policy stability is needed. This is certainly the first added-value that climate policy planning can bring for workers: increasing certainty about the policy framework and investment that are the key prerequisites for moving to a low-carbon economy while creating and maintaining quality jobs across sectors, including in manufacturing industries.
>
> From a workers' perspective, the transition will profoundly reshape the labour market in ways that creates both new risks and new opportunities for workers … Anticipating these trends and their impact on workers is at the heart of trade unions activities. Climate governance, and related policy planning, offers an opportunity for trade unions to increase their understanding of the ongoing changes and their influence on climate policy.

This is a sound analysis of the effect of "the transition" on workers, i.e. the risks and opportunities they will be facing. But what is striking is the definition of the actor within the process: "the transition". The transition appears as a kind of magic force coming from nowhere, bringing good and bad effects to which workers need to react. Later in the text "the transition" becomes more tangible, as "climate governance" and "policy planning". The first section of the ETUC document describes the countries that signed the Paris Agreement as the actors, since they have committed themselves to reduce their carbon emissions. The transition, one could then conclude, will be enacted by countries, by governments. But governments are already the result of citizens' actions. They are elected, they are pressured (lobbied) by civil society organizations and corporations. In other words, workers could be seen as actors influencing government as opposed to only *understanding* trends and *expecting* added value or risks. What we are arguing is that the language used in this (and other international and national trade union documents) does not see workers as *creators* of a transition, but instead as recipients of actions, whose initiators are not clearly discernible. Thus, our first observation of the ETUC document is that workers are constructed as reacting to processes that develop beyond their control. In addition, the process they are seen as reacting to is not the climate crisis but the measures (i.e. the transition) that might be taken by governments to confront the crisis. Nature does not appear in this scenario. The fact that "transition" is not adequately defined as either a process or a product means that it is difficult to assess how workers can relate to it.

In the same document we do find recommendations for workers' organizations to become actors. Workers' organizations are asked to promote:

- "industrial policies that are consistent with sustainable development goals"
- "technological innovation and R&D investments in clean energy, energy-saving technologies, greener and more efficient industrial processes, in particular in energy intensive industries"
- "European and national public and private investment in green technologies"
- "economic diversification in regions and industries most affected by the transition"
- "and the adoption of policies and measures that will allow a just transition for workers, favour investment in growth sectors ...". (p. 18)

The problem with these suggestions is crystallized in the formulation: "favour investment in growth sectors". Suggestions which concentrate *only* on green technologies and energy efficiency fail to recognize the key labour–nature issue: the limits of the natural resources on the planet. While CO^2 emissions, and the ways we produce energy are the most obvious sources of the climate crisis, they are not the only threats to the earth's life support system. As many scientists have argued, it is the system of relentless economic growth that threatens the existence of humans and other species on earth.

Green growth is an oxymoron

Can GDP be decoupled from material throughput?

A critical issue facing society is whether growth, as measured by an increase in GDP,[6] can be decoupled from material throughput, that is, from the amount of resources that need to be extracted from the earth in order to produce the energy and the goods we use. In other words, can there be an ever-growing green economy that will not be just as destructive for nature as the economy we already have? One of the international institutions most doubtful of this possibility is UNEP. As Hickel and Kallis (2019) report:

> UNEP acknowledges that improvements in resource efficiency will not be enough, in and of themselves, to achieve sustainability, or green growth … Productivity gains in today's linear production system are likely to lead to increased material demand through a combination of economic growth and rebound effects … Improving circularity could reduce the ecological impact of material throughput, but only a small fraction of total throughput has

6. For a general critique of GDP measurement see for instance Cha, 2013.

> circular potential. 44 per cent is comprised of food and energy inputs, which are irreversibly degraded, and 27 per cent is net addition to stocks of buildings and infrastructure. (p.6)7

Digitalization is seen as the crucial means for an increase of efficiency. But it is a factor that increases the demands for materials and energy, as researchers at the Max Planck Society (2018) argue:

> Means to automate production and distribution, or to synchronize industrial flows and to fulfil on-demand/on-time production … do not just simply increase the efficiency with which demand is met. Often overlooked is the effect that any efficiency gained in a process is likely to lead to the production of even more goods and services. This, again, directly translates to consumption of raw materials, products and energy…Information technology is the opposite of an immaterial technology. Even the smartest device needs dumb metals. At least 40 chemical elements are used in every smartphone, which means we carry around one-third of the periodic table in our pockets. What seems to be an almost immaterial business of zeros and ones makes use of more chemical elements than every previous tech- nology in history.

Does the replacement of fossil fuels with renewables allow for sustainable growth?

The terms "energy efficiency" and "green technologies and renewable energy" give the impression that applying new technologies will allow economic growth to continue with other means. It is necessary to remember, however that renewables are made of steel, cobalt, lithium, nickel, manganese, rare earths (neodymium and dysprosium). Solar panels specifically need cadmium, indium, gallium, selenium, silver, tellurium. Aluminium and copper are used in all technologies. Dominish, Teske and Florin (2019) predict that the rising demand for energy would increase the demand for necessary minerals by 280 per cent. Even if recycling efficiency were greatly improved, demands for lithium and nickel would still surpass the existing reserves by 86 and 43 per cent respectively. Moreover, the mining of these minerals pollutes the environment and threatens the lives of workers and communities in those areas. This is why indigenous communities in Alaska, Norway, Papua New Guinea and elsewhere are fighting against the mining of copper and gold. Many of these materials are today sourced in the Democratic Republic of Congo, where child labour and workers' abuse are widespread as well as

7. For a further analysis of the problems of a circular economy see Haas et al., 2015, pp. 770ff.

violent conflicts, not least as a consequence of the demand for these minerals. Anticipating a steep increase in demand, companies are beginning to explore another nature-threatening practice, namely sea-mining (Davidson and Doherty, 2017).

These facts should not deter environmental policies from replacing fossil fuels with renewables, but they should alert us to the need to change not just some technologies and resources, but the way we live and use energy in general. Renewables can only help us to mitigate the climate crisis if we significantly reduce our usage of energy instead of increasing it, for instance through the mass production of electric cars. Energy reduction is especially important in the global North to provide the global South with a space to tackle energy poverty. This need and the plight of workers in the mining industries in countries of the global South demonstrate the need for a globalized labour movement that forms alliances between workers of the global North and South as much as with nature.

An alternative pathway to a just transition: Reconciling nature and labour

What we are arguing here is that suggestions for a just transition that come in the shape of technological fixes do not consider the ways in which humans and workers are inseparable from nature. The technological fix and growth approach is still acting *upon* rather than *with* nature. If trade unions are to break this cycle and challenge the destructive forces of our present growth system, they need to formulate policies which treat nature as an indispensable ally of labour. If they fail to do this, their politics will invariably be subordinated to the interests of what the ITUC report (2019) calls "corporate greed that has captured governments" (p. 5). Their policies and actions will remain restricted to trying to repair the worst effects on workers of a "transition" that happens essentially *to* them rather than *with* them. Arguments like the following are an example of this: "Every government must raise its ambition and determine national development plans including *Just Transition measures to protect workers, their families and their communities*" (ibid. p. 14). [our emphasis]

Demanding that governments and employers protect workers and their families and communities leaves the fate of workers in "the hands of the corporate greed that has captured governments such that they act against the rights and the interests of people" (ibid. p. 5), and denies workers the power, capacity and ingenuity to formulate their own, alternative visions for a just and equal society living and working in alliance with and in nature. It constructs workers as victims as opposed to masters of their fate.

However, there are examples of workers understanding the close relationship between labour and nature which lead them to other kinds of

strategies. Their understanding develops through their daily working practices, as a fisher in Kerala explained:

> Now recently, wherever the men fish, they get the plastic waste. It affects the fish wealth also. The pesticides they also finally come to the sea. See, this is why we are collaborating with other groups … We need to protect Adivasis [indigenous groups]. Then we need to protect the forest. Otherwise you will not get rain timely, then you will not have sea wealth. So, this is the chain. We need to protect the environment, we are part of this environment.8

It is easy to understand why for this fisher it is impossible not to see work, nature and life as inseparable. The question whether it is more or less important to protect jobs or the environment cannot even occur.

However, the way in which nature and work are interwoven is not as tangible for workers in the metal industry, for instance. But there are other ways to appreciate this connection, as one metal worker in Brazil describes:

> Then my friendship with ------ and the study of ecology led me to think that there was something supreme, subtle, that couldn't simply be physical reactions … I have been a Protestant Christian for six years and today I frequently go to the Anglican Church. It's a very progressive church, very open and one of the pillars of the church which was defining for me is the defence of all creation … The Bible says … all creation has to be redeemed with the presence of God on Earth. In other words, it's all a relationship between man and nature.

What we find here is what the South African unionist we quoted above was missing, a comprehensive worldview that can make the connection between humans as part of nature palpable and thus enable workers to understand our relationship to nature as mediated through labour. Expressed differently, labour has always been an activity enabled by nature, transforming nature, and being shaped by nature.

If we consider these examples as ways to understand how nature and labour are inseparably interconnected, what they tell us is that either the character of work itself, the experiences of connectivity or a comprehensive worldview (which need not be religious) is necessary in order to overcome the perception of nature as labour's "other". How to develop this consciousness would have to be part of a comprehensive environmental strategy of trade unions.

8. An example of insight into the inseparable relationship between nature and humans is Chico Mendes, a rubber tapper and unionist, who in the 1970s said: "At first, I thought I was fighting to save rubber trees, then I thought I was fighting to save the Amazon rain forest. Now I realize I am fighting for humanity."

Five suggestions for a global environmental labour movement

What our research and that of other colleagues shows is that it might be useful for trade unions to consider the following points for an innovative trade union programme that connects labour and nature:

Learning as research

There is much discussion in the just transition literature about the need to educate workers, to re-skill them, to improve their qualifications. While this will be necessary, we think it has to be qualified. First of all, workers are already qualified and have knowledge and skills which enable them to develop new transformative modes of production. The problem is that instead of making use of this knowledge that would allow workers to act, as opposed to being acted upon, workers are told that their knowledge is superfluous.

While workers have qualifications that allow them to develop alternative and environmentally sound forms of production, what is often missing is a consciousness of the ways in which they are connected to nature and to other workers across the globe. How could workers develop the kind of consciousness that the fisher we quoted derives from working experience or the metal worker from a religious worldview? What other kinds of experiences and other kinds of worldviews would enable such insights? It might not be enough to attend a seminar or listen to lectures. Methods of learning are needed which position workers as researchers of their own working context, including their relation to nature and to the global value chain.

The point of departure for such an alternative learning process is that any kind of work today is not only a transformation of nature, but, due to the processes of globalization and digitalization, is based on connection and co-operation between workers across the globe. However, as with the connection of labour and nature, the connection between workers along the value chain is not necessarily obvious in workers' everyday experiences. A method used in history workshops in Europe in the 1980s might be a useful tool to create the consciousness of connections that are already practised. The method went by the name *Dig where you stand*. Sven Lindqvist intended this to be a process through which workers could gain power by researching the history of their factories:

> Until workers understand where they stand ... and how to use the resources/ tools available to dig with … they will be forever in the background of the "official" version of events ... every worker in every country has the power and potential to create a new image for labor, one "that puts workers and their work in the foreground". (Lindqvist, 1980)

From researching the history of their jobs, workers can continue to trace back the materials they use, thereby finding out where these come from, how nature is transformed and how other workers (for example, in poor or dangerous environmental and working conditions) are used in extracting and transporting them. In the same way research could be undertaken on the afterlife of a product: who is recovering the minerals used in a smartphone, for example, and what are the hazards for the workers who do that work? Such research could be accompanied by visits to working places down the value chain, or other kinds of direct or indirect communication between workers who extract and transport materials and those who create the products. The same research process could be developed from the point of extraction to the point of the end-product and its afterlife. This could give workers a sense of their position in a globalizing economy and in relation to their fellow workers worldwide.

In one of our research projects we learned how such connections can make a difference. When workers in India working in a transnational corporation contacted workers in factories of the same corporation in the global North, they were able to compare pay, working conditions and lifestyles; it was the first time that those in the North learned that their company did not pay living wages to their colleagues in the global South. They began a process of questioning their management about the working lives of their colleagues *within their own transnational corporation* across the world (Räthzel, Mulinari and Tollefsen, 2014). Such "education as research from where you stand" could be the basis for developing an insight into the need for a globalized labour movement without North-South hierarchies and into the limits of growth because of its destructive effects on nature *and* workers. It would also further strengthen the abilities of workers (not just their trade union representatives) to develop alternative plans for the transformation of the current modes of production and the specific ways of producing.

Democratizing the global trade union movement

It is clear for everyone who is not in denial of the climate crisis that, while local actions are needed, we are dealing with a global problem that presents itself in different ways, not the least of which in that production in the global North disproportionately affects those in the global South. Our research has shown that this not only engenders different kinds of policy interests in the unions of the global North and South, but also exacerbates the power relations between them (Uzzell and Räthzel, 2013). Suggestions such as border adjustments to protect industries (usually) of the North from products of more polluting industries (usually) of the South do not constitute a solution for the relationship between justice for nature and justice for workers. Instead, it aggravates the already existing unequal ecological

exchange between the North and the South (Oulu, 2016). What this means is that companies of the global North (but now also increasingly of China and India) extract the natural resources of the South to produce material goods, which create wealth for those companies but almost no wealth for the workers and communities in the South itself.

The global networks of corporations are dense and effective, while those of trade unions are reduced to meetings of officials and exchange programmes where, as the unionists we talked to in Brazil, India and South Africa all explained, it is the unions of the North who determine the agendas and the ways in which decisions are taken: "They have the money, they control the meeting, they control the agenda." It was once a slogan of the labour movement that knowledge is power. This can still be the case if knowledge includes a global process of encounters and mutual recognition.

Including the workforce into designing the transformation of production

In the early 1970s the management of Lucas Aerospace, at the time Europe's largest producer of aircraft systems and equipment, of which 50 per cent was for military purposes, decided to restructure the company because the Labour Government had reduced their military budget, and as an answer to international competition. They proposed closing 15 factories resulting in the loss of 18,000 jobs. Instead of just fighting for the protection of their jobs, blue- and white-collar unionists developed the Lucas Plan, a plan which advocated shifting production from military weapons to "socially useful products". The workforce put forward 150 suggestions including heat pumps which were efficient in saving waste heat; solar cells and fuel cells; a road/rail public transportation vehicle which would be lightweight, using pneumatic tyres on rails and electric vehicles; and a combined internal combustion engine/battery-powered car which could give up to 50 per cent fuel savings while reducing toxic emissions (Wainwright and Elliott, 1982; Räthzel, Uzzell and Ellliott, 2010). The management rejected the plan, the TUC did not support the unions and the workers were ultimately made redundant. Forty years later the urgency of profoundly transforming our ways of producing and consuming gives such a process new legitimacy. One example of how such experiences of the past can travel into the present and provide a new perspective for labour and nature in the future is that of the Harland and Wolff shipyard workers in Belfast. In an attempt to save their jobs they have not only called for the nationalization of the shipyard but are also "addressing the substantive issue of production itself, envisaging a future based not on the fantasy of a return to the grand Titanic style liners of the past but on producing the infrastructure and inner working of equipment for generating renewable energy through harnessing the power of the wind and the waves" (Wainwright, 2019).

It is not sufficient that workers' representatives sit at the table and discuss a "just transition" *for* workers. If the unions internationally, nationally and locally involved workers in the development of a transformation to environmentally viable forms of production, they could use their skills and ingenuity and would not have to remain passive, expecting to be protected and fearing for their future. In a similar perspective Ferreras (2019) argues for the democratization of companies to include workers, not only their representatives in corporate governing.

Creating a production model that enables an alliance between nature and labour

Since all production leads not only to the transformation but also to the destruction of natural habitats, the incorporation of nature into any production process needs to include a consideration of how what is taken from nature can be restored. The circular economy, reusing materials when their original usage has finished, is one way of doing this. However, this has its limits. For all other kinds of products, reduction is the way out of the vicious circle into which we are locked. As Jackson (2018) argues: "You know that the most fundamental strategy in the circular economy is not to recycle or to reuse, it is to rethink the product itself and ask the questions: is this product really necessary? Does it contribute to welfare and human wellbeing? Is it a service that we actually want? Is it an effective way of delivering that service?"

We need a production system that leaves the earth at least in the same, if not in better shape than before the production processes. A number of suggestions exist in the public debate: decentralized production systems (Mangoyana and Smith, 2011), consumption of local production, products with a longer life, different forms of mobility based on public transport as John Samuelsen, the head of Transport Workers International, argues (Samuelsen, 2018). All these suggestions lead ultimately to a departure from the growth model.

Departing from the growth model

This is the most central and most challenging proposition. There is the fear of workers and their organizations that if there is no growth, the economy will falter and there will be no jobs. However, as unions argue "there are no jobs on a dead planet" either. How can it be possible to depart from the growth model without creating massive unemployment? There is by now a large amount of literature suggesting that we can "prosper without growth" (Jackson, 2011; Schor, 2010; Czech, 2013; Victor, 2017; D'Alisa, Demaria and Kallis, 2015) . A basic necessity to balance work and environmental

viability is the reduction of working hours in paid employment, which would make it possible to share the remaining work among all workers (Jackson and Victor, 2011; King and van den Bergh, 2017). This is not only necessary in order to reduce production but also to deal with the upcoming replacement of jobs through artificial intelligence. However, as again many researchers have shown, there is no automatic effect of work reduction on the reduction of the ecological footprint. There are also problems with financing such a reduction of working hours that is socially just and does not deprive workers of necessary income. Kasser (2002) has shown that from a certain threshold on, additional material wealth does not make people happier – on the contrary. However, this threshold has to be reached. It has also been argued that a reduction in working hours can lead to an increase in consumption, which would outdo the benefits of producing less materials (Aall et al., 2011).

Departing from the growth model, reducing hours in paid employment in order to share it with all workers, would need to be accompanied by different ways of remuneration. A transformation of ways of life and ways of working is also necessary. While those advocating just transition argue for decent and safe jobs, work is more than this. Work needs to provide intellectual and emotional satisfaction. This comes from it being meaningful, that it enhances people's capabilities and enables them to develop a "producer's pride", a satisfaction with their ways of producing and the kind of products they create (Sennett, 2008; Räthzel, Mulinari and Tollefsen, 2014). As sociologists and psychologists have found in numerous studies, "individuals perceive their relationship to their work in expressive terms of meaning: it provides social inclusion, a sense of usefulness, a sense of independence, a sense of service provided, or a sense of mastery; that is, satisfaction with tasks performed combined with some form of autonomy" (Ferreras, 2019, p. 6).

For many workers, their identities are intimately tied to their work and professions. Threatening particular industrial sectors (e.g. coalmining) with carbon-reducing legislation will threaten jobs which in turn may threaten identities (Uzzell, 2010). If identities are based on acquiring a source of pride in doing a particular job that is related to an individual's position in the society and social world in which they live (e.g. a truck driver, a steel worker), alternative values that generate pride such as caring for the environment and one's local community and one's family are also part of workers' identities and could form the basis of an interest in alternative jobs. Satisfactory work that supports people's identities as producers can also be found in areas that are not "productive" in the manufacturing sense: social work, care and education, refurbishment of housing, creative work that can be opened up for many more people than we find there now. These are not just work issues but societal issues. Trade unions promoting these kinds of issues would define themselves as social movements, developing the interests of their members not only as workers, but as citizens as well.

In addition, there would be space to develop other forms of satisfaction outside work: social relations, sharing goods and time, caring for people in need. Fewer hours of paid employment could help to realize gender equality, since both parents would have more time to care for children and the elderly. It would also enable people to develop their full capacities, engage in the improvement of society and, not least, create a balanced relation to nature and to the earth system and enjoy leisure activities that do not increase CO^2 emissions (Druckman, 2019).

None of this will happen automatically. A reduction of paid employment would need to be accompanied not only by a form of guaranteed basic income, but also by free access to quality public services including health, education, and care for the elderly.

The question that will immediately be asked here is: who will pay for this? This is a central question and would need an in-depth analysis once the need for a profound transformation is acknowledged. "Taxing the rich" is always a popular answer but one would have to go further than this. A different concept of consumption is also necessary (Soper, 2007). A departure from the growth model requires a different relation to nature, a change from seeing nature as an object to conquer, to seeing it as an ally. Unionists value solidarity with fellow unionists; solidarity with nature is equally necessary. There is a need to reconsider prosperity in terms of social relations as opposed to material wealth.

Some of these changes are already happening, although at the margins of our "Northern" societies. There is the sharing economy, the development of worker-owned cooperatives which work not for profit but to produce socially useful goods and a good working environment. In countries of the global South, the notion of "*buen vivir*", the good life, centred on inclusion into a broader community, which comprises nature, has been gaining importance beyond the indigenous communities which have developed it (Villalba-Eguiluz and Etxano, 2017).

Indigenous communities in Latin America and elsewhere are a source of knowledge from which unionists can learn the necessity to think of humans in nature and nature in humans – that is, to develop a comprehensive worldview of the labour–human –nature relationship. Other sources are Marx (1875), who once criticized the German Social Democratic programme which claimed that labour is the source of all wealth, by insisting: "Labour is not the source of all wealth. Nature is just as much the source of use values ... as labour, which itself is only the manifestation of a force of nature, human labour power.' Today, one of the most prolific researchers who is re-writing the history of our present economic system in the light of an approach that integrates society and nature is Jason Moore (see Patel and Moore, 2018).

None of the marginal movements of transformation are without its contradictions and problems. For instance, some initiatives that started as a

"sharing economy" like Airbnb and Uber have become parts of a predatory economy (Schor and Attwood-Charles, 2017). Any alternative, developing in our real world of conflict, power and exploitation, is bound to carry the character of these conflicts as well. However, they are pathways to alternatives – alternatives that the labour movement has largely ignored. In order to be able to build a different future that ends the exploitation of the earth and the worker, labour movements need to ally with and learn from the fisher in Kerala that we are part of the environment, from the metal worker in Brazil that the defence of all creation is needed, from the engineer in India that technological efficiency needs to be used to "save your resources without compromising your comfort". In short, labour movements, peasant movements, indigenous movements and blue- and white-collar workers have to come together to prevent that the climate crisis ends in catastrophe.

This might seem utopian, and it might go against the grain of the "nitty-gritty" everyday work of trade unionists trying to prevent job losses and to protect workers. But if we look back at the effects of hard union work across the globe since the development of neoliberal politics – what has been really achieved by policies which have sought only to defend once gained rights and regulations instead of creating a new agenda for new times? The gap between rich and poor has widened worldwide. In the OECD countries, in spite of a (slowly) growing economy, wages have been going down; informal work, outsourcing, (involuntary) part-time work, badly paid work in service sectors have all been increasing; trade union membership and thus their organizational capacity has been shrinking; and growth is declining anyway. Bertolt Brecht coined the phrase, "transformations take place in dead-ends".

The world is in a dead-end in terms of our natural life-support system, in terms of the decreasing power of labour movements around the world, in terms of the rising number of ruling "strong men" who care neither for workers nor for the earth, in terms of the ever-shrinking credibility of democratic, progressive organizations, including trade unions. Should this not be the time in which unions fundamentally rethink the way in which we need to work, consume and organize our relations to nature and to our co-humans? Trade unions' support of the global climate strike in September 2019 creates a hope that new initiatives will develop from unions. Workers have changed the world before; rising to do this again can produce the much-needed transformative power that no other social movement can create.

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