

Considerations for a just and equitable energy transition



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As the energy transition accelerates, it is our responsibility, it is our opportunity, to ensure that in addition to contributing to a healthy planet by replacing fossil fuels with clean energy sources, this is accomplished in a just and equitable manner providing prosperity for all.

BACKGROUND PAPER

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Key messages

- The energy transition is happening. For it to be sustainable, we must ensure it happens in a just and equitable manner.
- Renewable energy technologies are not inherently just or unjust. In addition to the implications of moving away from fossil fuels, the equity and justice implications of moving to clean energy systems must also be considered.
- A just transition demands that the benefits and costs of the transition are distributed in a just and equitable manner, reducing inequalities rather than exacerbating them.
- A just transition entails respecting human rights throughout the energy supply chain. Companies, governments, investors and civil society all have a role to play.
- Alternative livelihoods must be enabled for peoples and communities adversely affected by energy-related projects, including from all energy sources and technologies.



1. Introduction: why a just energy transition?

On 2–3 June 2022, representatives from around the world will convene in Stockholm under the theme ‘Stockholm+50: a healthy planet for the prosperity of all – our responsibility, our opportunity’ to commemorate the 50 years since the 1972 United Nations Conference on the Human Environment (UNGA, 2021). The 1972 Stockholm conference was a seminal event in the international response to environmental problems. It led, among other developments, to the creation of the UN Environment Programme and, in a fairly linear succession to the concept of sustainable development (World Commission on Environment and Development, 1987), the current 2030 Agenda for Sustainable Development (UNGA, 2015b), the 2015 Paris Agreement on climate change (UN, 2015) and the 2015 Addis Ababa Action Agenda for sustainable finance (UNGA, 2015a).

Many things have changed in the half century since 1972. As we prepare for Stockholm+50, a key question to ask is: ‘What is different now?’ Or more explicitly, ‘What is different now compared with Stockholm 1972, Rio 1992, Johannesburg 2002 and, more recently, Rio 2012, Addis Ababa 2015 and Paris 2015?’ While there may be many answers, one fits neatly for our time: we are now in the midst of an energy transition, which was not the case even as recently as 2015.

The energy transition combines different dimensions, such as digitization, electrification and decarbonization. Trends towards digitization and electrification have long been observable and are accelerating, but it is only very recently that renewable energy sources have become the least-cost alternative for electricity generation in most parts of the world, particularly solar and wind (International Renewable Energy Agency [IRENA], 2020a). In the words of the International Energy Agency (IEA), solar power is now ‘consistently cheaper than new coal or gas-fired power plants in most countries, and solar projects now offer some of the lowest-cost electricity ever seen’ (IEA 2020, p. 18). Renewable energy dominates the global market for new electricity generation capacity and, since 2015, more renewable energy power capacity has been added annually than fossil fuels and nuclear combined (see Figure 1) (IRENA, 2021). The precipitous fall in renewable energy costs enables the transition towards deep electrification scenarios where electricity becomes the dominant energy carrier (Binsted, 2022; Blondeel et al., 2021; IEA, 2021a).



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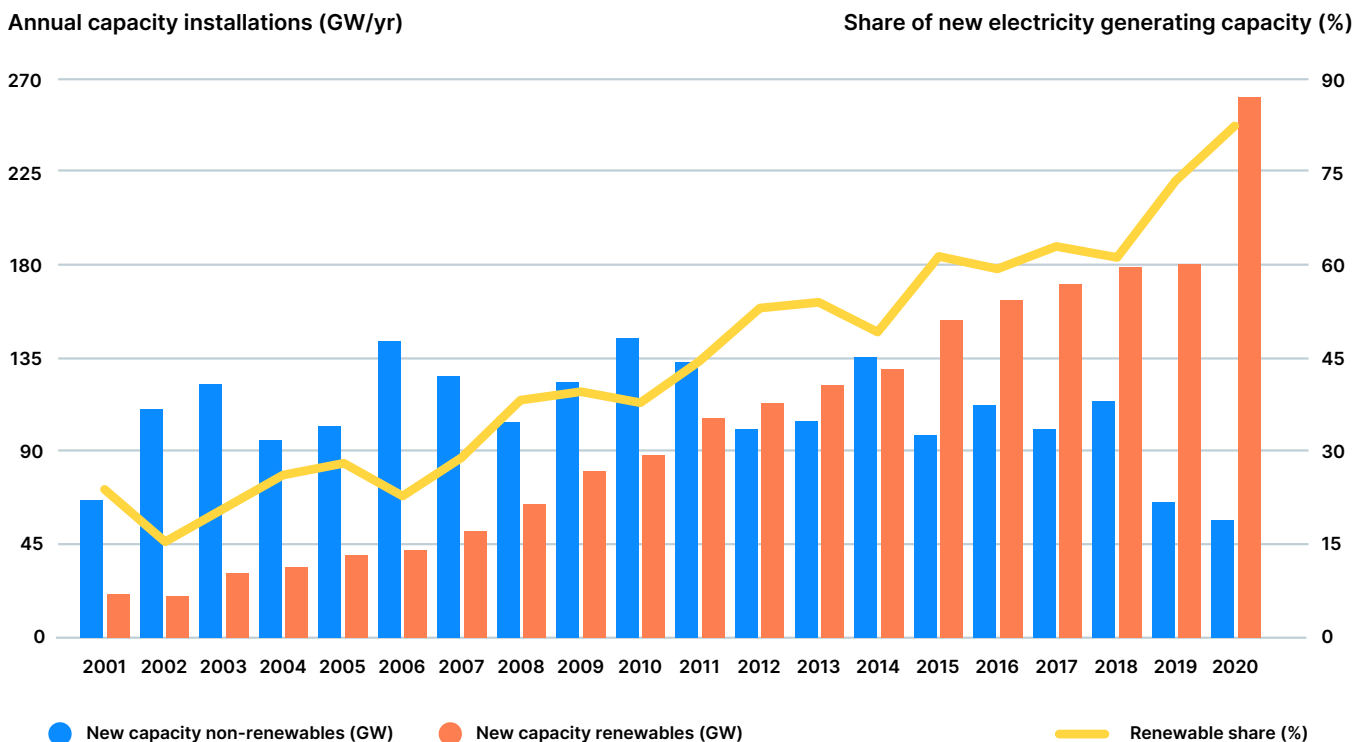


Figure 1: Annual capacity installations: non-renewables and renewables. Source: IRENA (2021)

It is difficult to overstate the climate benefits of the energy transition insofar as renewable energy sources replace fossil fuels. After all, fossil fuels are responsible for the majority of yearly and cumulative anthropogenic greenhouse gas emissions (Intergovernmental Panel on Climate Change, 2014). On the climate change count alone, the energy transition is likely to result in a net global environmental positive. Renewable energy sources also have other positive environmental and health impacts, including from reduced air pollution (Intergovernmental Panel on Climate Change, 2011) alongside socio-economic benefits such as job creation and improved energy access and energy security (IRENA, 2021). Renewables, however, are not free of negative impacts (see, for example, Villavicencio Calzadilla & Mauger, 2018).

The energy transition is happening and, given plummeting renewable energy costs (IRENA, 2020a), accelerating. Despite some negative impacts, the transition will have, from an environmental perspective, an overall net positive effect. But will this energy transition be sustainable? It should be recalled that poverty eradication in all its forms and dimensions is a prerequisite to achieving sustainable development (UN, 1992b, Principle 5; 2012, para. 2), and that developmental and environmental needs should be met 'equitably' (UN, 1992b, Principle 3), through inclusive and equitable economic growth (UN, 2012, para. 4). Other prerequisites include achieving social and economic sustainability, and adherence to the principles and goals articulated and regularly reaffirmed in Agenda 2030 and its many predecessors, all the way to the Rio Declaration, Agenda 21 and the Brundtland Report (UN, 1992a, 1992b; UNGA, 2015b; World Commission on Environment and Development, 1987). While the list of goals and principles is long, the take is clear. We contend that for the energy transition to be sustainable, it needs to be a just and



equitable transition. Our understanding of ‘just and equitable’ is articulated in Section 2 of this note. It should be emphasized that urgency versus justice is not a dichotomy – demands for urgent collective action to address climate change and other environmental emergencies must not overrule justice and equity. Techno-economic aspects are not the only drivers of the energy transition, and a just transition is likely to be faster and result in larger welfare than an unjust one (Muttitt & Kartha, 2020; Trades Union Congress, 2008). After all, the energy transition should be understood as a process towards a more sustainable world, not as an end in itself.

As the energy transition accelerates, it is our responsibility, it is our opportunity, to ensure that, in addition to contributing to a clean and healthy planet by replacing fossil fuels with clean energy sources, this is accomplished in a just and equitable manner providing prosperity for all.

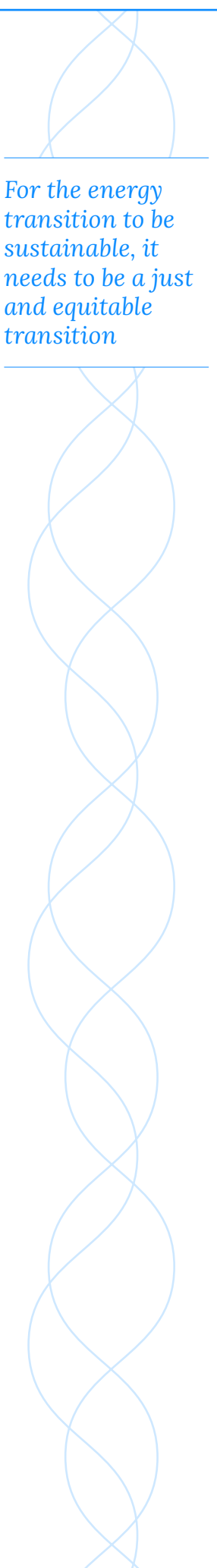
Much of the energy transition community’s attention on equity and justice issues has been devoted to the impacts on those dependent on fossil fuels, from countries to regions, communities and workers. While those are key issues that need to be addressed, in this note we seek to bring attention to the green side of the transition, exploring some key justice and equity considerations relating to clean energy that also need to be addressed, now and in the future. The rest of this note is articulated as follows. The next section delves into current definitions and common understandings around energy justice. This is followed by sections exploring the implications of a just and equitable energy transition for human rights, livelihoods and the equitable sharing of costs and benefits. The last section provides our main conclusions for moving forward.

2. What is a just and equitable energy transition?

While there may be many definitions and different conceptual approaches, we understand a just and equitable energy transition to be from the current fossil fuel-dominated energy system to one dominated by renewable energy sources, where both the process and the end state effectively address justice and equity concerns. These concerns may include multiple dimensions across time, space and through the energy sector lifecycle. While we argue that the energy transition must be just and equitable from a principled approach, there are also pragmatic considerations. Renewable energy projects, and those related to clean energy supply chains, depend on the support of the public, whose perspectives of justice and fairness can delay or halt their development, as seen in cases from across the industry in both the developed and developing world (European Western Balkans, 2021; Segreto et al., 2020; Stigka et al., 2014).

Existing literature suggests at least five broad forms of justice that should be acknowledged and addressed in a systematic and complementary way as part of a just energy transition (Heffron, 2020; Heffron & McCauley, 2018; Jenkins et al., 2016).

- **Distributional justice.** Deals with the unjust distribution of costs and benefits from the energy transition; for example, revenue management, social and environmental impacts, issues around taxation, and transparency.



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- **Procedural justice.** Encompasses the idea of due process, good governance and the rule of law at different levels with regard to energy projects, energy systems and their transition.
- **Recognition justice.** Focuses on the protection and recognition of rights and identities of different groups in society, especially vulnerable and historically marginalized groups (UN, n.d.), such as Indigenous communities. It also includes emerging notions and recognition of the rights of nature and non-anthropocentric entities (Borràs, 2016; Higgins et al., 2013; Minkova, 2021).
- **Restorative justice.** Stresses the need to support victims of damaging activities and restore them to their original position. In the context of the energy transition, it includes restoration from past and present damages associated with fossil fuels and other energy forms, and restorative mechanisms as a key pillar of new energy projects and systems. Specific aspects include responsible decommissioning and livelihood restoration plans (Hazrati & Heffron, 2021).
- **Cosmopolitan justice.** Focuses on the cross-border effect of some injustices that are caused or accentuated by decision-making in other parts of the world but have impacts beyond that location.

When talking about justice and equity, it is important to acknowledge that these are culturally relative human constructs. In some circles, the notion of ‘just transition’ is decried as yet another cultural imposition from the West. Framing assumptions are key as well – the distributional concerns of the energy transition are very different when framed by those who have and those who have not or are historically exploited (Jasanoff, 2018). Different framings may lead to additional conceptions of justice in the energy transition, such as cognition justice and transactional colonialism (Ramirez & Böhm, 2021).

3. Energy transition and human rights

At its simplest, justice in the energy transition means applying human rights throughout the energy supply chain (Heffron & McCauley, 2014). Procedural justice involves the right to a fair process. This is not limited to a call for inclusion in decision-making in informal and formal ways; it also calls for involvement in delivering more equitable outcomes (McCauley et al., 2019). Similarly, the recognition of rights, identities and needs that may or may not be affected by energy decisions is essential to allow a fair allocation of benefits, restoration for damages and the enforcement of particular laws (Droubi & Heffron, 2020; Lacey-Barnacle et al., 2020; Pandey & Sharma, 2020).

Applying human rights considerations across the full energy supply chain includes, but is not limited to: fossil fuel exploration, extraction, processing, transport and use; renewable energy plant construction and operation; bioenergy production and harvesting; supply chain extractives (e.g., critical minerals); electricity transmission; equipment manufacturing; and waste management and decommissioning.

The respect for human rights (or lack thereof) by extractive energy enterprises has a long and well-documented history, particularly for fossil fuels, hydropower and biomass (Cernea, 2004; Feichtner et al., 2019; Overbeek et al., 2012; Signorelli & Horvath, 2019). Figure 2 illustrates the prevalence of human rights and energy conflicts, with over 1535 cases documented across all energy technologies





(Environmental Justice Atlas, n.d.). While modern renewables are not as scrutinized as fossil fuels on their human rights record, still there is much work to do on that front. For example, over 200 allegations of human rights violations by renewable energy projects in the past 10 years have been recorded, almost half related to wind and solar (Business & Human Rights Resource Centre, 2021).

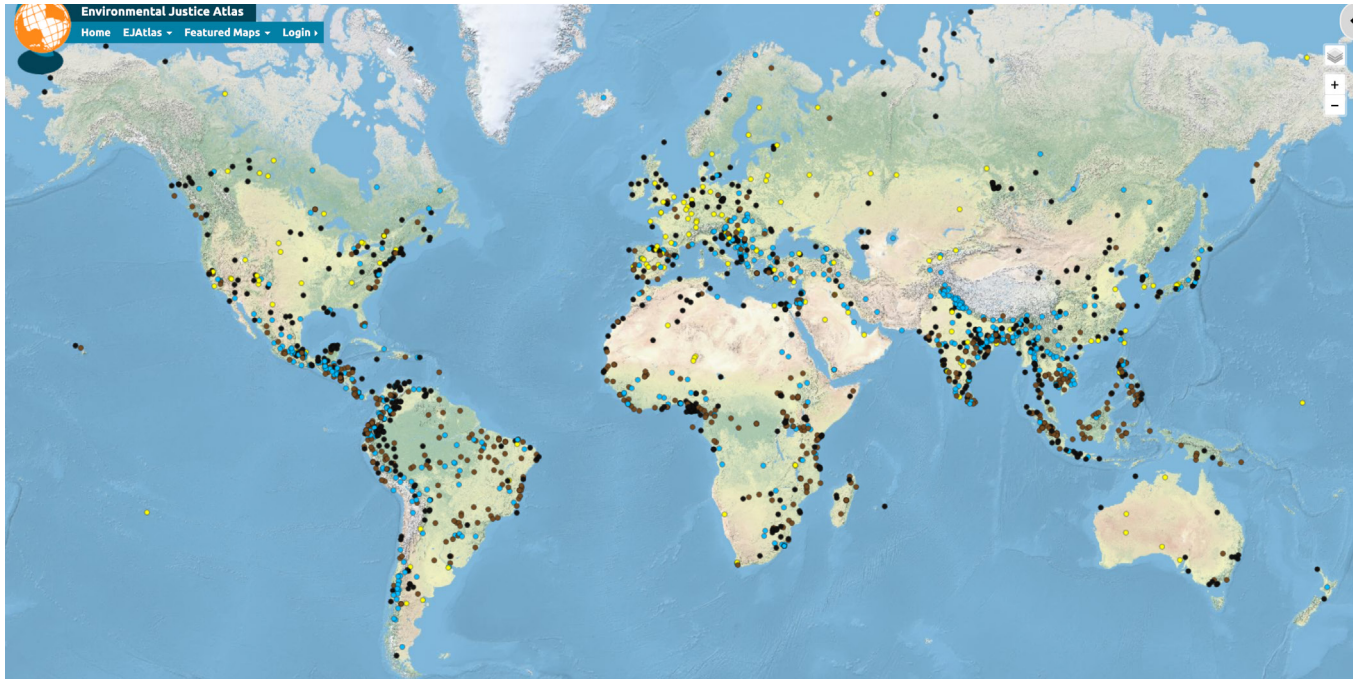


Figure 2: Documented human rights and energy conflicts around the globe.
Source: Environmental Justice Atlas (n.d.)

Additionally, the energy transition is likely to require a large supply of minerals, such as cobalt, copper, lithium and nickel, and rare earths, the extraction of which has well-documented cases of human rights violations and adverse health impacts (Figure 3) (Amnesty International, 2015; Brusselen et al., 2020; Business & Human Rights Resource Centre, 2017; Heffron, 2020). The IEA estimates that under a net zero scenario, the 2040 market for critical minerals will approach that of coal today, at above USD 400 billion annually (IEA, 2021a), and critical mineral trade is expected to have major geopolitical implications (Blondeel et al., 2021; Bordoff & O'Sullivan, 2021).

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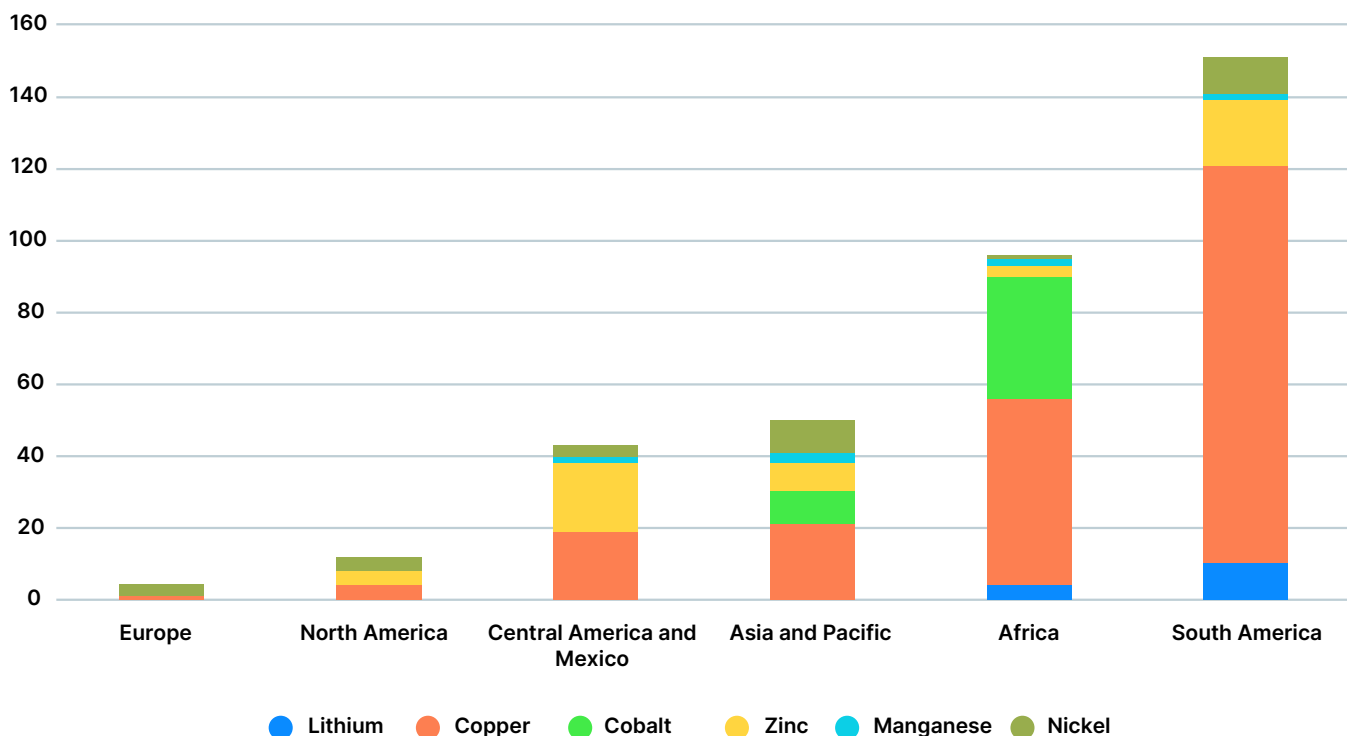


Figure 3. Human rights allegations related to critical minerals per region. Source: Transition Minerals Tracker (n.d.)

There are many ways to articulate the linkages between human rights and clean energy. For example, the Business & Human Rights Resource Centre (2019) defines 11 indicators to assess renewable energy companies' human rights performance (see Box 1). Other classifications are also relevant, such as those for human rights and the environment, or climate change (Knox, 2018; Mary Robinson Foundation, n.d.).

Box 1. The Renewable Energy & Human Rights Benchmark.

The Renewable Energy & Human Rights Benchmark is based on the three core themes of the UN Guiding Principles on Business and Human Rights (UNGPs) (UN, 2011) and includes eight more sector-specific elements based on international standards such as the International Labour Organization (ILO) Core Conventions, OECD Guidelines and UN declarations to cover high-risk areas for renewable energy companies (Business & Human Rights Resource Centre, 2019). The indicators are:

1. Governance and Policy Commitments*
2. Embedding Respect and Human Rights Due Diligence*
3. Remedies and Grievance Mechanisms*
4. Indigenous Peoples' and Affected Communities' Rights
5. Land Rights
6. Security and High-Risk Contexts
7. Human Rights and Environmental Defenders
8. Labour, Health and Safety
9. Right to a Healthy and Clean Environment
10. Transparency and Anti-Corruption
11. Equality and Inclusion

*Core UNGP themes.



Although modest progress has been recorded, substantial improvements are required in areas such as Indigenous rights, land rights, land tenure, community rights and respect for human rights defenders (Business & Human Rights Resource Centre, 2021). It has been reported that most renewable energy companies lack basic human rights policies and processes (Signorelli & Horvath, 2019). If the transition to a renewable-energy-based system is to be just and equitable, it is necessary that companies adopt and apply widely recognized human rights standards throughout the energy life cycle. Investors also have a key role to play in using their influence to ensure companies they invest in have public commitments to human rights and implement them, as well as ensuring that companies meaningfully engage with local communities and workers. Besides the principled need, companies may be swayed by the operational, legal, economic and reputational risks of failing to do so (Batel et al., 2013). Governments and clean energy advocates also have a role to play in respectively regulating and holding accountable those companies and investors on their human rights practices.

Energy and human rights issues are complex and often interlinked. For example, Indigenous peoples are often affected by discrimination, inequality and invisibility (Indigenous Peoples Major Group, 2019), and can be doubly affected by the dynamics of the energy transition, such as the expansion of mining frontiers, land demands for renewable energy projects and lack of recognition for their own forms of development. A just transition would see companies, investors and governments respecting and ensuring Indigenous peoples' rights through, for example, Free, Prior and Informed Consent (FPIC) as enshrined by the 1989 Indigenous and Tribal Peoples Convention (ILO, 1989). FPIC obliges signatory states to consult Indigenous and tribal peoples on any legislative or administrative decision that can directly affect their livelihood. It calls for the protection and respect of Indigenous values and practices, including the self-determination to say no to any project, even clean energy ones. The convention aims to enhance recognition justice while safeguarding a compendium of human rights (ILO, 2013). For FPIC to be effective, it must go beyond providing recognition justice to ensuring that all those involved in or impacted by energy projects, independently of their social background, have adequate opportunities for effective and meaningful participation in the early stages of decision-making. That may require, among other considerations, local capacity building as part of the process (Lucas et al., 2017).

4. Livelihoods for people and communities during the energy transition

As the energy transition gathers pace and fossil fuels begin to wind down, it is imperative, from the point of view of a just transition, that alternative livelihoods emerge for those peoples and communities adversely affected by energy-related projects, including renewable energy, fossil fuels and their supply chains, as well as for those currently dependent on fossil fuels. We define communities in the broad sense, from local to regions to entire countries, although for this note we refer mostly to local communities.

Renewable energy projects have the potential to create large benefits for local communities. Many types of compensation for communities have been identified (Lucas et al., 2017; van Wijk et al., 2021, Table 1). The discussion about benefits is expanding to 'community benefit packages', which appear to be key for public acceptability (Barrera-Hernández et al., 2016). The further expansion of benefit-sharing schemes means larger amounts of funds going to often relatively dispersed and lightly populated rural zones. This highlights the importance for communities of



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developing community action plans where key priorities for investment are identified, are updated on a regular basis and are aligned with sustainable practices. Benefit-sharing generally increases social acceptance, although many of the wider socio-political and institutional conditions that affect acceptance cannot be changed through intervention (van Wijk et al., 2021).

Local taxation is the most direct method for benefit-sharing. For example, in the US it is estimated that wind power taxation generated USD 1.6 billion in revenues in 2019 to states and local jurisdictions. These revenues have resulted in new or improved school infrastructure for many local school districts (Brunner et al., 2021). Local taxation, however, is largely contingent on the regulatory framework of each jurisdiction, and often is severely constrained or not possible. Moreover, in many local jurisdictions, particularly when discrimination and vulnerable populations are present, there may be a disconnect between those affected by the energy infrastructure and those deciding how local revenue is allocated (Lucas et al., 2017). Sharing of proceeds can take other forms, such as mandated social investments in local communities, or crediting local residential electricity customers where the projects are based (New York State Public Service Commission, 2021).

Communities can also benefit through alternatives to privately owned renewables (Muzondo et al., 2021), such as community ownership, which brings more capital into local economies and can strengthen communities in terms of empowerment, skills development and local regeneration (Van Der Waal, 2020). Studies have shown that community-driven renewable energy projects reduce usual community concerns by working to improve the distribution of costs and benefits. However, while community-driven renewable energy projects are found in wealthier nations, documented evidence of their use in developing countries is limited (Lucas et al., 2017, p. 21).

The role of government is key in ensuring that local communities can reap the benefits of the energy transition, including by establishing appropriate institutional and regulatory frameworks, and policies to promote community benefits. An example can be found in Scotland, where the government has issued good practice guidelines for community benefits, encourages online registration of the agreements reached and offers free advice and support at any stage of the negotiation with developers (Local Energy Scotland, 2021a, 2021b; Scottish Government, 2019).

Another way to ensure that local communities hosting clean energy projects benefit is through 'secure, safe and well-paid jobs with training and career progression opportunities' (Australian Council of Trade Unions [ACTU], 2020). Job creation, however, transcends the local context, as it is expected that the energy transition will create many additional jobs, and thus livelihoods, beyond the locations where projects are located. For example, the International Renewable Energy Agency (IRENA) estimates that there were 11 million renewable energy jobs worldwide in 2019, with a potential for 24 million jobs in 2030 (IRENA, 2020b). Even accounting for jobs lost in the fossil fuel sector, the ILO estimates that limiting global warming to 2°C would create 18 million net jobs in the energy sector (ILO, 2019b), and the IEA estimates that a net zero scenario would generate 9 million net jobs by 2030 (IEA, 2021a). Skills and training are key to enabling those jobs and enabling the transition itself (Inter-American Development Bank & ILO, 2020; ILO, 2019a). From an equitable transition perspective, it is important to ensure that new jobs are quality jobs, for example at an equivalent or better wage than those displaced in the fossil fuel sector (Larson et al., 2020), and to avoid gender and racial wage gaps, such as those already being observed in the US clean energy workforce (Said et al., 2021). Protecting workers' pensions is an important equity consideration as companies make it (or not) through





the energy transition (Pai et al., 2020). The needs of energy workers in the informal sector must be addressed as well (Bhushan et al., 2020).

While the benefits to communities can be significant, there may also be significant livelihood impacts, particularly for communities affected by large-scale energy and supply chain projects (see Box 2). Restrictions on land use due to project activities can lead to involuntary resettlement, by physical displacement (relocation or loss of shelter) and/or economic displacement (loss of income sources or means of livelihood), as recognized by international frameworks such as the IFC Environmental and Social Performance Standards (International Finance Corporation [IFC], n.d.). This underlines the importance of further integrating restorative justice into the just transition agenda.

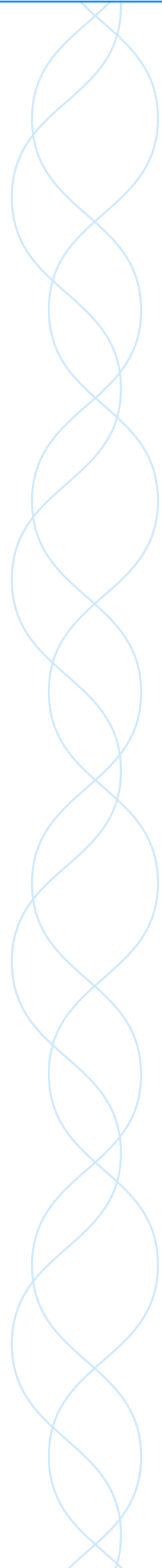
The IFC standards highlight the need to put in place strategies such as Resettlement Action Plans or Livelihood Restoration Plans during the early project phases, including impact assessments in the initial stages of public consultation. Under IFC Standard No. 5 (IFC, 2012), these plans are considered completed when the impacts of the resettlement have been addressed and adequate opportunities to re-establish livelihoods are given. This involves carrying out a socio-economic census to identify those who will suffer displacement and therefore who are eligible for assistance. Ensuring livelihoods affected by energy decisions are restored requires, among other things, an appropriate disclosure of information and informed participation of those affected, which reflects the connection between recognition and procedural forms of justice.

Box 2. Case studies: Indigenous peoples, justice and equity concerns around wind power development in La Guajira, Colombia, and Sápmi, Scandinavia.

The development of renewable energy projects often encroaches on Indigenous peoples' rights and territories, in both developed and developing countries. This is illustrated in this box with examples from wind power development in Colombia and Scandinavia.

Colombia

La Guajira region, in Colombia, has untapped world-class wind resources and is slated to host about 70% of the new renewable energy capacity installed in Colombia, alongside new transmission infrastructure (Mining and Energy Planning Unit [UPME], 2022). At least 16 wind parks are already approved, located in Wayuu Indigenous peoples' territory.



Box 2. Continued...

The development of wind energy projects in La Guajira, however, is a complex process as the Wayuu Indigenous peoples suffer from long-standing marginalization and poor socio-economic performance, and coal mining operations in La Guajira have a long story of human rights violations (Avilés, 2019). Wind energy projects are facing strong resistance, including protests and blockades, causing delays and financial risks (Mejía, 2022; La República, 2021). Flaws in the consultation processes have been reported for most projects (González Posso & Barney, 2019), and the Attorney General has issued orders to energy and environmental authorities for the protection of Indigenous peoples' rights (Procuraduría General de la Nación, 2020). Concerns have been reported around the legitimate representation of communities during consultation processes, limited benefit-sharing, undue pressure put on communities by both companies and community advisors, and territorial fragmentation, among others (González Posso & Barney, 2019; Vega-Araújo & Heffron, [in press]).

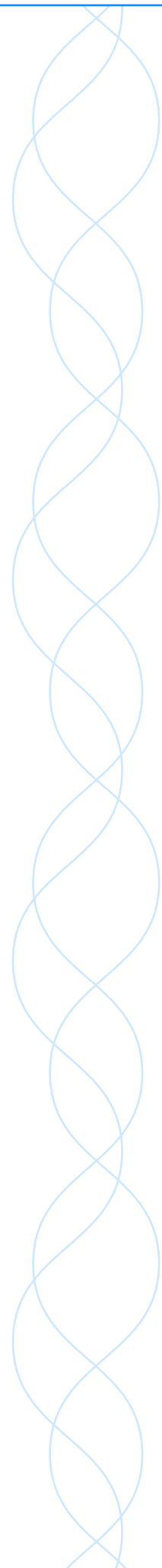
Moreover, La Guajira's economy is reliant on coal mining, which is showing signs of structural decline (Yanguas Parra et al., 2021). This leaves the region with the double challenge of ensuring justice, fairness and the respect of human and Indigenous peoples' rights both in the transition away from fossil fuels and in developing the region's renewable energy future.

Scandinavia

The Sámi Indigenous peoples inhabit the Sápmi region in Scandinavia (also known as Lapland), which spans areas of Norway, Sweden, Finland and Russia. Reindeer herding is an important form of livelihood for the Sámi.

As Nordic countries seek to develop wind power resources in their northern confines, this often creates direct conflict with the rights of the Sámi Indigenous peoples. Human rights issues related to wind power development have been reported in Sweden (Cambou, 2020) and Norway (Kaaupke, 2018). A key consideration is the impact of wind farms on reindeer herding, during construction and operation, with impacts including changes in reindeer behaviour around windfarms and landscape fragmentation (Österlin & Raitio, 2020; Tsegaye et al., 2017). Other reported problems include recognition, procedural and spatial planning issues (Cambou, 2020; Lundberg & Richardson, 2021).

In October 2021 Norway's supreme court ruled that two large wind farms in Fosen had violated the Sámi's cultural rights set by international conventions and that the operating permits were invalid (Haetta, 2021). The windfarms, however, are (at the time of writing) still in operation and the decision did not spell out what should happen to them and associated infrastructure (Fouche & Solsvik, 2021).





5. Equitable distribution of benefits and costs of the energy transition

Beyond local communities, the energy transition is already creating benefits, and these are projected to grow as the transition gathers pace. For example, it has been estimated that replacing uncompetitive coal worldwide with clean energy could generate net savings of USD 73 billion in 2022, rising to USD 136 billion by 2025 (Bodnar et al., 2020). Another estimate calculates that building widespread distributed energy systems in the US could save USD 473 billion in system-wide costs (Vibrant Clean Energy, 2020; for critique of the methodology see Fowlie, 2021).

While those numbers are big, they pale in comparison with the investment needs of the energy transition. The IEA estimates that under a net zero scenario, by 2030 annual investment in renewables will be about USD 1.6 trillion, and about USD 880 billion for clean energy infrastructure (IEA, 2021a). IRENA estimates energy transition investment to be USD 131 trillion between 2020 and 2050, with sharp adjustments in capital flows and a reorientation of investments (IRENA, 2021). All those capital investments, many enabled with public resources, are likely to generate significant returns and other economic and social benefits. Any just and equitable energy transition strategy needs to have a plan for ensuring that the future benefits of the energy transition are distributed in a just and equitable manner, reducing inequalities rather than exacerbating them.

The shift to clean energy is likely to have a net benefit for the world economy overall (Mercure et al., 2021), but it will nonetheless generate costs. In addition to the community impacts already explored in this note, a key question, from a justice and equity perspective, is how will legacy energy costs and losses be allocated? On one hand, there are large fossil fuel stranded asset costs. Bodnar et al. (2020) estimated that by 2025 over three-quarters of global coal power plants will be uncompetitive with newly installed renewable energy capacity. The IEA estimates that under a net zero scenario most liquefied natural gas (LNG) projects currently under construction will not recover their capital investment, with stranded assets of about USD 75 billion (IEA, 2021b). The Rocky Mountain Institute estimates that, in the US alone, customers will be on the hook for USD 20–25 billion yearly to pay for utility stranded assets that will need to retire early to maintain the US nationally determined contribution target (Varadarajan et al., 2021). Other estimates calculate that, worldwide, between USD 1 and 4 trillion of assets linked to fossil fuels could be written off, with up to USD 30 trillion in fixed assets at risk of devaluation (Blondeel et al., 2021). While those costs do not belong to the ‘green side’ of the transition, they are inextricably linked and, given their magnitude, are likely to affect the fairness and equity of distribution of clean energy benefits. In the case of stranded assets, an additional consideration is regional equity, with developing countries, which have on average newer coal power plant fleets, taking the brunt of the loss.

On the other hand, there are the legacy costs of energy projects, often in the form of decommissioning and abandoned infrastructure. Energy and extractive companies have a long track record of abandoning infrastructure when it is no longer profitable, leaving the decommissioning and clean-up costs to be borne by local communities and the public sector. Global oil and gas decommissioning costs are expected to average USD 12 billion for 2019–2021 (Rystad Energy, 2019). Governments often spend significant resources decommissioning unproductive but still polluting ‘orphan’ oil and gas wells that have been abandoned by their former owners, effectively shifting liability from the private to the public sector. For example, the US Senate 2021 infrastructure package includes USD 4.7 billion for ‘orphan wells’ (US Congress, 2021). This problem is not exclusive to fossil fuels and can be expected to become significant once the large solar and wind power capacity installed today and during transition reaches the end of its lifetime. The same applies for



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critical mineral mines. As we are in the early stages of the transition, strong and effective end-of-life policies are needed so that clean energy infrastructure avoids repeating the mistakes of the fossil fuel era.

The energy transition creates a new area of wealth generation, related to digitization. Some energy transition technologies involve vast quantities of data (from prosumers to smart homes to electric vehicles). Whoever controls those technologies may be able to mine data from them (Bordoff & O'Sullivan, 2021) and create previously non-existent business opportunities and revenue flows. While digitization may unlock many benefits, it could also widen existing inequalities within and among countries and lead to a further concentration of power and wealth (UN Department of Economic and Social Affairs [UN DESA], 2021). A just transition needs to ensure universal access to digital services (and energy!), including through institutional capacities and regulations (UN DESA, 2021). It also needs to address privacy rights and cyber-security threats (Blondeel et al., 2021). With the advance of digitization, the issues of fairness and equity in the current intellectual property rights system may emerge in new and unexpected forms.

6. Conclusions

Stockholm+50 will provide an opportunity for nations and stakeholders to collaborate, share expertise and address complex issues in the quest for a healthy planet for the prosperity of all. The transition away from a fossil fuel-based energy system is a prerequisite to achieving a healthy planet. A just energy transition is imperative for the prosperity of all. As countries and the international community consider how to best ensure that a just and equitable transition is achieved alongside implementation of the sustainable development goals, we would like to offer three considerations.

First, while much attention has been paid to the equity dimensions of those impacted by fossil fuels, and those dependent on fossil fuels, it is time that full and equal consideration is given to the equity dimensions of the 'green' side of the energy transition. While renewable energy is vastly superior to fossil fuels from an environmental perspective, it is not free of its own impacts, and those cannot be overlooked in the name of the greater good. At the same time, the adverse social and environmental impacts of clean energy should not be used as an excuse to delay the transition and perpetuate even more impactful fossil fuel systems. Oppositional activism to renewable energy developments, often based on justice and equity concerns, is increasing and represents a real threat to climate targets and low-carbon ambitions (Sovacool et al., 2022). It is therefore important to address acceptance issues from an early stage, using different methodological approaches that fully capture the subjectivity of justice in a variety of contexts, including more input from regionally and culturally diverse non-academic communities and activists (Höffken et al., 2021).

Second, international cooperation is key to achieving a just transition, particularly for fossil fuel-dependent countries and communities with limited financial and institutional capacity facing significant sustainable development challenges (Muttitt & Kartha, 2020; Stockholm Environment Institute et al., 2020). The costs of a just transition should be borne by those most able to bear it, while poorer countries can reasonably demand financial support (Muttitt & Kartha, 2020). Many hopes have been pinned on climate finance, but unfortunately the track record is less than stellar: richer nations have not upheld their USD 100 billion per year climate pledge (Timperley, 2021), despite the fact that this pledge was supposed to be just a starting point. COP26 in Glasgow saw innovative approaches, such as the pledge to mobilize USD 8.5 billion for a just energy transition in South Africa (Governments of South Africa et al., 2021), which have raised hope for similar approaches





for other fossil fuel-producing countries. New tools have been suggested, such as the creation of a new global green development bank devoted solely to financing low-carbon, resilient economic development trajectories (Gallagher, 2022). In the end, it does not matter so much what shape international cooperation takes, so long as it actually happens and, crucially, that it happens at the scale and with the urgency that is needed to provide a meaningful response to the challenges at hand.

Third, human rights considerations related to renewable energy upscaling deserve more scrutiny, as do continued fossil fuel activities during the transition. Active engagement is needed at multiple levels including national and subnational governments, the private sector and civil society. Governments must regulate appropriately; communities must be organized; investors and developers must be cognizant of the impacts of their work while ensuring that their activities are respectful of human rights. Comprehensive human rights impact assessments (and their implementation) are needed, with careful vigilance and complementary action from governments following the state duty to 'protect against human rights abuse within their territory and/or jurisdiction by third parties, including business enterprises' (UN, 2011). Civil society organizations can play key roles in all of these steps.

We cannot conclude a note on just energy transition without mentioning energy access and energy poverty. While we do not address this in our note, there are still 759 million people who lack access to electricity, and energy access gains in Africa are being reversed due to the Covid-19 pandemic (IEA et al., 2021). No energy transition will ever be just and equitable unless universal access to affordable, reliable, sustainable and modern energy (SDG 7) is achieved.

While the energy transition must be just and equitable, it is also important to acknowledge that a just energy transition cannot, by itself, solve all of the world's injustices and inequalities. We live in an inherently unjust and increasingly inequitable world. Globally, extreme poverty is on the rise, hunger is on the rise, numbers of people internally displaced by conflict and violence are on the rise, and numbers of refugees are on the rise, even before the Russian invasion of Ukraine (UN Office for the Coordination of Humanitarian Affairs, 2021). Just transition is not a substitute term for development or sustainable development, even though it is increasingly used as such in some contexts. Therefore, our expectations should be that, at the very least, a just energy transition does not exacerbate inequality and is respectful of human rights and the considerations outlined in this note. In a best-case scenario, energy transition can play a key role in mitigating existing inequalities while achieving a healthy planet and prosperity for all.



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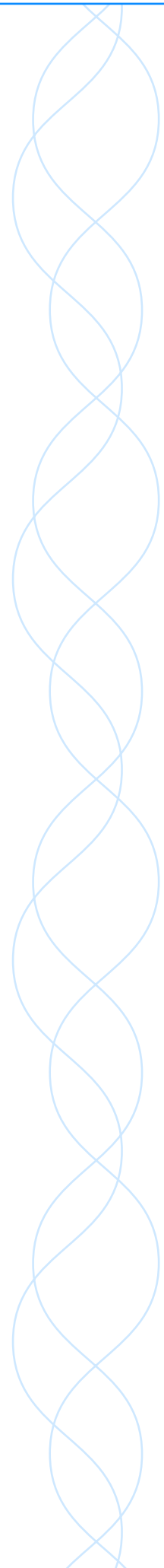
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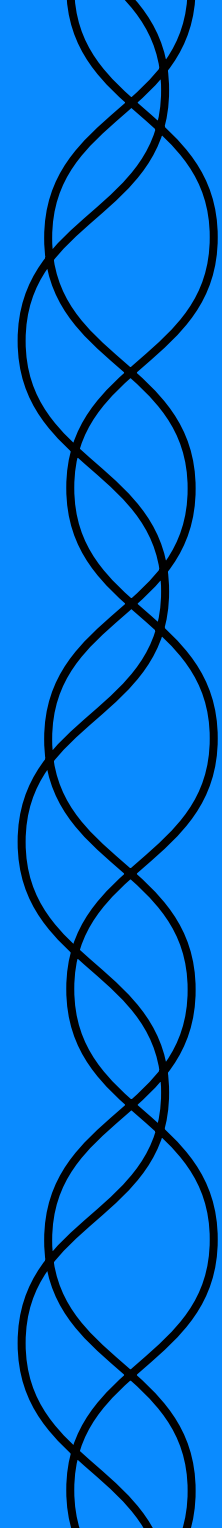
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