

Principles for Just Food System Transitions

Envisioning a more equitable and sustainable future – and an inclusive path to achieving it

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Just
Rural
Transition

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Contents

| | |
|--------------------------------------------------------------------------------|----|
| Acknowledgements | 2 |
| Executive summary | 3 |
| Principles for just food system transitions | 3 |
| Ways forward | 6 |
| 1. Food systems, sustainability and social justice | 7 |
| 1.1 Food production today is socially and environmentally unsustainable | 8 |
| 2. Envisioning food system transitions | 10 |
| 2.1 The concept of 'just transitions' | 10 |
| 2.2 Applying a just transitions lens to food systems | 11 |
| 3. Principles for just food system transitions | 13 |
| 3.1 Building a more just and sustainable food system – with the urgency needed | 15 |
| 3.2 What does a just process of change look like? | 21 |
| 3.3 Tackling the root causes of inequality and vulnerability | 28 |
| 3.4 Applying the principles to diverse food system transitions | 30 |
| 4. Ways forward | 34 |
| Endnotes | 36 |
| References | 45 |

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strengthening these principles based on ongoing lessons learned and bottom-up consultations, and welcome feedback.

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Executive summary

Food production has grown dramatically in recent decades, driven by technology, increased use of agricultural inputs, and the expansion of farmland. Yet although on a global scale we produce enough calories for all, hunger and malnutrition remain pervasive – and have worsened since the COVID-19 pandemic. At the same time, obesity and chronic diseases are on the rise due to unhealthy diets.

From a livelihoods perspective, food value chains raise major social justice concerns. Food production employs about 27% of the global workforce, with much larger shares in the Global South. But almost 94% of agricultural workers are employed informally, and farms and food processing plants alike typically pay low wages, with poor job security, no social protection, and often hazardous conditions. Many farmers live in poverty, even in the Global North, and often receive prices that do not properly reflect their costs and labour or are highly volatile.

Food systems are also devastating our natural environment. Through land conversion for farmland, agriculture is the top driver of habitat and biodiversity loss; it also accounts for 70% of freshwater withdrawals, and is eroding and otherwise degrading soils. The livestock sector has particularly large environmental impacts. There are also serious concerns about animal welfare and about the growing risks of disease transmission from livestock to humans.

Climate change is another urgent issue. The food system, including production and value chains, is responsible for around 37% of global greenhouse gas (GHG) emissions, and emissions are projected to keep rising. Food production systems – and the livelihoods of food producers – are also highly vulnerable to climate change, particularly in the Global South.

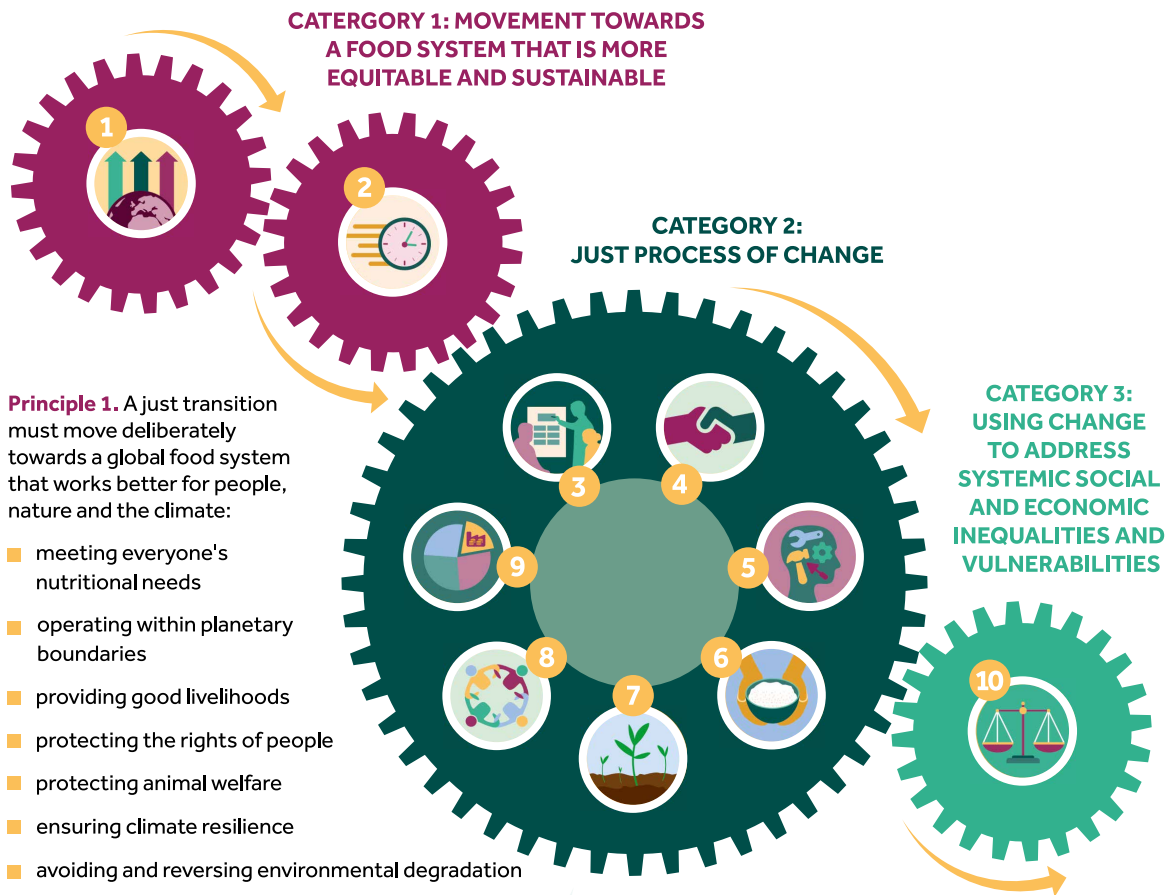
It is clear that profound changes are needed to ensure that food systems actually meet the world's nutritional needs – and do so in a socially and environmentally sustainable manner. Yet because food is essential to human survival, and so many livelihoods depend on food systems, those changes need to be made with great care, to ensure the transition itself is fair and inclusive.

Principles for just food system transitions

That is where the concept of “just transitions” comes in. This report lays out **10 guiding principles for achieving just food system transitions** and explores their implications in terms of desired outcomes, planning and decision-making processes, systemic changes that may be needed, and tensions that must be managed.

The purpose of these principles is to guide actors working with food systems – governments, businesses and investors, farmers, labour unions, international organizations, civil society organizations, and rural communities – in promoting a global food system that works better for people, nature and the climate. They offer a framework that can help to define what kinds of change should be supported and how change processes themselves should be managed around the world.

10 GUIDING PRINCIPLES FOR ACHIEVING JUST FOOD SYSTEM TRANSITIONS



Principle 1. A just transition must move deliberately towards a global food system that works better for people, nature and the climate:

- meeting everyone's nutritional needs
- operating within planetary boundaries
- providing good livelihoods
- protecting the rights of people
- protecting animal welfare
- ensuring climate resilience
- avoiding and reversing environmental degradation
- avoiding and correcting power imbalances in food value chains and in rural areas.

Principle 2. Structural changes in food systems must occur without delay, recognizing the urgency of the need for change.

Principle 10. Efforts to transform global food systems should address the root causes of social and economic inequality, food insecurity, environmental injustice, public health risks, and vulnerability.

Principle 3. The planning and implementation of transitions must be socially inclusive, ensuring there are ongoing opportunities for wide stakeholder involvement in, and influence over, the transition process itself and ongoing socio-economic development planning.

Principle 4. Food producers and their communities must be supported in bearing the costs of changing practices to align with a more ecologically sustainable food system, and in managing the wider socio-economic impacts of transition.

Principle 5. Those who are unable to continue farming or working in food value chains should be supported to reskill and find new livelihood opportunities and have access to social safety nets.

Principle 6. Consumers should be able to meet their nutritional needs during the transition, and not experience hunger or hardship due to increases in the cost of food.

Principle 7. Historical environmental degradation associated with the food system should be remediated, with priority to reversing harm that continues to affect local people's health, livelihoods and/or ecosystems – applying the "polluter pays" principle.

Principle 8. Priority for financial and other external support should be given to those regions, industries, workers and citizens who are most vulnerable and who face the greatest risks or challenges and have least capacity to fund transformation.

Principle 9. On a global scale, in the near term, the burden of shifting to more sustainable, low-GHG food production and consumption should be borne mainly by those with the greatest resources and the most cumulative responsibility for environmental harm.

The principles can be grouped into three categories:

Principles 1 and 2 describe what a just and sustainable food system would look like, and the scope and pace of changes needed to achieve it. They point us in the direction we need to go, highlight key problems we must address, and convey the urgency of the situation. A just food system should:

- ⊙ meet the nutritional needs of *all* people while respecting planetary boundaries;
- ⊙ provide good livelihoods through jobs and supply chains;
- ⊙ protect people's rights and correct inequities;
- ⊙ treat animals well;
- ⊙ be resilient to climate change;
- ⊙ stop and reverse environmental degradation.

This will require systemic changes that must begin as soon as possible. No single measure can achieve all these objectives, but actions will be consistent with a just transition pathway if they contribute to one or more of the objectives, without compromising any of the others.

Principles 3 through 9 define a just process of change. A just transition requires not only achieving just *outcomes*, but ensuring that the transition process itself is equitable and inclusive – and does not unduly burden people who are already vulnerable. This means the costs and risks associated with the transition should not fall overwhelmingly on specific groups (e.g. workers and their families, farmers, low-income communities). Support should be provided to those who need to change practices, learn new skills, change jobs or pay higher prices that they may not be able to afford. But it is not enough to manage the distributional impacts of the transition; it is also crucial to ensure that all who may be affected can participate in planning the transition and envisioning a better future. It is particularly important to engage with and listen to those who are most at risk, and those who are often left out, such as women, youth, Indigenous communities, and people living in poverty.

Principle 10 highlights the need to use the food system transition to address systemic social and economic inequalities and vulnerabilities.

Many of the failures of our current system result from broader injustices in our world and in our communities, such as major power imbalances, global markets and supply chains that favour corporations at the expense of farmers, discriminatory policies, insecure access to land, and violence against those who challenge the status quo. If these problems are not addressed, the transition is unlikely to succeed at creating a truly just food system. Even if significant progress is made, many people would be left behind – particularly the most vulnerable.

Together, the 10 principles provide a holistic picture of what it means to pursue a just food system transition. It is not enough to prioritize one or two principles and ignore the others. But, if changes in the food system make progress on one or more of the Principle 1 criteria, without compromising any of the others – and do so in a way that reflects a just process of change (Principles 3 to 9) – they will contribute to a just transition. Conversely, if advances in one criterion undermines another, the transition would not qualify as just. For example, it would not be just to impose costly new mandates on farmers for the sake of sustainability without first engaging with them, or without providing technical or financial support if they need it.

Principles are not a panacea, especially for something as large and complex as food systems. They are meant as tools to guide conversations both at the global level, and in specific contexts, and provide some relatively broad lanes of approach to a just food system. A single set of principles also cannot represent all realities at the local level. Indeed, overreliance on global principles could eclipse local nuances, which is the opposite of what a just food system transition requires. Instead, we need to recognize that when applied in different regions and different sectoral contexts, a good set of principles will generate different prescriptions for the transition. In other words, **there will be different “just transitions” in different parts of the world.**

If the transition is to be truly just, it will need to take a global perspective on justice, but tailor strategies, actions and priorities to the local context.

Ways forward

If we want to build support for large-scale, transformative change, we need a clear vision for the future. The principles laid out in this report aim to guide transition processes towards socially just and sustainable food systems.

Food system stakeholders have a range of opportunities and “levers” to promote just food system transitions, including policy processes, financing architecture, market incentives, global or local activism and more. There is already significant awareness in many places around the world of some of the changes we need: greater transparency between producers and consumers; fairer treatment of farmers; secure land and natural resource tenure for local communities; checks on the enormous power of global agribusiness corporations. Many governments are also already trying to align incentives for food producers with sustainability priorities, by removing or reducing subsidies on fossil fuels, synthetic fertilizers, etc., and instead providing incentives to adopt practices that work with natural ecosystems.

On a global scale, we know that fair burden sharing will require scaling up North-to-South financial support, with appropriate roles for international development assistance, multi-lateral development banks, philanthropic finance, agri-commodity companies and others. Because of the global interlinkages in food systems, the pursuit of a just food system transition will likely also require some form of international coordination.

At the same time, some actions to ensure just transition are needed outside the food system itself – including efforts to reduce poverty and ensure equitable growth policies, provide targeted safety nets for the poor, facilitate voluntary migration as a livelihood adaptation strategy, support economic planning and diversification, provide public infrastructure, education policy, financial sector reforms, and to strengthen and enforce ecosystem and conservation policies.

Transforming food systems is an enormous task, and involving existential-level risks for many rural people. But “business as usual” is morally unacceptable. There is no time to waste; we urgently need to start building a just food system that works for people, nature and the climate. We hope the 10 principles presented in this report provide helpful guidance and inspiration.



1. Food systems, sustainability and social justice

Food production has grown dramatically in recent decades, driven by technology, increased use of agricultural inputs, and large-scale conversion of land for agriculture. Global primary crop production grew by 52% from 2000 to 2020, to 9.3 billion tonnes,¹ and total food production – both plant- and animal-based – is now about 11 billion tonnes per year,² close to 3,000 kcal per person per day.³

Yet demand for food continues to rise: A systematic review of more than 50 studies projected a global increase of 35–56% between 2010 and 2050, due to population growth and dietary changes.⁴ Our food systems are also failing in critical ways. Hunger and malnutrition remain pervasive, and progress on food security, already stalled since 2015, has partly reversed since the COVID-19 pandemic.⁵

The global prevalence of undernourishment rose from 8% in 2019 to 9.3% in 2020 and 9.8% in 2021, with an estimated 702–828 million people affected by hunger in 2021.⁶ Around 2.3 billion (29.3% of the world population) were moderately or severely food-insecure, including 900 million in severe food insecurity – with more women than men in that situation. “Business as usual” projections show undernourishment growing until 2050, both as a share of the population and in absolute terms.⁷

A key challenge is that food is very inequitably distributed, and poverty further limits people’s diets. Poverty and hunger overlap, with Africans experiencing some of the worst

deficits, and also most at risk of famine.⁸ Cost relative to income is a key factor in malnutrition:⁹ In sub-Saharan Africa, the average household spends about 23% of its income on food, the largest share across all regions worldwide.¹⁰

Poverty also results in less diverse and nutritious diets. Income constraints are likely to prevent people in low-income countries generally from expanding their consumption of animal products, fruits and vegetables, so expected protein and nutrition increases in these parts of the world are marginal.¹¹ Food demand projections for sub-Saharan Africa show growth mainly in cereals and other staples, such as roots and tubers, that already make up a major portion of diets. Similarly, the average diet in the Middle East and North Africa region is projected to remain calorie-rich but nutrient-poor, based heavily on cereals and a higher-than-average intake of sugar as a portion of total calories, and likely to continue trends in obesity, diabetes and other chronic diseases related to diet.¹²

Even where food is more abundant, diets are often unhealthy. Obesity and chronic diseases linked to poor diets are rising in much of the world, as industrialized food production systems have increased consumption of refined carbohydrates and fats and reduced dietary diversity.¹³

Many people are also eating far more animal protein than medical professionals advise.¹⁴ Meat and fish consumption almost doubled

worldwide between 1960 and 2015. Much of this demand growth was from the Global North, but more recently has been driven by upper-income sections of the Global South.¹⁵ Between 2010 and 2050, some estimates suggest meat production will increase by 70%, aquaculture by 90%, and dairy by 55%.¹⁶ China is forecast to drive a significant amount of future demand growth for animal products: 41% of new global demand for fish, and 34% of meat.¹⁷ As livestock demand grows, so too will demand for animal fodder.

1.1 Food production today is socially and environmentally unsustainable

The challenges on the supply side of food systems are equally daunting. Food production plays a crucial role in many people's livelihoods, particularly in rural areas of the Global South, where over three-quarters of the world's poorest people live.¹⁸ There are an estimated 500 million smallholder farms in the Global South, supporting the livelihoods of nearly 2 billion people.¹⁹

In many countries, especially in Africa, agriculture still employs half or more of the working-age population – even in India and the Republic of Korea, both of which have greatly diversified their economies, the share was still over 40% as of 2019.²⁰ Dependence on agrarian livelihoods is even higher among women in sub-Saharan Africa, South Asia and some Pacific islands; in India, for instance, 55% of employed women are in agriculture.²¹ In contrast, in high-income countries, the average share of workers in agriculture is only about 3%, reflecting decades of farm consolidation, mechanization and automation, and economic diversification.

Food sector livelihoods are overwhelmingly precarious. Globally, almost 94% of workers in agriculture are informally employed: the

highest portion of any sector.²² On farms and at food processing plants, workers typically earn low wages and are often exploited, with poor job security and no social protection. Working conditions can also be dangerous: from extreme heat, to exposure to hazardous chemicals, to machinery that can cause deadly injuries.²³

While large commercial farms can be highly profitable, many smaller farmers live in poverty, even in the Global North. Food value chains are highly inequitable, with major corporations exerting enormous power, and prices fluctuating with global commodities markets. As a result, farmers often earn very little relative to their costs and labour – which, in turn, limits what they can pay workers.

Food production also has major environmental impacts. The conversion of natural ecosystems to farmland has made agriculture the most significant driver of habitat and biodiversity loss.²⁴ The sector also accounts for 70% of freshwater withdrawals, with impacts on water supplies and quality for all other purposes,²⁵ and is eroding and otherwise degrading soils.²⁶ The livestock sector has particularly severe environmental impacts, in terms of both resource use and pollution.²⁷

Moreover, because – particularly in the Global North, but increasingly also in the Global South – animals are raised and kept in intensive farming operations, in cramped conditions, there are serious concerns about animal welfare and health.²⁸ The industrial farming of animals is also associated with various human health risks, including the emergence of new infectious diseases²⁹ and the development of antimicrobial resistance in farmed animals, which increases the probability of antimicrobial-resistant pathogens being transmitted to people.³⁰

Climate change is another urgent concern. Agriculture, forestry and other land use changes are responsible for around 23% of global greenhouse gas (GHG) emissions, rising to up to 37% if pre- and post-production

activities in the food system are included.³¹ Some estimates suggest that GHG emissions from the food sector could increase by between 30 and 50% by 2050 under current projected production pathways.³² And food production itself is highly vulnerable to climate change, as rising temperatures, changes in rainfall, more extreme weather, and new pests and diseases all put pressure on agriculture. Smallholders in the Global South are in particular peril.³³

It is clear that profound changes are needed to ensure that food systems actually meet the world's nutritional needs – and do so in a socially and environmentally sustainable manner. Yet because food is so essential to human survival, and so many livelihoods depend on food systems, those changes need to be made with great care, to ensure the transition itself is fair and inclusive.

That is the focus of the rest of this report. Section 2 introduces the concept of “just transitions” and explains how it might be usefully applied to food systems. Section 3, the core of the report, lays out 10 guiding principles for just food system transitions and explores their implications in terms of desired outcomes, planning and decision-making processes, systemic changes that may be needed, and tensions that must be managed. Section 4 concludes with reflections on how best to use the principles in crafting a vision for the future and advocating for change.



2. Envisioning food system transitions

The need for major changes in food systems has been widely acknowledged, and many ideas have been put forward – by experts, policy-makers and advocates alike – for how to do better. There is broad support for “climate-smart” and regenerative agriculture practices,³⁴ as well as for fair trade practices, farmer cooperatives, and higher wages and enhanced worker safety, for example.³⁵

In practice, however, food systems are not yet changing in line with those ideas. While there are pockets of promising practices, as well as positive trends, such as a growing number of landscapes transitioning to regenerative approaches, and increased consumption of plant-based foods in some high-income countries, global forecasts suggest food systems are not on track to become significantly more sustainable or equitable.³⁶ In other words, without deliberate efforts to initiate major transitions, the harm and disparities we see today are likely to continue to grow.

At the same time, other factors are changing food systems in ways that could have implications for equity and sustainability. Advances in technologies such as robotics, artificial intelligence and sensors, and declining costs, are leading to increased mechanization in parts of the world.³⁷ Digital technologies are also changing how farmers and other stakeholders do their work, get information, build their capacities and access extension support.

Changing geopolitics is another important consideration. For instance, over recent years China has forged closer relationships with many low- and middle-income countries,

influencing the paradigm of “development” and spurring a raft of new agriculture sector partnerships and norms across the Global South.³⁸ Most recently, Russia’s war on Ukraine has severely disrupted food supply chains.

It is also crucial to recognize that food production and consumption – and the political, economic and social structures that underpin them – can vary greatly, even within countries. That means the priorities for change, and the obstacles and resistance it may face, can also vary greatly. There is no single way forward, no universal prescription for transforming food systems.

The Just Rural Transition’s Vision – shared by a growing community of stakeholders across governments, civil society, producer organisations, academia, business and others – is for global food systems that deliver positive outcomes for people, nature and the climate. A set of shared principles can guide change agents around the world to deliver on that vision, and help them craft locally appropriate strategies and fair and inclusive processes to advance them. That is where the concept of “just transitions” comes in.

2.1 The concept of ‘just transitions’

The term “just transition” first emerged in the labour movement, to argue that workers should not carry the burden of environmental reforms and should be supported through the change process.³⁹ That is still the focus of many “just transition” discussions today,⁴⁰ though the concept has expanded to a broader

consideration of the social justice aspects of structural changes in societies and economies, particularly in relation to climate action.⁴¹

The core idea that environmental action should be equitable goes back even further. For example, in 1972, at the first-ever global conference on the human environment in Stockholm, Indian Prime Minister Indira Gandhi famously argued: “We do not wish to impoverish the environment any further and yet we cannot for a moment forget the grim poverty of large numbers of people... We have to prove to the disinherited majority of the world that ecology and conservation will not work against their interest but will bring an improvement in their lives.”⁴²

The concept of just transitions provides a way of thinking about change holistically, rendering visible the ways in which major transitions can affect wider social, economic and environmental goals. There is no single definition of the term, but most framings consider both outcomes and processes:⁴³

First, the need for **broad, meaningful stakeholder involvement in planning and decision-making about the transition** (*procedural justice*): The key idea here is for a socially inclusive change process, whereby many kinds of stakeholders are involved in defining future development pathways in their region and planning the way forward.

Second, the need to **distribute the burdens and the benefits of the transition fairly and widely** (sometimes referred to as *distributional justice*): Ensuring a just transition means recognizing and addressing the potential negative impacts of change on some workers, communities, regions, and other sections of society, and working to spread the benefits of the transition widely and fairly.⁴⁴

Some framings of just transitions go one step further, calling for **transformative changes** to social and economic systems, in order to tackle underlying inequities and injustices and

undo some of the harm caused by existing systems.⁴⁵ This is sometimes referred to as *restorative justice*.⁴⁶

2.2 Applying a just transitions lens to food systems

Addressing procedural justice in food system transitions requires ensuring that all stakeholders are represented at the table. That is by no means the default in decision-making about food systems today. It is crucial to ask, “Who is missing?” and design processes that enable everyone to participate meaningfully – not just business leaders, unions and other influential groups, but also smallholder farmers, informal workers, Indigenous Peoples, and within communities, both women and men, young and old.

Thinking about distributional justice, meanwhile, highlights multiple concerns that need to be addressed. For example, a shift to more sustainable production systems could make food more expensive for consumers, at least at first. Industrial agriculture and large-scale processing and distribution systems do tend to lower the price of food,⁴⁷ and the same is true of some public subsidies – even if they promote practices that cause social and environmental harm.

There are also implications for livelihoods. Farmers may need to shift to new practices that are more costly and labour-intensive, making it even more difficult to earn a profit if buyers do not pay commensurately higher prices. Workers in industrial farm operations and at processing plants could lose their jobs as some employers try to offset the cost of the changes, or else choose to shut down.

Changes could also have macro-economic effects, particularly in less-diversified economies where agriculture makes up the highest share of GDP (e.g. Sierra Leone, 57% in 2021; Ethiopia, 38%; Syria and Liberia, 37%).

By default, the benefits and costs of changing food systems will be unevenly distributed – as they are in today’s food systems. Moreover, the impacts of changes could be felt well beyond the places where they occur, through supply chains and regional or global markets.

At the same time, the transformation of food systems is likely to create new opportunities. For example, a US study found that for every \$1 million invested in regenerative agriculture and ecosystem restoration, almost 24 direct, indirect and induced jobs would be created, more than for almost any other type of investment.⁴⁸ More research is needed on the potential employment impacts of food system transitions around the world, especially in developing countries. One analysis for Latin America and the Caribbean found that a decarbonization scenario would result in the net creation of 19 million jobs in crop production by 2030 relative to a high-emissions scenario, but animal-based could lose 4 million jobs.⁴⁹

Thinking about transformational change is also deeply relevant, because today’s global food system creates and perpetuates all manner of hardships and inequalities. Not acting to address them would be fundamentally unjust. A just transition might require tackling deep-seated social norms and institutions that limit women’s participation, for instance. For Indigenous Peoples, it might mean addressing historical marginalization by returning sovereignty over their customary

lands, or by promoting food sovereignty through the protection of native seeds and “decolonization” of Indigenous diets.⁵⁰ Local communities who were affected by pollution or other impacts of food production activities could receive compensation and support with rehabilitation efforts.

“Just food system transition” is thus a compelling idea, but it is important we clarify, tangibly, what we mean by it, otherwise there is a risk it becomes simply a slogan. For example, a study in Brazil, India and Indonesia of how the bioeconomy sector⁵¹ has developed – which is often touted as an opportunity for inclusive rural growth and economic diversification – found the benefits flowed mainly to agribusiness, while local stakeholders were excluded from governance processes relating to landscapes and resource use, and historical damages inflicted upon traditional communities and local populations were not being addressed.⁵² Another assessment of the extent to which social and environmental justice in agricultural transformation is influencing the UNFCCC’s Koronivia Joint Work on Agriculture (KJWA⁵³) found little discussion or implementation of these ideas to date.⁵⁴

This is why guiding principles are so important. We need to be clear both on the end goal, and on the norms that should govern the change process itself. That is the focus of the next section, the core of this report.



3. Principles for just food system transitions

Effective advocacy for just transitions in food systems starts with a clear vision for what such transitions should entail. This section lays out 10 guiding principles to help guide decisions – and assess changes – affecting food systems.

The principles were developed through a review of conceptual literature on just transitions, as well as literature and various online learning events on food system transitions specifically, and from interviews with various stakeholders working in this space. Input also came from responses to a survey on transition trade-offs and principles that was circulated by the Just Rural Transition initiative.⁵⁵ They are an attempt to integrate, in a coherent way, the different perspectives of actors working with food system transition and human welfare, environmental sustainability, and equity.

The purpose of these principles is to refine, or clarify, the goal of just food system transition. They should guide actors working with food systems – governments, businesses and investors, farmers, labour unions, international organizations, civil society organizations, and rural communities – in assessing whether changes in food systems are producing more just outcomes.

The principles are meant to be applied together, not just individually. And they are meant to be treated as a framework for thinking through different situations, recognizing that the priorities for action, the trade-offs to manage, the most appropriate measures, and the most suitable processes will all depend on the specific context.

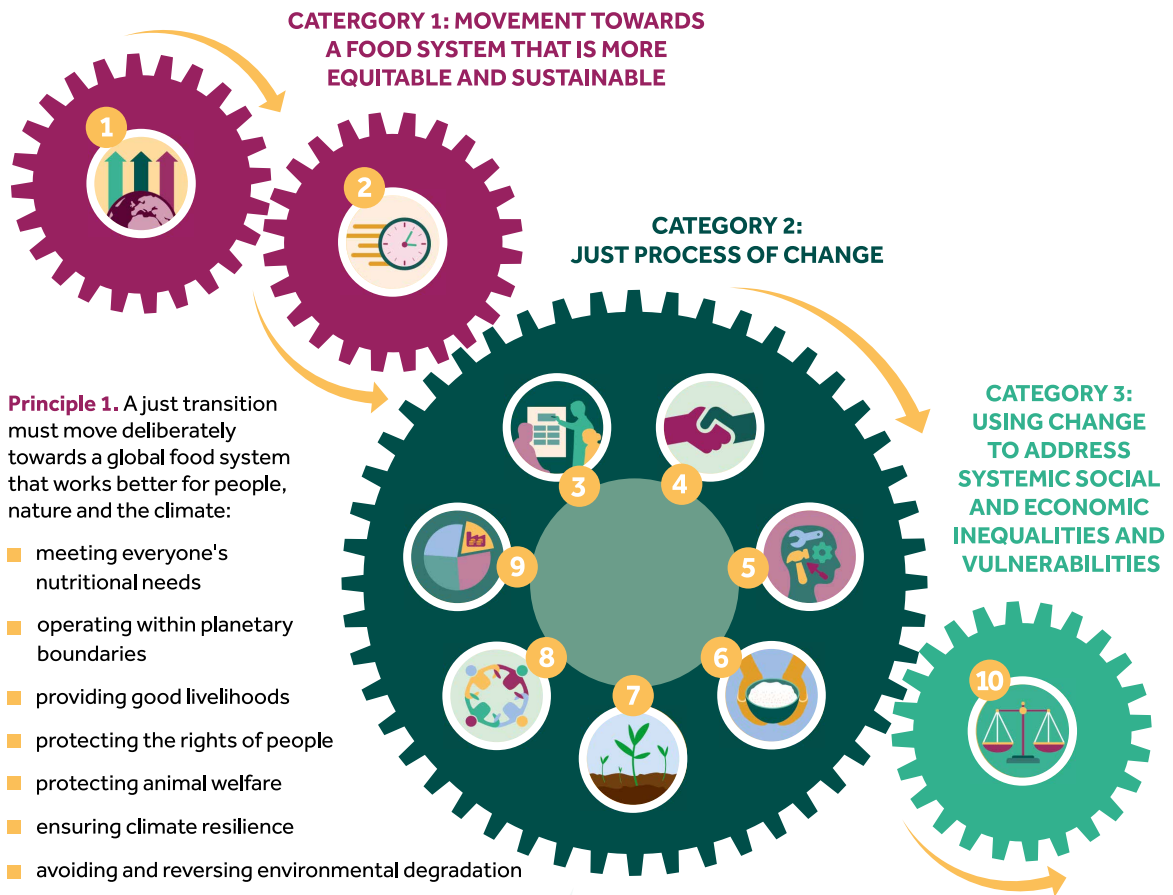
The principles depart from two fundamental observations. First, there must be change, and it should be directed to producing a more just system, i.e. one that is more equitable

and sustainable. Second, it is unavoidable that changes towards a more just food system may create negative impacts for some people. This does not itself make the change unjust. To ensure a just transition, the change process must minimize these impacts, or else mitigate hardship for those affected to ensure the costs or burdens of transition are shared equitably.

Figure 1 summarizes the principles, which can be grouped into three categories:

- ⊙ Principles 1 and 2 define **movement towards a food system that is more equitable and sustainable**. Elaborating these principles requires us to be clear on *what a just food system looks like*, and what equity-related problems and vulnerabilities in today's food system we must address, so we know what direction change needs to take us (see Section 3.1).
- ⊙ Principles 3 through 9 define a **just process of change**. They call on us to clarify *who should be involved* in transition planning and implementation, and *who is at risk* and *how* from structural changes, particularly recognizing the wide diversity in contexts among rural communities where food is produced (see Section 3.2).
- ⊙ Principle 10 calls for **using change to address systemic social and economic inequalities and vulnerabilities**, particularly in food-producing landscapes and along food value chains. It requires recognizing the *root causes of inequality* and the main *sources of livelihood vulnerability* for farmers, farm workers, and different constituents of rural communities (see Section 3.3).

10 GUIDING PRINCIPLES FOR ACHIEVING JUST FOOD SYSTEM TRANSITIONS



Principle 1. A just transition must move deliberately towards a global food system that works better for people, nature and the climate:

- meeting everyone's nutritional needs
- operating within planetary boundaries
- providing good livelihoods
- protecting the rights of people
- protecting animal welfare
- ensuring climate resilience
- avoiding and reversing environmental degradation
- avoiding and correcting power imbalances in food value chains and in rural areas.

Principle 2. Structural changes in food systems must occur without delay, recognizing the urgency of the need for change.

Principle 10. Efforts to transform global food systems should address the root causes of social and economic inequality, food insecurity, environmental injustice, public health risks, and vulnerability.

Principle 3. The planning and implementation of transitions must be socially inclusive, ensuring there are ongoing opportunities for wide stakeholder involvement in, and influence over, the transition process itself and ongoing socio-economic development planning.

Principle 4. Food producers and their communities must be supported in bearing the costs of changing practices to align with a more ecologically sustainable food system, and in managing the wider socio-economic impacts of transition.

Principle 5. Those who are unable to continue farming or working in food value chains should be supported to reskill and find new livelihood opportunities and have access to social safety nets.

Principle 6. Consumers should be able to meet their nutritional needs during the transition, and not experience hunger or hardship due to increases in the cost of food.

Principle 7. Historical environmental degradation associated with the food system should be remediated, with priority to reversing harm that continues to affect local people's health, livelihoods and/or ecosystems – applying the "polluter pays" principle.

Principle 8. Priority for financial and other external support should be given to those regions, industries, workers and citizens who are most vulnerable and who face the greatest risks or challenges and have least capacity to fund transformation.

Principle 9. On a global scale, in the near term, the burden of shifting to more sustainable, low-GHG food production and consumption should be borne mainly by those with the greatest resources and the most cumulative responsibility for environmental harm.

Figure 1. Principles for just food system transitions

3.1 Building a more just and sustainable food system – with the urgency needed

Principle 1. A just transition must move deliberately towards a global food system that works better for people, nature and the climate, by 1) meeting everyone's nutritional needs; 2) operating within planetary boundaries; 3) providing good livelihoods; 4) protecting the rights of people; 5) protecting animal welfare; 6) ensuring climate resilience; 7) avoiding and reversing environmental degradation; and 8) avoiding and correcting power imbalances in food value chains and in rural areas.

The most basic requirement for a just transition is that it results in a more just food system. Figure 2 provides a synthesis of key traits of a just food system, taking a holistic view that recognizes the need to ensure the long-term viability of food systems and the health and safety of future generations. Individual measures undertaken as part of the transition may focus on only one or a few criteria, but collectively, they must make progress on all eight. It is also crucial to recognize potential trade-offs and avoid any actions that undermine one objective for the sake of another.

Meet the nutritional needs of all people worldwide

This is – or should be – the primary purpose of food systems. The UN Food and Agriculture Organization (FAO) describes four “pillars” of food security: availability, stability of supply,

access and utilization.⁵⁶ In other words, food systems need to reliably produce diverse, nutritious whole foods that are locally appropriate and have enough calories and nutrients, *and* deliver them to people, so everyone can have a healthy diet.⁵⁷ However, as noted in Section 1, hunger and malnutrition are widespread, not only in the Global South, but worldwide.⁵⁸

The FAO has identified enabling conditions to advance the “right to food”, including social safety nets for poor consumers, markets and investments that focus on the livelihoods and nutritional needs of the poor and hungry, and legal and regulatory frameworks and institutions that support these goals.⁵⁹ Produce must be distributed in a way that makes good food accessible to all people, not only those with the highest incomes. To help close the affordability gap, governments can provide targeted financial support or other forms of nutritional assistance.

Notably, food insecurity and malnutrition are driven to a great extent by larger systemic problems, such as low incomes, lack of assets (including land ownership) and persistent poverty. This means that, while food systems can help solve the problem, they cannot ensure universal access to food. Complementary efforts are needed to boost incomes, enhance livelihoods, foster sustainable economic development, address inequities in access to land, and provide social protection, including in vulnerable and food-insecure rural communities.⁶⁰

Provide food within planetary boundaries

There are many ways to define what is “sustainable”, but one of the most useful and widely cited approaches is the planetary boundaries framework,⁶¹ which identifies nine critical thresholds in Earth systems beyond which irreversible, harmful changes are likely to occur. The production of food directly influences many of these thresholds – sometimes as a key driver of biophysical change.

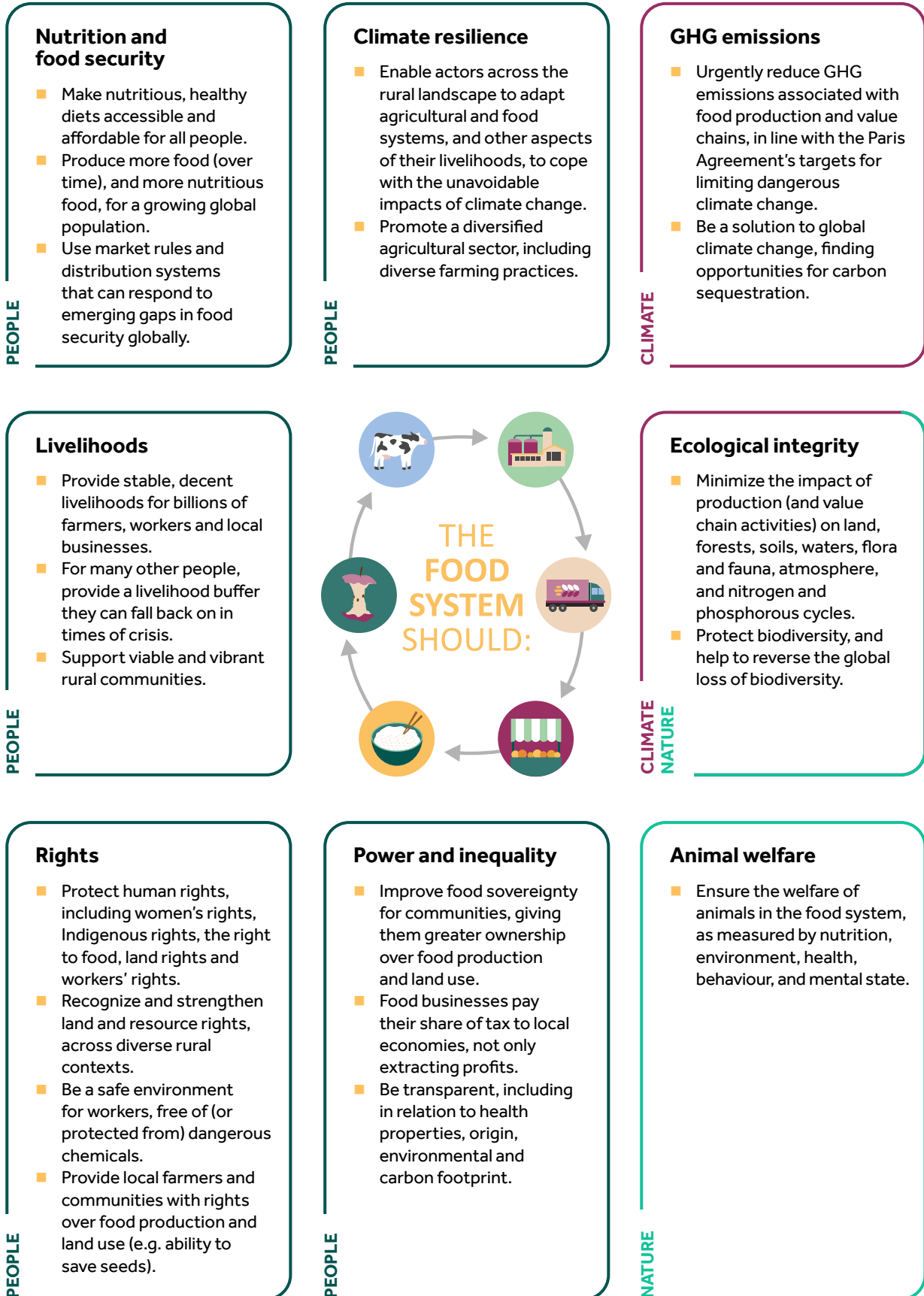


Figure 2. The characteristics of a just food system

Figure 3 provides a simplified illustration. Key planetary boundaries of concern for food systems include those for atmospheric carbon (GHG emissions), biodiversity loss, flows of nitrogen and phosphorous, and land use change.

A food system that operates beyond planetary boundaries will undermine our ability to produce food, and to provide stable, decent livelihoods for people all around the world, and continuing to operate beyond these boundaries will ultimately create a cascading sequence of catastrophes for humanity and other species. This means food systems must operate within those boundaries – and, to the extent that they are not, they must correct course as soon as possible.

Provide good livelihoods through employment and value chains

Food systems support an estimated 1.3 billion jobs and 3.2 billion livelihoods around the world – about two-thirds in primary production (on farms) and the rest in food processing, food services, transportation and distribution, and related services.⁶²

Those livelihoods are very diverse, even within individual categories. For example, while in much of the Global North, industrial-scale agriculture prevails, there are an estimated 500 million smallholder farms across the Global South,⁶³ with 338 million in Asia and 44 million in Africa.⁶⁴ Globally, small farms of less than 2 hectares in size are estimated to represent around 84% of farms by number and contribute a third of global crop production,⁶⁵ on 24% of gross agricultural area.⁶⁶ (However, such estimates should be treated with caution, because of large methodological challenges.⁶⁷)

A more just future food system might support more livelihoods, or fewer. As noted in Section 1, only about 3% of people in high-income countries today are employed in agriculture – and many people who farm today could similarly shift into other sectors. However, given that billions of people are engaged

in agricultural production of some kind for direct sustenance, for employment, or for commercial production, often with few or no other livelihood options available, it seems highly likely that the prosperity and stability of societies worldwide depends on large numbers of people continuing to make a decent living through agriculture, including food production.⁶⁸

It is not only the number of livelihoods that matters, but also their quality. For workers, a just food system should ensure living wages, safe working conditions and social protection.⁶⁹ For farmers, it should provide the ability to earn a stable income that is high enough to meet their needs – and return a fair share of the financial revenues accumulated along food value chains. Many farmers today live in poverty despite contributing to significant revenue generation for those who buy their products.

Ensure resilience to climate change

Climate change is already affecting food production around the world, and even with stepped-up action to reduce emissions, significant and worsening climate change impacts are now unavoidable and will continue over the long term. Continued adaptation will therefore be crucial across agricultural and food production systems,⁷⁰ to ensure food systems of the future are ever more resilient to climate change.

Achieving this will require adaptation measures at the local level, to help farmers adapt practices and protect local food supplies, as well as at a regional and global scale, because supply disruptions to large producers of important crops can affect food security and food prices worldwide. In this context, it is essential to recognize that adaptation measures can have adverse effects on other actors: whether it is farmers upstream increasing water offtake for irrigation at the expense of farmers downstream, or corporate buyers changing where they source agricultural commodities

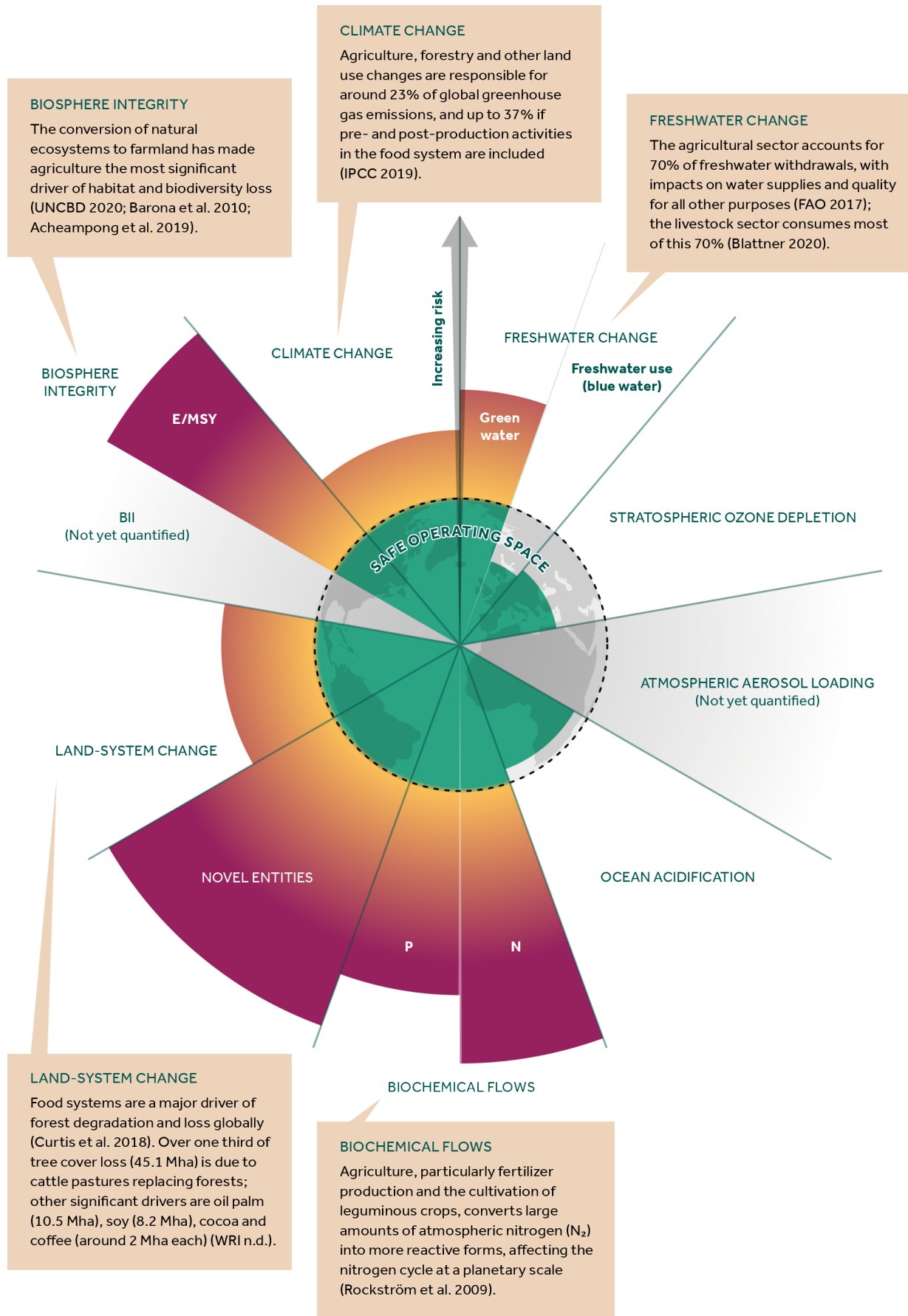


Figure 3. Impacts of the global food system on planetary boundaries

Source: Azote for Stockholm Resilience Centre, based on analysis in Wang-Erlandsson et al. 2022.⁷¹

to avoid climate-vulnerable areas.⁷² In a just transition, the pursuit of climate resilience should genuinely reduce climate risks, not just redistribute them.

The climate resilience of food systems is crucial not just for global food supplies, or to protect rural communities from going hungry. It is also crucial to protect jobs and livelihoods, both in agriculture – which employs about 27% of the global workforce⁷³ – and in food processing, transportation, retail and other related occupations.⁷⁴ Adaptation measures will also be needed to ensure that food production jobs are safe, particularly as extreme heat becomes more common and more severe.⁷⁵

Protect the rights of people

Many kinds of rights are linked with food production. The way we produce, process and distribute food should protect human rights, the right to food (discussed above), land rights and workers' rights.⁷⁶ A just transition in food systems should recognize the many ways in which people are currently denied those rights, and actively work to do better. The systems we build should:

- ⊙ For *women*, provide, respect and enable equal rights to access land, farm inputs (seeds, water, equipment) and markets. It should support progress towards eliminating gender inequality, and provide fair and equal pay for women's work. Women must be meaningfully included in the governance, control, and use of land and resources.
- ⊙ For *workers*, provide decent work (see above) and uphold the right to organize and build collective power.
- ⊙ For *farmers*, provide seed sovereignty, which means farmers being able to collect and trade their own seeds, as well as secure land tenure, if they currently lack it. This extends beyond the concept of theoretical tenure: in many places,

people have legal resource rights on paper but cannot effectively claim or use these to manage land and pursue self-determined priorities, due to administrative or procedural hurdles, or social norms.

- ⊙ For *Indigenous Peoples*, provide and respect their human rights, land tenure rights, and traditional practices, and provide opportunities for their leadership of transition initiatives in rural landscapes, such as conservation and restoration initiatives.
- ⊙ For *local communities*, ensure the right to clean air and water, land that is not degraded, and to safe living environments.

Protect the welfare of animals

An estimated 80 billion terrestrial animals are slaughtered for meat each year, mostly chickens but also large numbers of pigs, turkeys, sheep, goats, cattle and ducks.⁷⁷ There are also some 270 million dairy cows globally⁷⁸ and over 6 billion egg laying hens.⁷⁹ Scientists have estimated the number of fish and other aquatic animals killed each year to be in the trillions, including some 124 billion farmed fish.⁸⁰

Advocates for the rights and care of animals distinguish between animal welfare and animal rights. This principle emphasizes animals' welfare – as judged by their nutrition, environment, health, behaviour and mental state⁸² – as the necessary outcome, rather than animal rights, which would preclude the consumption of animal-based foods. The latter seems unrealistic, given the sheer number of animals in current food systems and their widespread use in cultures around the world.

Reducing food systems' GHG emissions and negative environmental impacts (and in some places improving health outcomes) will inherently require, at the global level, a shift to more plant-based diets. However, this will

not necessarily reduce the number of animals raised for slaughter. For instance, shifting meat consumption from beef to chicken could reduce GHG emissions and some other environmental impacts, but would actually increase the number of animals confined and slaughtered.⁸³

In the parts of the world where industrial livestock production is prevalent, shifting to a food system respectful of animal welfare would almost certainly require transitioning away from industrial-scale animal farming. It is clear that industrial operations, where animals are confined in close quarters and unable to engage in their natural behaviours, fail to meet basic animal welfare needs; even “free-range” and high-welfare farms may not be enough, though they are better.⁸⁴

Stop and reverse environmental degradation

Environmental degradation from food production not only affects planetary health thresholds, but can have serious local consequences, affecting people’s health, safety and livelihoods. Those who are already at the margins and/or vulnerable are often the worst affected. Stopping environmental degradation is also crucial for the food system itself, as it relies on a wide range of ecosystem services (soil health, water quality, pollinators) that are compromised by continued pollution and ecosystems degradation.⁸⁵

Because the scale of environmental degradation today as a result of the food system is so great, a just food system will need to not only avoid further degradation but to also actively reverse past damage, by contributing to the restoration of ecosystems, degraded cropland and polluted water sources, among others. This is a key aspect of environmental justice.

In some places, the harm to be repaired may go beyond stopping and reversing environmental degradation – it will also require restoring people’s access to healthy land, water and forests. If water is diverted

for farm irrigation, for example, local people may not have adequate freshwater access for other uses, with consequent impacts on their livelihoods. Women, who may have to collect water for their households, may also have to travel farther, at the expense of their time, health and safety. Loss of forests undermines the livelihoods of people who use forests for subsistence food production or to harvest non-timber products, and degrades cultural values in places where Indigenous Peoples, for example, have had cultural connections with natural landscapes over a long time period.

Reverse existing – and avoid creating new – power imbalances or inequalities

A just food system transition will not result in large corporations making smallholder farmers or local communities vulnerable, economically or environmentally. Instead, it should create more equitable conditions. It should also not create risks for poor consumers (e.g. prohibitively high prices for basic foods that are not offset by targeted support, or access only to poor-quality diets). This criterion applies at the level of individual programmes or investments and local planning, and also when taking a view of the food system globally.

Because today’s food systems are profoundly inequitable, it is likely that without deliberate efforts to correct those inequities, transitions might reinforce them, or even create new problems. Governments, corporations and even individual farmers should take care to avoid making choices or investments that deepen vulnerability and injustice. As discussed further in Section 3.2, one way to move towards more just and equitable outcomes is to broaden participation in the governance of land use, trade and food production, so that decisions better reflect context-specific impacts, needs and priorities.⁸⁶

Principle 2. Structural changes in food systems must occur without delay, recognizing the urgency of the need for change.

The changes described under Principle 1 are dramatic; small, incremental changes might move food systems in the right direction, but a just transition to socially and environmentally sustainable food systems will require urgent, ambitious and large-scale action.

From an equity perspective, the pace of change towards these goals is crucial. Delaying action on these goals is fundamentally unjust,⁸⁷ as unsustainable practices continue to take a major toll on the well-being of billions of people. Moving too slowly, even in the right direction, can worsen inequality. Climate change is an example here: only gradually reducing the growth in GHG emissions increases the risk of catastrophic impacts, disproportionately affecting vulnerable people. Similarly, in the absence of stepped-up efforts to reduce hunger and malnutrition, the number of people globally who are categorized as in “crisis” or worse almost doubled from 2016 to 2021.⁸⁸

As a minimum, change should keep pace with agreed international goals for tackling hunger (such as Sustainable Development Goal 2),⁸⁹ GHG emissions (the Paris Agreement)⁹⁰ and reversing biodiversity loss (the Kunming-Montreal Global Biodiversity Framework agreed in 2022).⁹¹ However, in reality, progress towards those goals is far too slow, with worrisome backsliding.

The slow progress means more severe climate change risks, more environmental degradation, and more human suffering. The pace of change and intensity of effort must therefore ramp up considerably – not only to avoid further harm, but to provide more time for vulnerable people to adapt to changing conditions. Delays could

also create stranded-asset risks for farmers, if they invest in infrastructure and equipment that they have to abandon as the food system changes in the coming years.

3.2 What does a just process of change look like?

The process of transition should not only achieve just outcomes, but also move towards those outcomes in ways that stakeholders experience as being just. That requires:

- ⊙ Meaningful participation by stakeholders in the process of planning for transition and envisioning future livelihoods and economy for their region, particularly those who are most at risk from transition and those who are usually marginalized or excluded; and
- ⊙ Attending to the distributional impacts of transition, by ensuring the costs and risks of implementing transitions are not unfairly concentrated on particular groups of people (e.g. workers and their families, farmers, women, local communities, poor consumers), and that the transition does not create (or exacerbate) inequality or hardship.

The principles laid out in this section address both of those needs.

Making planning and decision-making processes socially inclusive

How those affected by structural changes in food systems are involved in guiding the change process and designing local socio-economic development strategy is a central theme in discussions of just transitions, particularly in the context of food systems.⁹² The core idea is simple: If various measures are to be adopted to ensure a just transition, the people at the heart of transition, and most affected by it, should be able to express their preferences and needs and actively participate in shaping the transition.

Principle 3. The planning and implementation of transitions must be socially inclusive, ensuring there are ongoing opportunities for wide stakeholder involvement in, and influence over, the transition process itself and ongoing socio-economic development planning.

Farmers must be actively involved in discussions about shifts in production methods.⁹³ Farmers and food sector workers, including informal workers, as well as their families, local communities and local businesses, must also be at the table when planning regional economic diversification and strategies for future socio-economic development of rural regions.

Social dialogue is an important mechanism for engaging workers representatives during transition.⁹⁴ Inclusion is particularly important for marginalized groups, who are often excluded from planning and decision-making processes that affect and may harm them. Women, Indigenous Peoples, people with disabilities, youth, migrant workers and other groups must all have opportunities to input their perspectives and knowledge.⁹⁵

Poor and vulnerable people, including those experiencing hunger, should also be brought to the table when discussing measures with implications for food security.⁹⁶ Moreover, their inclusion needs to be supported or enabled, because poor and marginalized groups have least flexibility to volunteer time, as they must prioritize their livelihoods.

The issue of **representation** is a crucial one, meaning care is needed in deciding who represents different types of stakeholders.⁹⁷ Smallholder farmers do not face the same risks, or share the same coping mechanisms, as big farmers, and farmer associations may represent some farmers, but not others.

Informal workers are unlikely to have access to the same rights, or social protections, as those workers who are formally employed, and local labour unions may not represent all workers involved in the food value chain. The private sector includes not only large agro-industry corporations but also, for instance, small local businesses and local financial institutions that might play an important role in catalysing new economic activities. Therefore, within each category of stakeholders, it is important to carefully consider who is invited to represent.

Another crucial issue is what **influence** these stakeholders have over outcomes. Engagement must go beyond simply “consultation”: stakeholders should have genuine – and ongoing – opportunities to shape the policy and planning outcomes during transition. How the perspectives of different stakeholders will be taken into account should be transparent.

Typically, there are various inclusion challenges in rural landscapes and food systems that will need to be recognized and tackled if the principle of social inclusion is to be operationalized meaningfully. These include power imbalances between corporates and local farmers and farm workers, as well as local norms or rules that constrain women’s engagement. Some have also raised the question of who represents the “rights of nature”.⁹⁸

The systemic exclusion of Indigenous women and men, including through institutional barriers, needs to be tackled to enable their participation (and willingness to participate) in transition planning processes,⁹⁹ and to respect the principle of Free, Prior and Informed Consent.¹⁰⁰ Some stakeholders have expressed concern that the objectives of wide stakeholder engagement and participation in decisions around transitions will not be executed faithfully – just as a tick-box formality.¹⁰¹ However, achieving meaningful participation, especially by marginalized and disenfranchised people, is hard, challenging work. Expert assistance and partnerships with trusted community groups may be needed.

Another complexity with operationalizing this principle is that value chains for food stretch globally. When transitions are approached through the lens of a place, a region, then it is conceivable to construct a highly inclusive stakeholder process, notwithstanding there are already many barriers to inclusion which must be overcome. But what does social inclusion mean if we take the perspective instead of food value chains, where stakeholders can be in different countries with different socio-economic concerns? Who can convene actors in a neutral way, and overcome enormous power imbalances? Some form of global or international governance of food system transition is likely needed to address some of these challenges.

Managing the distributional impacts of the transition process

Even if a transition is moving towards a more equitable and sustainable food system, it could create significant hardships – both among food producers, particularly vulnerable farmers, and among consumers – that need to be managed carefully to avoid unfair outcomes. Key groups at risk include:

- ⊙ **Consumers** could face price shocks as the incremental cost of more sustainably produced food is passed down to them, which could affect food security and the accessibility of specific foods, from meat, milk and eggs to fresh fruit and vegetables.
- ⊙ **Workers** on farms and along value chains could lose their jobs. Which jobs are at risk, and where, will depend on what specific changes occur to bring about a just food system, although informal and migrant workers tend to be particularly vulnerable. Where changing production practices increase costs to farmers, workers' wages may be kept low in response.
- ⊙ **Rural communities** could see land ownership become (more) concentrated, farm operations become more automated, workers move away, and investment in services and infrastructure decline (which then encourages more people to leave).¹⁰²
- ⊙ **Indigenous communities** could find that new approaches promoted as part of the transition do not align with their values, knowledge and traditions.¹⁰³ This is a particular risk with market-based instruments such as carbon offsets and REDD+ approaches, which can also concentrate benefits on a small group of actors, at the expense of communities.¹⁰⁴
- ⊙ **Farmers**, particularly (though not only) many smallholder farmers in the Global South, may face new financial burdens and other challenges in shifting to more sustainable production methods, and could be disadvantaged on global markets if the prices they are paid are not raised. If farmers are unable to make changes, they could see their products excluded from global markets – for instance, due to labelling or certification standards.



- © **Some countries and regions** could face adverse impacts to their food security – for instance, where changes affect international trade and supply chains,¹⁰⁵ or where alternative practices drive up food prices. Economies that generate significant revenue from existing practices (e.g. in areas with large-scale livestock or animal fodder production, or agriculture that is only possible through unsustainable input use) might also be negatively affected.

These potential risks, along with new opportunities, will be distributed unevenly around the world and even within individual communities – reflecting in part the high inequality that exists within today’s food system. Wealthier farmers, for instance, will be more readily able to adopt climate-smart agricultural practices than smaller farmers, and large producers are also better placed to access loans and insurance, or cope with lost income for a period.¹⁰⁶ But other variables outside the food system will also increase – or buffer – the way transition impacts are experienced. For instance, rural people in Latin America and Asia who need new livelihoods may find more opportunities in cities than, for example, those in Africa, because at least to date, cities in Africa have struggled to create large numbers of good jobs in sectors such as manufacturing.¹⁰⁷

Highly globalized supply chains and markets for food and feed mean that transition risks will also be transferred between places – along value chains from producers to consumers,¹⁰⁸ or vice versa, and beyond national borders. People’s responses may also affect others, potentially shifting vulnerability down to those who are least able to adapt.¹⁰⁹ (For example, a corporation might decide to stop buying from smallholder farmers who can’t afford to shift to more sustainable practices, instead of helping them to comply with new requirements.)

If changes to our food systems are not well managed to minimize hardship, the consequences well may include resistance

(which could itself result in highly unjust outcomes, e.g. if it delays climate action), social unrest and suffering. Deliberate action to fairly manage the distributional impacts of change thus requires considering the impacts of transition holistically, to recognize and avoid unintended negative health, economic, social, environmental, and animal welfare outcomes.¹¹⁰

These reflections lead us to the next six principles.

Principle 4. Food producers and their communities must be supported in bearing the costs of changing practices to align with a more ecologically sustainable food system, and in managing the wider socio-economic impacts of transition.

The people who currently produce our food, and who are expected to adopt new practices, should be supported and empowered in the process,¹¹¹ so as many as possible can participate in the new (more just) food system. Even if they embrace the desired changes – such as switching to agroforestry, organic farming, or other more sustainable approaches, or investing in methane capture or expanded irrigation – they may not have the resources or capacities to do so without substantial risk or hardship.

Farmers, especially poorer smallholders, should not have to bear the full costs of their own training on new practices, or of significant new investments required to align with a more just food system. They need both financial and technical support, and should be financially rewarded for taking on practices that are aligned with the social, economic and environmental objectives of a just food system. It is also important to recognize that where land and upfront equipment costs are high, farmers

may be financially locked into practices that are being phased out,¹¹² and thus at risk of “stranded” farm assets.¹¹³

It is important that any financial support does not increase farmers’ overall debt burdens, nor lock them into other precarious financial situations (for example, because they are prevented from saving and reusing their own seeds or reducing their reliance on synthetic fertilizers). The scope of technical assistance should also recognize the value of peer-to-peer knowledge sharing, including traditional or Indigenous knowledge, which can be an important aspect of empowerment and source of expertise that can support adaptation to more resilient food systems.

Some financial and technical support can be delivered through farmers’ networks (associations, cooperatives, etc.) at different levels. This has the added advantage of strengthening organizations that pool farmers’ resources, facilitate collective action, and can play a key role in enhancing their negotiating power and access to markets.

Other potential economic impacts, on local businesses and also potentially on public revenue in places affected by transitions, need to be recognized and tackled as well. Where food system transition results in significant negative effects on the scale or value of agricultural production at a regional scale, support for regional economic diversification is needed.¹¹⁴ Support for local municipalities may also be needed if public revenues are affected.

Other social impacts are also important to recognize and address. Loss of livelihoods may create mental stress, leading to family conflicts or added pressures on other household members, higher rates of domestic violence, or higher suicide rates among farmers. If food system transition significantly changes who produces food or where it is produced, this may undermine social vibrancy and community cohesion in some places. Support systems may be needed to help address such impacts.

Principle 5. Those who are unable to continue farming or working in food value chains should be supported to reskill and find new livelihood opportunities and have access to social safety nets.

Given the enormous changes required to bring about a just food system, it would be unrealistic to expect that all existing jobs in food value chains will be maintained, or that all of today’s workers will promptly move into new jobs. Avoiding job losses is a legitimate objective, but it is not the same as achieving a just transition.¹¹⁵

Some farmers and farm workers may be unable (or unwilling) to participate in the new food system, and thus need support to develop new livelihoods. The same is true of the wider community of small businesses and citizens who have depended directly or indirectly on the local food production economy.

The International Labour Organization (ILO) estimates that a global transition to ecological sustainability in agriculture could result in 120 million fewer jobs worldwide by 2030 relative to “business as usual”, including 20 million fewer jobs in Africa and 100 million fewer jobs in the Asia-Pacific region.¹¹⁶ As noted earlier, jobs are also at risk due to automation,¹¹⁷ and reduced livestock production would also affect employment.¹¹⁸ On the other hand, phasing out agrochemicals might create more farm jobs, though the work could be strenuous.¹¹⁹

Various kinds of support may be needed, at different scales, to help people move into new jobs and livelihoods. This is likely to include training and educational programmes, not just for directly affected farmers and workers, but also for their families and other community members. Targeted programmes could also be developed for young people, who experience very high levels of unemployment in much of the Global South.¹²⁰

If the transition to a more just food system can be shaped in a way that maximizes job opportunities, this will help to offset any employment losses.¹²¹ But the quality of new jobs also matters: the types of jobs, whether they are formal or informal, and who has the opportunity to access them.¹²² These are challenging demands; in many transition contexts, it may be difficult to see a sufficient number of realistic, well-paying job or livelihood options for farmers and rural labourers.

Alongside job creation and economic diversification efforts, social protection systems, or “safety nets”, are a key mechanism for managing some of the impacts of transition.¹²³ In various forms these provide the most vulnerable people – including those who lose work or livelihoods and are not immediately able to find alternatives – with ongoing access to adequate support systems and resources (food, income, health support, care support, labour market access).

Principle 6. Consumers should be able to meet their nutritional needs during the transition, and not experience hunger or hardship due to increases in the cost of food.

This principle requires paying attention to the impact of the transition on food prices and taking action to avoid any negative effects on food security and nutrition, particularly in low-income households. This is important, because at least initially, it is likely that some changes in food production and supply chains will increase costs to consumers, and even possibly the availability of some foods.

For example, farmers who stop using chemical fertilizers and pesticides may need a few years to achieve similar productivity levels with organic alternatives and new techniques. Shifting from factory egg farms to free-range

or pasture settings – which require far more space and more labour – would certainly make eggs more expensive.¹²⁴ Higher prices will particularly affect urban consumers even more than rural ones, as they purchase a larger share of their food (if not all).

There are multiple approaches that governments can take to mitigate any price effects on low-income people, including targeted cash assistance, food distribution programmes, and other safety-net programmes.

In this context, it is important to make a distinction between avoiding negative nutritional impacts, and avoiding price changes altogether. Many people will be able to afford small increases. Moreover, some policies that seek to promote healthier and more sustainable diets may deliberately use price hikes as incentives.

Principle 7. Historical environmental degradation associated with the food system should be remediated, with priority to reversing harm that continues to affect local people’s health, livelihoods and/or ecosystems – applying the “polluter pays” principle.

This is necessary so local communities are not left with ongoing health or safety risks, and so land and natural resources become a productive asset that communities can use to support and diversify local livelihoods. From an equity perspective, the costs of rehabilitation should be covered by those who were responsible for the damage, following what is known as the “polluter pays” principle.

That said, it is unclear how the “polluter pays” principle might be practically applied in many settings where food is produced, given the type of pollution (diffuse water quality impacts, deforestation) and the type of “polluters”

involved (often smallholder farmers, or illegal or informal workers, even if they are part of larger supply chains with significant resources).

In the case of smallholder farmers, whose financial capacity to pay for environmental restoration is limited or non-existent, responsibility might best be understood as spread along the whole value chain – and in proportion to the accumulation of value in today’s market (i.e. those in the value chain deriving most profit or benefit are most responsible).

Principle 8. Priority for financial and other external support should be given to those regions, industries, workers and citizens who are most vulnerable and who face the greatest risks or challenges and have least capacity to fund transformation.

From a justice or equity perspective, managing the distributional impacts of a transition does not mean avoiding *any* negative impacts – which would be impossible (noting also that continuation of today’s food system creates negative impacts as well). The emphasis here is on how costs and risks are allocated. In some places, farmers are wealthy enough and well able to implement new practices, so support needs – and how support should be directed – differ greatly by context.

Smallholder farmers, for instance, are crucial actors in food system transition given their contribution of 50–70% of global food production,¹²⁵ yet many are also highly exposed and vulnerable to systemic changes. Without support, they would be unable to implement changes or to cope with any additional costs or risks that changes might bring. Impacts on the vulnerability of farm workers, food processors, transporters, Indigenous Peoples, and other marginalized

groups, including low-income consumers in both rural and urban areas, women, youth and migrant workers, also need to be considered.

Principle 9. On a global scale, in the near term, the burden of shifting to more sustainable, low-GHG food production and consumption should be borne mainly by those with the greatest resources and the most cumulative responsibility for environmental harm.

An equity perspective on burden-sharing also draws attention to the fact that there is a global dimension to the allocation of responsibility for providing transition support. The benefits of current practices (cheap food, profits along the supply chain) are now concentrated in the Global North and in upper-income segments of the Global South. These are also the people (and corporate actors and governments) with the greatest financial capacity to bear the costs of the transition, and who have most power over decisions in food value chains globally.

Those who have done the least to cause today’s problems, among them poor farmers and communities in the Global South, must not bear great responsibility for fixing the crisis. Fairness also demands that actors in the Global North provide financial and technical support to actors in the Global South, sufficient to catalyse transition to a more just and resilient food system, and to manage the impacts of doing so. International cooperation – and financial support – is also imperative in the effort to reduce deforestation globally.¹²⁶

3.3 Tackling the root causes of inequality and vulnerability

As the analysis up to this point makes clear, the injustices and unsustainable practices in food systems today are part of much larger problems – within societies and on a global scale. That means that to create the food systems envisioned under Principles 1–9, just transition efforts will need to look beyond food systems themselves, to address the underlying causes of inequality and vulnerability. Anything less will achieve only modest, incremental progress, potentially leaving hundreds of millions of people behind.

Principle 10. Efforts to transform global food systems should address the root causes of social and economic inequality, food insecurity, environmental injustice, public health risks, and vulnerability.

Many framings and discussions of just transitions explicitly identify the need to tackle the underlying sources of inequality or vulnerability,¹²⁷ particularly in the context of food systems.¹²⁸ This reflects a recognition of the close links between poverty, human rights concerns and food security, and of the opportunities that food system transitions create to achieve deeper changes in policies and practices, and thus advance broader development goals.

Section 3.2 identifies several stakeholder groups who are particularly vulnerable to the adverse impacts of the transition, including smallholder farmers, women, Indigenous Peoples, poor consumers, farm workers, and rural communities more generally. To some extent, their vulnerability is the direct result of existing practices and structures in today's food systems. Yet there are much larger

factors at play as well, such as poverty and lack of access to basic services, low wages and weak labour protections, and governments that prioritize corporate interests and high-level development priorities over local livelihoods and environmental protection.

Many of these issues have a strong gender dimension – for instance, compared with men, poor rural women tend to have more limited access to decision-making processes, technology and technical support, finance, and markets,¹²⁹ and they face greater educational barriers. For farmers particularly, global food supply chains and markets are also a cause of vulnerability and precarity. Indigenous Peoples, ethnic minorities and other marginalized groups are also disproportionately vulnerable.

Efforts to achieve a just transition in food systems need to recognize the root causes of inequalities, injustices and vulnerabilities that affect stakeholders in those systems, and seek to correct them. Some concerns that require more attention, and were not discussed above, include:

Insecure access to land and lack of ownership are common and significant problems in many rural landscapes, especially (but not only) in the Global South. Nearly 1 billion people worldwide feel vulnerable to eviction from their land or property in the next five years – a global average of roughly 20% of adults.¹³⁰ Land rights usually consist of layers of different rights and may comprise both customary and statutory rights, and, where this creates conflict or contestation between these rights, violence can sometimes result.¹³¹

Often laws that recognize rights are not meaningfully implemented or respected – for example, in Brazil,¹³² Indonesia¹³³ and the Congo Basin.¹³⁴ Of the 65% of land under customary tenure that is managed by Indigenous Peoples and rural communities globally, only 18% is formally recognized by governments.¹³⁵ Women's land tenure is particularly likely to go unrecognized, even when national laws technically afford them the

same rights as men.¹³⁶ Globally, women own only 2% of land, and they are more likely to experience food insecurity.¹³⁷

Even where laws are implemented, there can be practical barriers preventing smallholder farmers from registering their land and claiming ownership. The concentration of land ownership in some places is a further source of inequality; in Latin America, for instance, 1% of farms occupy over half of the total agricultural land (and in the extreme, in Colombia just 0.4% of farm owners control over 67% of the land under production).¹³⁸

All this points to the importance of addressing land tenure and access as part of a just food system transition. Some evidence suggests that where communities are granted clear, legal forest rights, and where these rights are protected by governments, carbon dioxide emissions and deforestation tend to be lower,¹³⁹ so supporting land and resource tenure for local people as a core part of food system transition is also likely to positively reinforce the ecological goals of sustainability transitions.

In that context, it is crucial to ensure that the process of securing land rights is inclusive and takes into account the needs and perspectives of all members of society – particularly those who now face the worst disparities and marginalization. Otherwise, the process could unintentionally exacerbate inequalities, as women and Indigenous communities, for instance, might not benefit.

Violence against those advocating for transition in land and resource use practices, including in food landscapes, is a feature in some parts of the world. Global Witness recorded 227 lethal attacks worldwide in 2020 on people defending their homes, land and livelihoods, and ecosystems – and this is likely to be a significant underestimate.¹⁴⁰ Over half of these were in Colombia, Mexico or the Philippines, though the list spans Latin America, Asia and Africa, and also includes Canada.

Other forms of violence against activists include intimidation, surveillance, sexual violence and criminalization. The victims are most often smallholder farmers, local Indigenous Peoples, and/or women, all of whom directly depend on local resources for their daily existence.¹⁴¹ The threat of violence against people trying to promote positive change is a source of great vulnerability for some communities, and curbs their enjoyment of basic human rights. Fear of violence will also curtail women's access to markets.¹⁴²

In rural areas especially, **cultural norms** dictating that women care for children and elderly family members, prepare food, and fetch water and firewood, effectively prevent many from being able to engage in productive (i.e. paid) economic activities such as farming.¹⁴³ Many countries have laws that specifically limit the livelihood options available to women, and consequently many women feel it necessary to take on dangerous informal work where they are at greater risk of violence and other health risks.



Global food supply chains and markets

directly influence the precarity of farmer livelihoods – and, sometimes, food security. Market volatility, driven in part by futures trading¹⁴⁴ and by the financialization¹⁴⁵ of food commodities on major world stock markets, can greatly affect the incomes of farmers and, indirectly, of farm workers.¹⁴⁶ It also affects food prices for consumers.

Volatility has become an inherent feature of the food market, and will likely reinforce the trend observed in some regions towards increasingly large, consolidated farms at the expense of smallholders (who often have little or no capacity to store produce for extended periods of time, and thus may have no way to ride out short-term price fluctuations).

Corporate practices can also have significant impacts on farmers. For example, large agro-corporations frequently restrict the choices that farmers and communities can make to self-determine production (e.g. by restricting choice of seeds or agro-chemicals), or to get fair prices for their produce.¹⁴⁷ The prices paid to farmers are significantly determined by the interconnectedness of global markets, so farmers in different corners of the world compete with one another,¹⁴⁸ even though food production methods and contexts are highly diverse around the world.

Addressing these and other problems is not only something to aspire to in a just food system transition – it may be critical to its success. Broadly, poverty and various forms of marginalization limit people's access to healthy foods and expose them to economic exploitation and environmental impacts. This means we need to tackle the causes of poverty and exclusion to reach a just food system. A well-designed transition can provide an opportunity to tackle some of these drivers.

3.4 Applying the principles to diverse food system transitions

Principles are not a panacea, especially for something as large and complex as food systems. They are meant as tools to guide conversations both at the global level, and in specific contexts, and provide some relatively broad lanes of approach to a just food system. But these are wickedly difficult problems, which smallholder farmers and hungry people have virtually no power to influence. We need to be cognizant of this when applying the principles.

A single set of principles also cannot represent all realities at the local level. Indeed, overreliance on global principles could eclipse local nuances, which is the opposite of what a just food system transition requires. Instead, we need to recognize that when applied in different regions and different sectoral contexts, a good set of principles will generate different prescriptions for the transition. In other words, **there will be different “just transitions” in different parts of the world.** And the vulnerability of food sector actors to change varies significantly: some have very high incomes and profits, while others earn less than a living wage.

In general, if changes in the food system make progress on one or more of the criteria in Principle 1, without compromising (making worse) any of the other criteria – and do so in a way that reflects a just process of change (Principles 3 to 9) – they will contribute to a just transition. However, if advances in one criteria undermine another – for instance, if measures to reduce GHG emissions somehow deepen rural poverty – the transition would in principle not qualify as just.

In practice, however, evaluating such scenarios is complicated. For example, if a food-insecure region expands food production in a way that reduces malnutrition, but also marginally increases global GHG emissions, is it really

fair to say it is an unjust transition? Or by how much could measures to make food systems more sustainable increase costs to consumers before the result is unjust – and how does the calculus change if the consumers are in a wealthy country vs. a very poor one?

The principles for a just food system transition therefore need to recognize, and be applicable to, many different contexts and different kinds of change, and be applied with nuance. Yet calls for just transitions are often simplistic, in the food sector as in other sectors. Sometimes this is because they promote only high-level direction. Or they may focus too narrowly on single objectives, like labour, or farmer livelihoods – both of which are important, but by themselves insufficient to ensure a just transition – while ignoring interactions between social, economic and environmental objectives.

Working with this complexity is the central challenge in defining a set of principles for just food system transitions, and appreciating this complexity is a central challenge in using the principles. Their application requires nuanced interpretation in each specific context.

To be useful as a lens for guiding, or assessing, changes as they unfold around the world, a set of just transition principles must try to integrate the needs and challenges of the local context and the global context. Furthermore, given that the potential for tension to arise between certain goals is inevitable, principles should ideally help to navigate any trade-offs that cannot otherwise be resolved.



Box 1: Examples of potential tensions between just transition principles

There are many possible tensions that could arise in seeking to transition to a more just global food system. The hypothetical trade-offs presented below may or may not arise in any given context. They are noted here to highlight the need for careful consideration in how the transition is planned.

Increasing land and labour productivity vs. employment: The push to increase productivity and lower farm costs (to improve farmer livelihoods, reduce food costs, and/or increase food security) may drive the uptake of new technologies, which in turn may reduce the number of jobs on farms, and result in net employment loss if the number of new jobs created (e.g. in agricultural technology and service sectors) is less than those lost on farms.¹⁴⁹

Food security and nutrition vs. sustainability: Boosting agricultural production in many places could increase pressure on natural resources (e.g. as freshwater is used for irrigation, or large-scale monocultures replace mixed landscapes) and require more fertilizer use, which could lead to higher levels of pollution and GHG emissions.¹⁵⁰ Expanding livestock production in particular to increase the availability of protein for those who are now undernourished (in areas of the Global South) could also increase GHG emissions.

GHG emission reductions vs. livelihoods/jobs: The use of technology for more precise application of fertilizers/pesticides, which would reduce GHG emissions, could reduce on-farm labour. Reducing deforestation means the food system must increase productivity of existing farmed areas, which as above could see greater use of technology in place of labour. Reducing livestock numbers means job losses in some areas producing meat or dairy today, even if new jobs may be created elsewhere. Introducing zero deforestation rules for supply chains to reduce forest loss and GHG emissions could prevent some local farmers from being able to sell their produce.

Smallholder livelihoods vs. food security: In sub-Saharan Africa, small and diminishing farm sizes are going to limit new investment in technological change that could increase productivity and local food security. Some suggest that some amount of farm consolidation will be needed to overcome this, but this will require alternative employment opportunities to enable some farmers and farm workers to shift out of agriculture altogether, since larger farms use less labour overall. However, the numbers of jobs outside agriculture is likely to be insufficient to enable this.¹⁵¹

Animal welfare vs. environmental footprint of food production: Livestock intensification can be more efficient environmentally, per kilo of meat (or dozen eggs), but will likely exacerbate animal welfare issues compared with less intensive production. A shift from beef to chicken production will reduce GHG emissions, but result in larger numbers of animals being reared and slaughtered under conditions of deprived welfare.

GHG emission reductions vs. food security: As noted earlier, some changes in agricultural practices could increase food costs, and thus potentially affect food security. A recent study found that implementing ambitious climate mitigation policies globally could increase agricultural commodity prices so much that, without measures to offset the impacts, it could cause more hunger than the direct impacts of climate change.¹⁵² The study found the risks would be most acute in regions such as sub-Saharan Africa and South Asia, which are today already most vulnerable to hunger.

Some of these tensions emerge from the interaction between local and global objectives. For example, reducing GHG emissions is a global goal. This means there should, in theory, be opportunities for some places to expand food production in a way that increases emissions while the global GHG footprint of the food sector is brought down by stronger mitigation action in other regions.¹⁵³

The resolution of such tensions is not necessarily in avoiding impacts altogether, but in how these impacts are subsequently managed to achieve the objectives of just food system transition. For example:

- ⊙ If additional GHG emissions cannot be avoided as part of an initiative that increases nutrition in areas affected by hunger, the food system – and food system actors – must find ways of reducing emissions elsewhere across the global food system (**Principles 1 and 9**).
- ⊙ If local job losses cannot be offset by the creation of new local jobs for these workers, then support for re-training and social protection systems must be available to workers and their families, so their livelihoods are protected (**Principle 5**).
- ⊙ If efforts to improve farmer livelihoods and reduce their income vulnerability result in higher prices for food commodities, adverse price effects on poor consumers should be managed through other mechanisms like income support or targeted subsidies (**Principle 6**).

A key approach to resolving tensions is to be clear about which objectives *must* be met by the food system itself (i.e. nutrition and food security, production within planetary boundaries),ⁱ and which could, in theory, be met by providing support that comes from

outside the food system (e.g. provision of social safety nets, or central government support for regional economic diversification, such as through infrastructure investment, urban renewal programmes or other strategies). This allows for some changes within the food system to create certain kinds of negative impacts (e.g. job losses), provided there are strategies in parallel to effectively manage these, especially for vulnerable or marginalized stakeholders.

It also requires clarity on *how* negative impacts at a local level (e.g. increases in GHG emissions) might be offset by positive changes at a global level (i.e. GHG reductions of equivalent or greater scale elsewhere in the global food system). This is plausible in theory, but what mechanisms exist or are needed to ensure that this actually happens?

At a macro level, the global food system is inherently complex, as then is the task of promoting a more just food system. It requires us to explicitly consider global linkages in the food system. For instance, its scope should not only take into account the GHG emissions produced and consumed domestically in any country, but also the impact of food and feed that is imported and exported. Climate strategies that reduce domestic emissions, while increasing food imports that outsource and increase total global emissions, are not delivering on the goals of a just transition.

ⁱ A just food system must, first and foremost, provide food – enough nourishment and nutrition to ensure all people have access to a healthy diet. It must do so in a way that brings the food sector's contribution to GHG emissions in line with internationally agreed targets for curtailing the rate of climate change (and over time, may need to operate within an even smaller emissions budget than today's targets reflect). Arguably, GHG emissions reductions are agnostic to sector, so reductions could be greater in other sectors to allow more space for the food sector to generate emissions. Practically, however, agriculture and food production are responsible for around a quarter of global emissions, so these emissions cannot simply be dealt with in other sectors (and in any case there are equity implications to unravel if this was to be argued as acceptable).

4. Ways forward

Talk of a just transition usually assumes a transition is already happening or expected soon. Yet in the food sector, that is far from the case. Despite the overwhelming evidence that today's food systems are socially and environmentally unsustainable, and some modest changes and positive trends in some parts of the world, there is little evidence to suggest that fundamental changes are under way – certainly not on a global scale.

If the food sector continues with “business as usual”, then talk of a just transition is not only fanciful, but it also focuses on the wrong justice questions. It is unjust to be focusing on what happens if and when our food system “transitions”, when we should instead be focused on the injustices and planetary impacts of a food system that continues along today's path.

In that context, the just transition principles laid out in this report can be seen as a tool for challenging the status quo and mobilizing support for systemic change.

Systemic change will not be easy to agree on, given the many vested interests that benefit from today's system, the extensive and interconnected ways that the food system affects social, economic and environmental objectives, and the enormous diversity in contexts where (and by whom) food is produced – and consumed. Food is essential to human survival, and food systems are central to many livelihoods, so for many people, particularly in rural areas, the stakes are very high.

We need a clear vision for the future where people can see themselves thriving – particularly those who are now most vulnerable. If people fear that the transition will result in their going hungry, losing their job, being driven out of business, or otherwise

being harmed, they will – understandably – push back. Farmers, workers and rural communities can experience psychological stress if there is a perceived pressure to “transition”, especially if the path forward is unclear. This situation can also lead farmers to make financial investments that result in stranded assets, or are otherwise wasted.

So how do we move forward?

First, **we need to acknowledge and work to reverse some systemic inequalities and power asymmetries upon which today's food system is built**, and which its most powerful actors may have limited interest in reforming. The larger food transition may be an opportunity to tackle these issues, but there is no need to wait. We can start working to improve transparency and disclosures about our food system, including between producers and consumers, for instance;¹⁵⁴ try to level the playing field between producers and corporate buyers; and scale up efforts to secure land and natural resource tenure in rural communities.

Second, **we need to accelerate trends towards healthier and more sustainable diets in the Global North (and in upper-income segments of the Global South)**. In some parts of the world, there is already a growing interest in plant-based foods and meat alternatives, for example, as well as in improved nutrition as a way to improve health.¹⁵⁵ Policies, fiscal incentives and public awareness campaigns can all contribute to promoting these changes, but policies and subsidies that actually encourage higher consumption of animal products actively work against them.¹⁵⁶ In middle-income countries where meat demand is still rising, it is important to build wider awareness of the human health and environmental impacts of meat-intensive diets.

Third, we need to start reshaping our institutions to be capable of supporting – and potentially driving – a food system transition.

At the local and national level, this means developing social, political and economic institutions that ensure fair representation and provide different stakeholders a say in all decisions over the food system – and land and resource use more broadly. Governments need mechanisms that can bridge the gaps between siloed sector ministries and departments and connect their work. Furthermore, because of the global interlinkages in food systems, and the inevitable tensions between principles (discussed in Section 3.4), a global food system transition is likely to require some form of international coordination. One option might be the UN Food Systems Coordination Hub, which could help the international community to work towards fair burden-sharing.

When discussing, planning and creating policies for change, it is essential to include consensus-building measures, to account for the often polarized relationship between

farmers and environmental organizations, and sometimes within and between farmer organizations. Open, constructive dialogue between the relevant parties should ensure jointly supported roadmaps for transition. Dialogue should be framed around concrete issues that are directly relevant to people in rural areas and food value chains, rather than abstract concepts or jargon, and should seek to identify concrete, locally appropriate solutions. Otherwise, dialogue about transition will itself create fear or insecurity for those most at risk.

Changing the character of a global food system to one that is more socially equitable and ecologically sustainable, and in a way that is just, is an enormous task. But continuing “business as usual” is untenable, given the many problems today’s food system creates. There is no time to waste; we urgently need to start building a just food system that works for people, nature and the climate. We hope the 10 principles presented in this report provide helpful guidance and inspiration.



Endnotes

- ¹ FAO. 2022. "World Food and Agriculture – Statistical Yearbook 2022." Rome: Food and Agriculture Organization of the United Nations. doi:10.4060/cc2211en. Note that the spelling "tonnes" is used to indicate metric tons.
- ² FAO. 2021. "The State of Food and Agriculture 2021: Making Agrifood Systems More Resilient to Shocks and Stresses." Rome, Italy: Food and Agriculture Organization of the United Nations. doi:10.4060/cb4476en.
- ³ See "Food Balances" on the UN Food and Agriculture Organization's FAOStat database: <https://www.fao.org/faostat/en/#data/FBS>.
- ⁴ Dijk, M. van et al. 2021. "A Meta-Analysis of Projected Global Food Demand and Population at Risk of Hunger for the Period 2010–2050." *Nature Food* 2 (7): 494–501. doi:10.1038/s43016-021-00322-9.
- ⁵ FAO et al. 2022. "The State of Food Security and Nutrition in the World 2022: Repurposing Food and Agricultural Policies to Make Healthy Diets More Affordable." Rome: Food and Agriculture Organization of the United Nations, International Fund for Agricultural Development, United Nations Children's Fund, World Food Programme, and World Health Organization. doi:10.4060/cc0639en.
- ⁶ FAO et al., 2022.
- ⁷ FAO. 2018. "The Future of Food and Agriculture: Alternative Pathways to 2050." Summary Version. Rome, Italy: Food and Agriculture Organization of the United Nations. <https://www.fao.org/3/CA1553EN/ca1553en.pdf>.
- ⁸ Webb, P. et al. 2018. "Hunger and Malnutrition in the 21st Century." *BMJ*, June, k2238. doi:10.1136/bmj.k2238.
- ⁹ WFP. 2013. "Labour Market Analysis Guidance For Food Security Analysis and Decision-Making." Rome: World Food Programme Analysis and Nutrition Service. https://documents.wfp.org/stellent/groups/public/documents/manual_guide_proced/wfp258583.pdf.
- ¹⁰ OECD and FAO. 2022. *OECD-FAO Agricultural Outlook 2022–2031*. Paris and Rome: Organisation for Economic Co-operation and Development and Food and Agriculture Organization of the United Nations. doi:10.1787/19428846-en.
- ¹¹ By 2031, average daily calorie availability in sub-Saharan Africa will still be well below the global average of 3040 kcal per person, and still the lowest in the world (OECD and FAO, 2022).
- ¹² OECD and FAO. 2022. *OECD-FAO Agricultural Outlook 2022–2031*.
- ¹³ FAO. n.d. "Biodiversity and Nutrition: A Common Path." Food and Agriculture Organization of the United Nations (FAO). https://www.fao.org/fileadmin/templates/food_composition/documents/upload/Interodocumento.pdf.
- ¹⁴ Willett, W. et al. 2019. "Food in the Anthropocene: The EAT–Lancet Commission on Healthy Diets from Sustainable Food Systems." *The Lancet* 393 (10170): 447–92. doi:10.1016/S0140-6736(18)31788-4.
- ¹⁵ IPES-Food. 2022. "The Politics of Protein: Examining Claims about Livestock, Fish, Alternative Proteins, and Sustainability." IPES-Food. https://www.ipes-food.org/_img/upload/files/PoliticsOfProtein.pdf.32890
- ¹⁶ IFIF. 2021. "International Feed Industry Federation Annual Report 2020/21." International Feed Industry Federation. <https://annualreport.ifif.org/wp-content/uploads/Annual-report-2020-21-download.pdf>.
- ¹⁷ OECD and FAO. 2022. *OECD-FAO Agricultural Outlook 2022–2031*.
- ¹⁸ IFAD. n.d. "The Issues: Dig Deeper and Explore the Issues Driving Extreme Poverty." <https://www.ifad.org/en/issues>.
- ¹⁹ OECD. n.d. "How We Feed the World Today." <https://www.oecd.org/agriculture/understanding-the-global-food-system/how-we-feed-the-world-today/>.
- ²⁰ See International Labour Organization (ILO) modelled estimates of employment in agriculture as a share of total employment (via the World Development Indicators website): https://data.worldbank.org/indicator/SL.AGR.EMPL.ZS?most_recent_value_desc=true.
- ²¹ See ILO modelled estimates for women employed in agriculture (via World Development Indicators website): https://data.worldbank.org/indicator/SL.AGR.EMPL.FE.ZS?most_recent_value_desc=true.
- ²² ILO. 2018. "Women and Men in the Informal Economy: A Statistical Picture." Geneva, Switzerland: International Labour Organization. https://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/documents/publication/wcms_626831.pdf.

- ²³ ILO. 2022. "Asia–Pacific Sectoral Labour Market Profile: Agriculture." Geneva, Switzerland: International Labour Organization. https://www.ilo.org/wcmsp5/groups/public/---asia/---ro-bangkok/documents/briefingnote/wcms_863302.pdf.
- Jaeger, J. et al. 2021. "The Green Jobs Advantage: How Climate-Friendly Investments Are Better Job Creators." Working Paper. World Resources Institute, ITUC and the New Climate Economy. https://files.wri.org/d8/s3fs-public/2021-10/the-green-jobs-advantage-how-climate-friendly-investments-are-better-job-creators.pdf?VersionId=_4g3pkXM5qB8_DEy1MhhbF8AloDhqGUY.
- Anderson, T. 2019. "Principles for a Just Transition in Agriculture." ActionAid.
- ²⁴ UNCBD. 2020. "Global Biodiversity Outlook 5." Montreal, Canada: Secretariat of the Convention on Biological Diversity. <https://www.cbd.int/gbo/gbo5/publication/gbo-5-en.pdf>; Barona, E. et al. 2010. "The Role of Pasture and Soybean in Deforestation of the Brazilian Amazon." *Environmental Research Letters* 5 (2): 024002. doi:10.1088/1748-9326/5/2/024002; Acheampong, E.O. et al. 2019. "Deforestation Is Driven by Agricultural Expansion in Ghana's Forest Reserves." *Scientific African* 5 (September): e00146. doi:10.1016/j.sciaf.2019.e00146.
- ²⁵ FAO. 2017. "Water for Sustainable Food and Agriculture." Rome, Italy: Food and Agriculture Organization of the United Nations. <https://www.fao.org/3/i7959e/i7959e.pdf>.
- ²⁶ Montgomery, D.R. 2007. "Soil Erosion and Agricultural Sustainability." *Proceedings of the National Academy of Sciences* 104 (33): 13268–72. doi:10.1073/pnas.0611508104; Borrelli, P. et al. 2017. "An Assessment of the Global Impact of 21st Century Land Use Change on Soil Erosion." *Nature Communications* 8 (1): 2013. doi:10.1038/s41467-017-02142-7; Anderson, T. 2019. "Principles for a Just Transition in Agriculture." ActionAid.
- ²⁷ Poore, J. and T. Nemecek. 2018. "Reducing Food's Environmental Impacts through Producers and Consumers." *Science* 360 (6392): 987–92. doi:10.1126/science.aag0216.
- ²⁸ Verkuijl, C. et al. 2022. "A Just Transition in the Meat Sector: Why, Who and How? A Mapping of Affected Stakeholders in High-Income Countries, and Principles to Guide a Just Transition." SEI Report. Stockholm Environment Institute. <https://www.sei.org/wp-content/uploads/2022/11/just-transition-meat-sector.pdf>; PETA. n.d. "Animals Used for Food." *People for the Ethical Treatment of Animals (PETA)* (blog). <https://www.peta.org/issues/animals-used-for-food/>.
- ²⁹ Jones, B.A. et al. 2013. "Zoonosis Emergence Linked to Agricultural Intensification and Environmental Change." *Proceedings of the National Academy of Sciences* 110 (21): 8399–8404. doi:10.1073/pnas.1208059110.
- Wiebers, D.O. and V.L. Feigin. 2020. "What the COVID-19 Crisis Is Telling Humanity." *Neuroepidemiology* 54 (4): 283–86. doi:10.1159/000508654.
- ³⁰ Silbergeld, E.K., J. Graham, and L.B. Price. 2008. "Industrial Food Animal Production, Antimicrobial Resistance, and Human Health." *Annual Review of Public Health* 29 (1): 151–69. doi:10.1146/annurev.publhealth.29.020907.090904.
- ³¹ IPCC. 2019. "Climate Change and Land: An IPCC Special Report on Climate Change, Desertification, Land Degradation, Sustainable Land Management, Food Security, and Greenhouse Gas Fluxes in Terrestrial Ecosystems – Summary for Policy Makers." Intergovernmental Panel on Climate Change. https://www.ipcc.ch/site/assets/uploads/sites/4/2020/02/SPM_Updated-Jan20.pdf.
- ³² Costa, C. et al. 2022. "Roadmap for Achieving Net-Zero Emissions in Global Food Systems by 2050." *Scientific Reports* 12 (1): 15064. doi:10.1038/s41598-022-18601-1.
- ³³ Bezner Kerr, R. et al. 2022. "Food, Fibre, and Other Ecosystem Products." In *Climate Change 2022: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*, edited by H.-O. Pörtner et al. Cambridge, UK, and New York: Cambridge University Press. <https://www.ipcc.ch/report/ar6/wg2/>.
- ³⁴ Proponents of this term define it in various ways, some based on processes (e.g., use of cover crops, the integration of livestock, and reducing or eliminating tillage), others based on outcomes (e.g., to improve soil health, to sequester carbon, and to increase biodiversity), and others on combinations of both. See: Newton, P. et al. 2020. "What Is Regenerative Agriculture? A Review of Scholar and Practitioner Definitions Based on Processes and Outcomes." *Frontiers in Sustainable Food Systems* 4 (October): 577723. doi:10.3389/fsufs.2020.577723.
- For an overview of climate perspectives, see Bezner Kerr et al. 2022. "Food, Fibre, and Other Ecosystem Products."
- ³⁵ See, for example: ILO. 2022. "Sectoral Policies for a Just Transition towards Environmentally Sustainable Economies and Societies for All." ILO Just Transition Policy Briefs. Geneva: International Labour Organization. http://www.ilo.org/global/topics/green-jobs/publications/just-transition-pb/WCMS_858856/lang--en/index.htm.
- ³⁶ See, for example: OECD and FAO. 2022. *OECD-FAO Agricultural Outlook 2022–2031*.
- Johnson, E. et al. 2022. "Fresh Food as Medicine." *Deloitte Insights* (blog), September 26. <https://www2.deloitte.com/us/en/insights/industry/retail-distribution/future-of-fresh-food-sales/fresh-food-as-medicine-for-the-heartburn-of-high-prices.html>.
- Carter, H. 2023. "5 Food and Beverage Trends to Watch in 2023." *Food & Beverage Insider* (blog), January 6. <https://www.foodbeverageinsider.com/market-trends-analysis/5-food-and-beverage-trends-watch-2023>.

- ³⁷ Rotz, S. et al. 2019. "Automated Pastures and the Digital Divide: How Agricultural Technologies Are Shaping Labour and Rural Communities." *Journal of Rural Studies* 68 (May): 112–22. doi:10.1016/j.jrurstud.2019.01.023; FAO. 2022. *The State of Food and Agriculture 2022*. FAO. doi:10.4060/cb9479en.
- ³⁸ Qii, G. et al. 2015. "Copying the Extension System of China and Beyond: Implementing the Chinese Agriculture Technology Demonstration Centre in Ethiopia." Working Paper 128. Future Agricultures. https://opendocs.ids.ac.uk/opendocs/bitstream/handle/20.500.12413/7096/FAC_Working_Paper_128.pdf?sequence=1; Lixia, T. et al. 2015. "Blurring the Lines between Aid and Business in the Agricultural Technology Demonstration Centre in Zimbabwe." Working Paper 129. Future Agricultures. https://opendocs.ids.ac.uk/opendocs/bitstream/handle/20.500.12413/7097/FAC_Working_Paper_129.pdf?sequence=1; Fiorentini, M. 2016. "How Is The Chinese 'Going Out' Policy Having an Impact on Agriculture-Related Trade with Africa? A Political and Economic Analysis of Sino-African Relations." Working Paper 134. Future Agricultures. <https://www.future-agricultures.org/download/fac-working-paper-134-pdf/>.
- ³⁹ JTRC. 2018. "Mapping Just Transition(s) to a Low-Carbon World." Just Transition Research Collaborative (JTRC), United Nations Research Institute for Social Development (UNRISD). <https://cdn.unrisd.org/assets/library/books/pdf-files/report-jtrc-2018.pdf>.
- ⁴⁰ ITUC. 2010. "Resolution on Combating Climate Change through Sustainable Development and Just Transition (2CO/E/6.10 [Final])." International Trade Union Confederation. <http://ituc-csi.org/resolution-on-combating-climate/>; ILO. 2015. "Guidelines for a Just Transition towards Environmentally Sustainable Economies and Societies for All." International Labour Organization; Blattner, C. 2020. "Just Transition for Agriculture? A Critical Step in Tackling Climate Change." *Journal of Agriculture, Food Systems, and Community Development*, March, 1–6. doi:10.5304/jafscd.2020.093.006.
- ⁴¹ The same lens applies equally well to other drivers of systems change, such as technological innovation, market shifts, and corporate strategy, even if today it is still relatively absent outside of debates about environmental and climate policy.
- ⁴² DTE. 2022. "Looking Back at Stockholm 1972: What Indira Gandhi Said Half a Century Ago on Man & Environment." *Down To Earth* (blog), May 31. <https://www.downtoearth.org.in/news/environment/looking-back-at-stockholm-1972-what-indira-gandhi-said-half-a-century-ago-on-man-environment-83060>.
- ⁴³ See for example: ILO. 2015. "Guidelines for a Just Transition towards Environmentally Sustainable Economies and Societies for All." Climate Justice Alliance. 2019. "Just Transition Principles." https://climatejusticealliance.org/wp-content/uploads/2019/11/CJA_JustTransition_highres.pdf.
- JTRC. 2018. "Mapping Just Transition(s) to a Low-Carbon World." Just Transition Research Collaborative. Geneva: Rosa Luxemburg Stiftung, University of London in Paris, and United Nations Research Institute for Social Development. <https://www.unclearn.org/wp-content/uploads/library/report-jtrc-2018.pdf>.
- IEN. 2017. "Indigenous Principles of Just Transition." Indigenous Environmental Network. <http://www.ienearth.org/wp-content/uploads/2017/10/IENJustTransitionPrinciples.pdf>.
- CSIS and CIF. 2020. "Just Transition Concepts and Relevance for Climate Action." Just Transition Initiative. Washington, DC: Climate Investment Funds and Center for Strategic and International Studies. <https://justtransitioninitiative.org/just-transition-concepts-and-relevance-for-climate-action/?id=1>.
- Atteridge, A. and C. Strambo. 2020. "Seven Principles to Realize a Just Transition to a Low-Carbon Economy." Policy Report. Stockholm: Stockholm Environment Institute. <https://www.sei.org/publications/seven-principles-to-realize-a-just-transition-to-a-low-carbon-economy/>.
- ⁴⁴ Molina Romo, O. 2022. "The Role of Tripartite Social Dialogue in Facilitating a Just Transition: Experiences from Selected Countries." ILO Working Paper 76. International Labour Organization. https://www.ilo.org/global/publications/working-papers/WCMS_854518/lang--en/index.htm; Krawchenko, T.A. and M. Gordon. 2021. "How Do We Manage a Just Transition? A Comparative Review of National and Regional Just Transition Initiatives." *Sustainability* 13 (11): 6070. doi:10.3390/su13116070.
- ⁴⁵ JTRC, 2018b, "Mapping Just Transition(s) to a Low-Carbon World"; IHRB. 2022. "Just Transitions Dialogue: Exploring the Need for International Rules Based on Local Realities." Report of the IHRB-Wilton Park Just Transitions Dialogue. Institute for Human Rights and Business (IHRB), and Wilton Park. <https://www.wiltonpark.org.uk/wp-content/uploads/2022/04/WP3012-Report.pdf>.
- ⁴⁶ Montmasson-Clair, G. 2021. "A Policy Toolbox for Just Transition." Trade and Industrial Policy Strategies. <https://www.tips.org.za/research-archive/sustainable-growth/green-economy-2/item/4152-a-policy-toolbox-for-just-transitions>; IEN. 2017. "Indigenous Principles of Just Transition." Indigenous Environmental Network. <http://www.ienearth.org/wp-content/uploads/2017/10/IENJustTransitionPrinciples.pdf>; Akuno, K. et al. 2022. "From Crisis to Transformation - What Is Just Transition: A Primer." Transnational Institute and Grassroots Global Justice Alliance. <https://www.tni.org/en/publication/from-crisis-to-transformation>.
- Climate Justice Alliance. 2019. "Just Transition Principles."
- CSIS and CIF. 2020. "Just Transition Concepts and Relevance for Climate Action."

Wilton Park. 2022. "Just Transitions Dialogue: Exploring the Need for International Rules Based on Local Realities." Report on a high-level dialogue held October 5-7, 2022. Prepared in association with the Institute for Human Rights and Business. <https://www.wiltonpark.org.uk/wp-content/uploads/2022/04/WP3012-Report.pdf>.

- ⁴⁷ Ambikapathi, R. et al. 2022. "Global Food Systems Transitions Have Enabled Affordable Diets but Had Less Favourable Outcomes for Nutrition, Environmental Health, Inclusion and Equity." *Nature Food* 3 (9): 764–79. doi:10.1038/s43016-022-00588-7.
- ⁴⁸ Pollin, R. and S. Chakraborty. 2020. "Job Creation Estimates Through Proposed Economic Stimulus Measures." Political Economy Research Institute, University of Massachusetts Amherst. <https://peri.umass.edu/publication/item/1297-job-creation-estimates-through-proposed-economic-stimulus-measures>.
- ⁴⁹ Saget, C., A. Vogt-Shilb, and T. Luu. 2020. "Jobs in a Net-Zero Emissions Future in Latin America and the Caribbean." Washington, DC and Geneva: Inter-American Development Bank and International Labour Organization. https://www.ilo.org/global/publications/books/WCMS_752069.
- ⁵⁰ IEN. 2017. "Indigenous Principles of Just Transition."
- ⁵¹ The EU provides a simple definition for the term "bioeconomy": "using renewable biological resources from land and sea, like crops, forests, fish, animals and micro-organisms to produce food, materials and energy". See https://research-and-innovation.ec.europa.eu/research-area/environment/bioeconomy_en.
- ⁵² Bastos Lima, M.G. 2022. "Just Transition towards a Bioeconomy: Four Dimensions in Brazil, India and Indonesia." *Forest Policy and Economics* 136 (March): 102684. doi:10.1016/j.forpol.2021.102684.
- ⁵³ See "Koronivia joint work on agriculture": <https://unfccc.int/documents/505870>.
- ⁵⁴ Sarku, R. and S. Whitfield. 2022. "Delivering a Just Transformation through the Koronivia Joint Work on Agriculture." Note No. 6, SRI 31. United Kingdom: University of Leeds.
- ⁵⁵ The interviews and the review of literature were used to collate different perspectives on the following broad questions: (i) What are the costs and benefits generated by today's food production system, how are these distributed, and in what ways does the system produce inequality and vulnerability? (ii) What transition(s) are taking place – or needed – in food systems, and what are the main drivers of change? (iii) Who may be affected by these changes, and how, considering both direct and indirect, positive and negative impacts, and their distribution? What should the objectives of "just" transition in food systems be? What actions or measures will support just transition in food systems?
- ⁵⁶ FAO. 2005. "The Right to Food: Voluntary Guidelines to Support the Progressive Realization of the Right to Adequate Food in the Context of National Food Security." Rome: Food and Agriculture Organization of the United Nations. <https://www.fao.org/3/y7937e/y7937e.pdf>.
- ⁵⁷ Sánchez García, J.L., I. Beiro Pérez, and J.M. Díez Sanz. 2019. "Hunger and Sustainability." *Economic Research-Ekonomiska Istraživanja* 32 (1): 850–75. doi:10.1080/1331677X.2019.1583588.
- ⁵⁸ Webb et al. 2018. "Hunger and Malnutrition in the 21st Century."
- ⁵⁹ FAO. 2005. "The Right to Food: Voluntary Guidelines to Support the Progressive Realization of the Right to Adequate Food in the Context of National Food Security."
- ⁶⁰ FAO. 2018. "The Future of Food and Agriculture: Alternative Pathways to 2050"; Webb, P. et al. 2018. "Hunger and Malnutrition in the 21st Century." *BMJ*, June, k2238. doi:10.1136/bmj.k2238.
- For examples of countries that have done this well, see Webb et al. 2018. "Hunger and Malnutrition in the 21st Century."
- ⁶¹ Rockström, J. et al. 2009. "A Safe Operating Space for Humanity." *Nature* 461 (7263): 472–75. doi:10.1038/461472a.
- ⁶² UNSDG. 2020. "The Impact of COVID-19 on Food Security and Nutrition." Policy Brief. United Nations Sustainable Development Group. <https://unsdg.un.org/resources/policy-brief-impact-covid-19-food-security-and-nutrition>.
- ⁶³ IFAD. n.d. "The Issues: Dig Deeper and Explore the Issues Driving Extreme Poverty."
- ⁶⁴ Samberg, L.H. et al. 2016. "Subnational Distribution of Average Farm Size and Smallholder Contributions to Global Food Production." *Environmental Research Letters* 11 (12): 124010. doi:10.1088/1748-9326/11/12/124010.
- ⁶⁵ OECD. n.d. "How We Feed the World Today."
- ⁶⁶ Ricciardi, V. et al. 2018. "How Much of the World's Food Do Smallholders Produce?" *Global Food Security* 17 (June): 64–72. doi:10.1016/j.gfs.2018.05.002.
- ⁶⁷ Giller, K.E. et al. 2021. "The Future of Farming: Who Will Produce Our Food?" *Food Security* 13 (5): 1073–99. doi:10.1007/s12571-021-01184-6.

- ⁶⁸ Headey, D.D. and T.S. Jayne. 2014. "Adaptation to Land Constraints: Is Africa Different?" *Food Policy* 48 (October): 18–33. doi:10.1016/j.foodpol.2014.05.005. Note this particularly in relation to sub-Saharan Africa, where in many countries they argue there are limited opportunities for non-farm income, due to economic structure (lack of manufacturing, for instance) and to limited participation in overseas labour markets and hence limited remittances.
- ⁶⁹ This is what the International Labour Organization (ILO) calls "decent work"; see <https://www.ilo.org/global/topics/decent-work/>.
- ⁷⁰ Bezner Kerr et al. 2022. "Food, Fibre, and Other Ecosystem Products."
- ⁷¹ Wang-Erlandsson, L. et al. 2022. "A Planetary Boundary for Green Water." *Nature Reviews Earth & Environment* 3 (6): 380–92. doi:10.1038/s43017-022-00287-8.
- For annotations, see also Acheampong et al. 2019; Barona et al. 2010; Blattner 2020; Curtis 2018; FAO 2017; IPCC 2019; Rockström 2009; UNCBD 2020; and WRI n.d.
- ⁷² Atteridge, A. and E. Remling. 2018. "Is Adaptation Reducing Vulnerability or Redistributing It?" *WIREs Climate Change* 9 (1). doi:10.1002/wcc.500.
- ⁷³ FAO. 2022. "World Food and Agriculture – Statistical Yearbook 2022."
- ⁷⁴ In the European Union, for instance, only 46% of food supply jobs are in crop and animal production. See: Eurostat. 2020. "Employment in Food Supply across EU Regions." May 22. <https://ec.europa.eu/eurostat/web/products-eurostat-news/-/ddn-20200522-2>.
- ⁷⁵ Heat exposure is already a serious concern. See, for example: Rodriguez-Delgado, C. and C. Jones. 2021. "Farmworkers Are Dying in Extreme Heat. Few Standards Exist to Protect Them." *PBS NewsHour*, August 6, sec. Health. <https://www.pbs.org/newshour/health/farmworkers-are-dying-in-extreme-heat-few-standards-exist-to-protect-them>.
- ⁷⁶ Anderson. 2019. "Principles for a Just Transition in Agriculture"; Friends of the Earth International. 2021. "Dismantling Patriarchy While Building Food Sovereignty." Friends of the Earth. https://www.foei.org/wp-content/uploads/2022/03/Friends-of-the-Earth-International_Dismantling-patriarchy-while-building-food-sovereignty_English.pdf; JRT. 2021. "Land Tenure in a Just Rural Transition: Restoring Our Relationships to Land and Natural Resources." Policy Brief. Just Rural Transition. https://justruraltransition.org/wp-content/uploads/sites/12/2022/12/JRT_Land-Tenure_FINAL.pdf; Akuno et al. 2022. "From Crisis to Transformation - What Is Just Transition: A Primer."
- ⁷⁷ In 2018, an estimated 69 billion chickens; 1.5 billion pigs; 656 million turkeys; 574 million sheep; 479 million goats; and 302 million cattle were killed for meat production. See Ritchie, H., P. Rosado, and M. Roser. 2017. "Meat and Dairy Production." *Our World in Data [Online Resource]*. <https://ourworldindata.org/meat-production#number-of-animals-slaughtered>.
- ⁷⁸ CIWF. 2012. "Statistics: Dairy Cows." Compassion in World Farming. <https://www.ciwf.org.uk/media/5235182/Statistics-Dairy-cows.pdf>.
- ⁷⁹ Fan, H. and J. Wu. 2022. "Conventional Use and Sustainable Valorization of Spent Egg-Laying Hens as Functional Foods and Biomaterials: A Review." *Bioresources and Bioprocessing* 9 (1): 43. doi:10.1186/s40643-022-00529-z.
- ⁸⁰ Mood, A. et al. 2023. "Estimating Global Numbers of Farmed Fishes Killed for Food Annually from 1990 to 2019." *Animal Welfare* 32: e12. doi:10.1017/awf.2023.4.
- Notably, Mood et al.'s estimate of 0.79–2.3 trillion per year in 2007–2016 excludes so-called "bycatch" (marine animals caught incidentally during fishing) and other unrecorded capture.
- ⁸¹ As defined by PETA, for example, animal rights means that "animals are not ours to use – for food, clothing, entertainment, or experimentation" and deserve consideration of their best interests without regard to whether they are of any utility to humans. See <https://www.peta.org/about-peta/faq/what-do-you-mean-by-animal-rights/>.
- ⁸² Goldstein, H. 2021. "What's the Difference Between Animal Rights and Animal Welfare?" World Animal Protection. *Animals in Farming* (blog), June 11. <https://www.worldanimalprotection.us/blogs/whats-difference-between-animal-rights-and-animal-welfare>.
- ⁸³ Verkuijl et al. 2022. "A Just Transition in the Meat Sector: Why, Who and How? A Mapping of Affected Stakeholders in High-Income Countries, and Principles to Guide a Just Transition."
- ⁸⁴ Goldstein, H. 2021. "What's the Difference Between Animal Rights and Animal Welfare?" *World Animal Protection* (blog), June 11. <https://www.worldanimalprotection.us/blogs/whats-difference-between-animal-rights-and-animal-welfare>.
- ⁸⁵ FAO. 2018. "The Future of Food and Agriculture: Alternative Pathways to 2050."
- ⁸⁶ Wood, A. et al. 2023. "Reframing the Local–Global Food Systems Debate through a Resilience Lens." *Nature Food* 4 (1): 22–29. doi:10.1038/s43016-022-00662-0.

- ⁸⁷ Atteridge, A. and C. Strambo. 2020. "Seven Principles to Realize a Just Transition to a Low-Carbon Economy." SEI Policy Report. Stockholm, Sweden: Stockholm Environment Institute. <https://www.sei.org/publications/seven-principles-to-realize-a-just-transition-to-a-low-carbon-economy/>; Verkuil et al. 2022. "A Just Transition in the Meat Sector: Why, Who and How? A Mapping of Affected Stakeholders in High-Income Countries, and Principles to Guide a Just Transition."
- ⁸⁸ WFP. 2022. "Global Report on Food Crises - 2022."
- ⁸⁹ See <https://www.globalgoals.org/goals/2-zero-hunger/>.
- ⁹⁰ UNFCCC. 2015. "Paris Agreement." FCCC/CP/2015/10/Add.1. Paris, France: United Nations Framework Convention on Climate Change. <https://unfccc.int/resource/docs/2015/cop21/eng/10a01.pdf>.
- ⁹¹ UNCBD. 2022. "Kunming-Montreal Global Biodiversity Framework." CBD/COP/15/L.25. Montreal, Canada: United Nations Convention on Biological Diversity (UNCBD). <https://www.cbd.int/doc/c/e6d3/cd1d/daf663719a03902a9b116c34/cop-15-l-25-en.pdf>.
- ⁹² Anderson. 2019. "Principles for a Just Transition in Agriculture"; Blattner. 2020. "Just Transition for Agriculture? A Critical Step in Tackling Climate Change"; 50by40. 2020. "A Just Transition within Livestock Production." Online Covid19 Food Systems Dialogues. 50by40. <https://50by40.org/2020/07/01/a-just-transition-within-livestock-production/>; Verkuil et al. 2022. "A Just Transition in the Meat Sector: Why, Who and How? A Mapping of Affected Stakeholders in High-Income Countries, and Principles to Guide a Just Transition."
- ⁹³ Anderson. 2019. "Principles for a Just Transition in Agriculture."
- ⁹⁴ ILO. 2015. "Guidelines for a Just Transition towards Environmentally Sustainable Economies and Societies for All."
- ⁹⁵ Anderson, T. 2017. "Agroecology, Empowerment and Resilience: Lessons from ActionAid's Agroecology and Resilience Project." South Africa: ActionAid. https://actionaid.org/sites/default/files/agroecologyempowermentresilience-lessons_from_aer.pdf.
- ⁹⁶ FAO. 2005. "The Right to Food: Voluntary Guidelines to Support the Progressive Realization of the Right to Adequate Food in the Context of National Food Security."
- ⁹⁷ O'Neill, J. 2001. "Representing People, Representing Nature, Representing the World." *Environment and Planning C: Government and Policy* 19 (4): 483–500. doi:10.1068/c12s.
- ⁹⁸ Ephraim, L. 2018. *Who Speaks for Nature?: On the Politics of Science*. University of Pennsylvania Press. <https://www.jstor.org/stable/j.ctv16t6kqj>.
- ⁹⁹ ILO. 2019. "Implementing the ILO Indigenous and Tribal Peoples Convention No. 169 - Towards an Inclusive, Sustainable and Just Future." International Labour Organization. https://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/---publ/documents/publication/wcms_735607.pdf.
- ¹⁰⁰ UN OHCHR. 2013. "Free, Prior and Informed Consent of Indigenous Peoples." Geneva, Switzerland: United Nations Office of the High Commissioner for Human Rights. <https://www.ohchr.org/sites/default/files/Documents/Issues/IPeoples/FreePriorandInformedConsent.pdf>.
- ¹⁰¹ Qi, J., A. Terton, and S. Vaughan. 2021. "Seeking Common Ground for Climate, Biodiversity, and People: How to Get the Debate on Nature-Based Solutions Right." *IISD Insight* (blog), December 2. <https://www.iisd.org/articles/common-ground-nature>.
- ¹⁰² Giller et al. 2021. "The Future of Farming: Who Will Produce Our Food?"
- ¹⁰³ Witchger, J. et al. 2022. "Climate Smart Agriculture." Indigenous Environmental Network Climate Justice Program Briefing Series. Indigenous Environmental Network. <https://www.ienearth.org/wp-content/uploads/2022/11/Climate-smart-Ag-2.pdf>.
- ¹⁰⁴ Qi, Terton, and Vaughan. 2021. "Seeking Common Ground for Climate, Biodiversity, and People: How to Get the Debate on Nature-Based Solutions Right."
- ¹⁰⁵ Giller et al. 2021. "The Future of Farming: Who Will Produce Our Food?"
- ¹⁰⁶ Santos, N. et al. 2022. "Investing in Carbon Neutrality: Utopia or the New Green Wave?" Rome, Italy: FAO. doi:10.4060/cc0011en.
- ¹⁰⁷ Page, J. et al. 2020. "Urban Economic Growth in Africa: A Framework for Analyzing Constraints to Agglomeration." Africa Growth Initiative, Working Paper 24. Washington, DC: Brookings Institution. <https://www.brookings.edu/research/urban-economic-growth-in-africa-a-framework-for-analyzing-constraints-to-agglomeration/>.
- ¹⁰⁸ Baldock, D. and A. Buckwell. 2021. "Just Transition in the EU Agriculture and Land Use Sector." Institute for European Environmental Policy.
- ¹⁰⁹ Atteridge, A. and E. Remling. 2018. "Is Adaptation Reducing Vulnerability or Redistributing It?" *WIREs Climate Change* 9 (1). doi:10.1002/wcc.500.

- ¹¹⁰ Verkuil et al. 2022. "A Just Transition in the Meat Sector: Why, Who and How? A Mapping of Affected Stakeholders in High-Income Countries, and Principles to Guide a Just Transition."
- ¹¹¹ Anderson. 2019. "Principles for a Just Transition in Agriculture"; 50by40. 2020. "A Just Transition within Livestock Production"; Baldock and Buckwell. 2021. "Just Transition in the EU Agriculture and Land Use Sector"; Verkuil et al. 2022. "A Just Transition in the Meat Sector: Why, Who and How? A Mapping of Affected Stakeholders in High-Income Countries, and Principles to Guide a Just Transition."
- ¹¹² Giller et al. 2021. "The Future of Farming: Who Will Produce Our Food?"
- ¹¹³ Verkuil et al. 2022. "A Just Transition in the Meat Sector: Why, Who and How? A Mapping of Affected Stakeholders in High-Income Countries, and Principles to Guide a Just Transition."
- ¹¹⁴ Blattner. 2020. "Just Transition for Agriculture? A Critical Step in Tackling Climate Change"; Verkuil et al. 2022. "A Just Transition in the Meat Sector: Why, Who and How? A Mapping of Affected Stakeholders in High-Income Countries, and Principles to Guide a Just Transition."
- ¹¹⁵ Baldock and Buckwell. 2021. "Just Transition in the EU Agriculture and Land Use Sector."
- ¹¹⁶ The scenario modelled envisions a 30% rate of adoption of conservation agriculture in developing and emerging countries, and 30% organic agriculture in developed economies. See ILO. 2018. "World Employment Social Outlook 2018: Greening with Jobs." Geneva, Switzerland: International Labour Organization. https://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/---publ/documents/publication/wcms_628654.pdf.
- ¹¹⁷ Anderson. 2019. "Principles for a Just Transition in Agriculture"; Hughes, K. and M. Rescalvo. 2021. "Just Transition Beyond the Energy Sector." ADB Brief No. 195. Asian Development Bank. <https://www.adb.org/sites/default/files/publication/746406/adb-brief-195-just-transition-beyond-energy-sector.pdf>.
- ¹¹⁸ Livestock contributes to the livelihoods of 1.7 billion smallholder farmers in the Global South, for example, and employs as many as 4 million people in the EU alone. See IPES-Food. 2022. "The Politics of Protein: Examining Claims about Livestock, Fish, Alternative Proteins, and Sustainability."
- ¹¹⁹ Anderson. 2019. "Principles for a Just Transition in Agriculture."
- ¹²⁰ See, for example: Mohideen, S. 2022. "Why Climate Action Is Critical to the Future of Unemployed Youth in South Africa." *Africa Policy Journal* (blog), September 29. <https://apj.hkspublications.org/why-climate-action-is-critical-to-the-future-of-unemployed-youth-in-south-africa/>.
- ¹²¹ Muller, S. and N. Robbins. 2022. "Just Nature: How Finance Can Support a Just Transition at the Interface of Action on Climate and Biodiversity." London, United Kingdom: Grantham Research Institute on Climate Change and the Environment and Centre for Climate Change Economics and Policy, London School of Economics and Political Science; Verkuil et al. 2022. "A Just Transition in the Meat Sector: Why, Who and How? A Mapping of Affected Stakeholders in High-Income Countries, and Principles to Guide a Just Transition"; Baldock and Buckwell. 2021. "Just Transition in the EU Agriculture and Land Use Sector"; Blattner. 2020. "Just Transition for Agriculture? A Critical Step in Tackling Climate Change."
- ¹²² Atteridge and Strambo. 2020. "Seven Principles to Realize a Just Transition to a Low-Carbon Economy."
- ¹²³ Anderson. 2019. "Principles for a Just Transition in Agriculture"; Blattner. 2020. "Just Transition for Agriculture? A Critical Step in Tackling Climate Change."
- ¹²⁴ See, e.g., Getahun, H. 2023. "The High Cost of Eggs Could Give Us a Taste of an Expensive, Ethical, and Cage-Free Future, an Eggsperit Says." *Business Insider*, March 4. <https://www.businessinsider.com/why-are-eggs-expensive-cage-free-range-chickens-ethical-2023-3>.
- ¹²⁵ Giller et al. 2021. "The Future of Farming: Who Will Produce Our Food?"
- ¹²⁶ Anderson. 2019. "Principles for a Just Transition in Agriculture."
- ¹²⁷ See the Just Transition Initiative framework discussed earlier – <https://justtransitioninitiative.org/about-just-transitions/> – as well as, for example, CSIS and CIF. 2021. "A Framework for Just Transitions." Climate Investment Funds (CIF) and Centre for Strategic and International Studies (CSIS). https://www.cif.org/sites/cif_enc/files/knowledge-documents/framework-for-just-transitions_download.pdf; Atteridge and Strambo. 2020. "Seven Principles to Realize a Just Transition to a Low-Carbon Economy."
- ¹²⁸ Verkuil et al. 2022. "A Just Transition in the Meat Sector: Why, Who and How? A Mapping of Affected Stakeholders in High-Income Countries, and Principles to Guide a Just Transition"; 50by40. 2020. "A Just Transition within Livestock Production"; Friends of the Earth International. 2021. "Dismantling Patriarchy While Building Food Sovereignty"; JRT. 2021. "Land Tenure in a Just Rural Transition: Restoring Our Relationships to Land and Natural Resources"; Anderson. 2019. "Principles for a Just Transition in Agriculture."
- ¹²⁹ IFAD. n.d. "The Issues: Dig Deeper and Explore the Issues Driving Extreme Poverty."

- ¹³⁰ Feyertag, J. et al. 2020. "A Global Assessment of Perceived Tenure Security from 140 Countries: Comparative Report." London: Prindex, Overseas Development Institute. <https://www.prindex.net/reports/prindex-comparative-report-july-2020/>. Across the 140 surveyed countries, rates of perceived insecurity vary: Europe and Central Asia (12%), North America (14%), East Asia and the Pacific (15%), Latin America and the Caribbean (21%), sub-Saharan Africa (26%), the Middle East and North Africa (28%).
- ¹³¹ Santos et al. 2022. "Investing in Carbon Neutrality: Utopia or the New Green Wave?"; JRT. 2021. "Land Tenure in a Just Rural Transition: Restoring Our Relationships to Land and Natural Resources"; IUCN. 2021. "Conflict and Conservation." *Nature in a Globalised World Report No.1*. Gland, Switzerland: International Union for the Conservation of Nature. <https://portals.iucn.org/library/efiles/documents/NGW-001-En.pdf>.
- ¹³² Damasceno Costa, R. 2016. "Insecure Land Rights Brazil: Consequences for Rural Areas and Challenges for Improvement." *Climate Policy Initiative*. https://www.climatepolicyinitiative.org/wp-content/uploads/2016/08/Insecure_Land_Rights_in_Brazil_CPI.pdf; Chaves, P. 2018. "What Do Land Rights Mean for Women? Five Insights from Brazil." *World Bank Blogs* (blog), September 4. <https://blogs.worldbank.org/latinamerica/what-do-land-rights-mean-women-five-insights-brazil>; HRW. 2022. "Brazil: Indigenous Rights Under Serious Threat." *Human Rights Watch* (blog), August 9. <https://www.hrw.org/news/2022/08/09/brazil-indigenous-rights-under-serious-threat>.
- ¹³³ Gindroz, A.-S. 2017. "In Indonesia, Land Allocation Policies and Practices Favor Corporations over Communities." *Rights and Resources Initiative (RRI)* (blog), October 23. <https://rightsandresources.org/blog/indonesia-land-allocation-policies-practices-favor-corporations-communities/>; Dhialuhaq, A. and W. Berenschot. 2020. "A 150-Year Old Obstacle to Land Rights." *Inside Indonesia* (blog), September 18. <https://www.insideindonesia.org/a-150-year-old-obstacle-to-land-rights>.
- ¹³⁴ RRI. 2021. "Community Land Rights in the Democratic Republic of the Congo (DRC): A Summary of 2020 Analyses." *Rights and Resources Initiative*. https://rightsandresources.org/wp-content/uploads/Summary-of-2020-DRC-RRI-analyses_Final-EN-Formatted.pdf; IUCN. 2016. "Land Rights and Nature Conservation in Democratic Republic of the Congo." *Land Rights and Conservation Issue Brief*. International Union for the Conservation of Nature. https://www.iucn.org/sites/default/files/2022-06/tger_drc_final_english.pdf.
- ¹³⁵ JRT. 2021. "Land Tenure in a Just Rural Transition: Restoring Our Relationships to Land and Natural Resources."
- ¹³⁶ Hanstad, T. 2020. "Gender Equality: Women, Land, and Data." *World Bank blog*. November 25. <https://blogs.worldbank.org/opendata/gender-equality-women-land-and-data>.
- ¹³⁷ Friends of the Earth International. 2021. "Dismantling Patriarchy While Building Food Sovereignty."
- ¹³⁸ Oxfam. 2016. "Desterrados: Tierra, Poder y Desigualdad En América Latina." *Oxfam International*. <https://www.oxfam.org/es/informes/desterrados-tierra-poder-y-desigualdad-en-america-latina>.
- ¹³⁹ Stevens, C. et al. 2014. "Securing Rights, Combating Climate Change - How Strengthening Community Forest Rights Mitigates Climate Change." *World Resources Institute and Rights and Resources Initiative*. <https://www.wri.org/research/securing-rights-combating-climate-change>.
- ¹⁴⁰ Global Witness. 2021. "Last Line of Defence: The Industries Causing the Climate Crisis and Attacks against Land and Environmental Defenders." *Global Witness*. <https://www.globalwitness.org/en/campaigns/environmental-activists/last-line-defence/>.
- ¹⁴¹ Prosse, C. 2021. "Rising Violence against Environmental Activists Threatens Us All." *Stockholm Environment Institute* (blog), December 20. <https://www.sei.org/perspectives/violence-environmental-activists-threatens/>.
- ¹⁴² Anderson. 2019. "Principles for a Just Transition in Agriculture."
- ¹⁴³ Anderson. 2019; Akuno et al. 2022. "From Crisis to Transformation - What Is Just Transition: A Primer."
- ¹⁴⁴ Mittal, A. 2009. "The 2008 Food Price Crisis: Rethinking Food Security Policies." No.56. G-24 Discussion Paper Series. United Nations Conference on Trade and Development (UNCTAD). https://unctad.org/system/files/official-document/gdsmdpg2420093_en.pdf.
- ¹⁴⁵ For an overview of what "financialization" means, see Sawyer, M. 2013. "What Is Financialization?" *International Journal of Political Economy* 42 (4): 5–18. doi:10.2753/IJP0891-1916420401.
- ¹⁴⁶ Isakson, S.R. 2014. "Food and Finance: The Financial Transformation of Agro-Food Supply Chains." *The Journal of Peasant Studies* 41 (5): 749–75. doi:10.1080/03066150.2013.874340.
- See also: Atteridge, A. and E. Remling. 2013. "The Indirect Effects of Adaptation: Pathways for Vulnerability Redistribution in the Colombian Coffee Sector." *SEI Working Paper No. 2013-10*. Stockholm Environment Institute. <https://mediamanager.sei.org/documents/Publications/Climate/SEI-WP-2013-10-Colombia-coffee-indirect-adaptation-impacts.pdf>.
- ¹⁴⁷ Anderson. 2019. "Principles for a Just Transition in Agriculture."
- ¹⁴⁸ Giller et al. 2021. "The Future of Farming: Who Will Produce Our Food?"

- ¹⁴⁹ Giller et al. 2021.
- ¹⁵⁰ FAO. 2018. "The Future of Food and Agriculture: Alternative Pathways to 2050."
- ¹⁵¹ Giller et al. 2021. "The Future of Farming: Who Will Produce Our Food?"
- ¹⁵² Hasegawa, T. et al. 2018. "Risk of Increased Food Insecurity under Stringent Global Climate Change Mitigation Policy." *Nature Climate Change* 8 (8): 699–703. doi:10.1038/s41558-018-0230-x.
- ¹⁵³ One major challenge here is lack of global governance of food system GHG emissions. There is no agreed framework for agreeing on a global carbon budget for the food sector, or distributing any agreed budget between countries/production regions/food types. Presently, there are few transparent commitments by individual countries to take action to reduce the GHG impacts of food production.
- ¹⁵⁴ Gordon, L.J. et al. 2017. "Rewiring Food Systems to Enhance Human Health and Biosphere Stewardship." *Environmental Research Letters* 12 (10): 100201. doi:10.1088/1748-9326/aa81dc.
- ¹⁵⁵ Carter. 2023. "5 Food and Beverage Trends to Watch in 2023"; Johnson et al. 2022. "Fresh Food as Medicine."
- ¹⁵⁶ Verkuijl et al. 2022. "A Just Transition in the Meat Sector: Why, Who and How? A Mapping of Affected Stakeholders in High-Income Countries, and Principles to Guide a Just Transition."

References

- 50by40. 2020. "A Just Transition within Livestock Production." Online Covid19 Food Systems Dialogues. 50by40. <https://50by40.org/2020/07/01/a-just-transition-within-livestock-production/>.
- Acheampong, E.O., C.J. Macgregor, S. Sloan, and J. Sayer. 2019. "Deforestation Is Driven by Agricultural Expansion in Ghana's Forest Reserves." *Scientific African* 5 (September): e00146. doi:10.1016/j.sciaf.2019.e00146.
- Akuno, K., K. Sandwell, L. Fernanda Forero, and J. Browne. 2022. "From Crisis to Transformation - What Is Just Transition: A Primer." Transnational Institute and Grassroots Global Justice Alliance. <https://www.tni.org/en/publication/from-crisis-to-transformation>.
- Ambikapathi, R., K.R. Schneider, B. Davis, M. Herrero, P. Winters, and J.C. Fanzo. 2022. "Global Food Systems Transitions Have Enabled Affordable Diets but Had Less Favourable Outcomes for Nutrition, Environmental Health, Inclusion and Equity." *Nature Food* 3 (9): 764–79. doi:10.1038/s43016-022-00588-7.
- Anderson, T. 2017. "Agroecology, Empowerment and Resilience: Lessons from ActionAid's Agroecology and Resilience Project." South Africa: ActionAid. https://actionaid.org/sites/default/files/agroecologyempowermentresilience-lessons_from_aer.pdf.
- Anderson, T. 2019. "Principles for a Just Transition in Agriculture." ActionAid.
- Atteridge, A. and E. Remling. 2013. "The Indirect Effects of Adaptation: Pathways for Vulnerability Redistribution in the Colombian Coffee Sector." SEI Working Paper No. 2013-10. Stockholm Environment Institute. <https://mediamanager.sei.org/documents/Publications/Climate/SEI-WP-2013-10-Colombia-coffee-indirect-adaptation-impacts.pdf>.
- Atteridge, A. and E. Remling. 2018. "Is Adaptation Reducing Vulnerability or Redistributing It?" *WIREs Climate Change* 9 (1). doi:10.1002/wcc.500.
- Atteridge, A. and C. Strambo. 2020. "Seven Principles to Realize a Just Transition to a Low-Carbon Economy." Policy Report. Stockholm: Stockholm Environment Institute. <https://www.sei.org/publications/seven-principles-to-realize-a-just-transition-to-a-low-carbon-economy/>.
- Baldock, D. and A. Buckwell. 2021. "Just Transition in the EU Agriculture and Land Use Sector." Institute for European Environmental Policy.
- Barona, E., N. Ramankutty, G. Hyman, and O.T. Coomes. 2010. "The Role of Pasture and Soybean in Deforestation of the Brazilian Amazon." *Environmental Research Letters* 5 (2): 024002. doi:10.1088/1748-9326/5/2/024002.
- Bastos Lima, M.G. 2022. "Just Transition towards a Bioeconomy: Four Dimensions in Brazil, India and Indonesia." *Forest Policy and Economics* 136 (March): 102684. doi:10.1016/j.forpol.2021.102684.
- Bezner Kerr, R., T. Hasegawa, R. Lasco, I. Bhatt, D. Deryng, A. Farrell, H. Gurney-Smith, et al. 2022. "Food, Fibre, and Other Ecosystem Products." In *Climate Change 2022: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*, edited by H.-O. Pörtner, D.C. Roberts, M.M.B. Tignor, E.S. Poloczanska, K. Mintenbeck, A. Alegria, M. Craig, et al. Cambridge, UK, and New York: Cambridge University Press. <https://www.ipcc.ch/report/ar6/wg2/>.
- Blattner, C. 2020. "Just Transition for Agriculture? A Critical Step in Tackling Climate Change." *Journal of Agriculture, Food Systems, and Community Development*, March 1–6. doi:10.5304/jafscd.2020.093.006.
- Borrelli, P., D.A. Robinson, L.R. Fleischer, E. Lugato, C. Ballabio, C. Alewell, K. Meusburger, et al. 2017. "An Assessment of the Global Impact of 21st Century Land Use Change on Soil Erosion." *Nature Communications* 8 (1): 2013. doi:10.1038/s41467-017-02142-7.
- Carter, H. 2023. "5 Food and Beverage Trends to Watch in 2023." *Food & Beverage Insider* (blog), January 6. <https://www.foodbeverageinsider.com/market-trends-analysis/5-food-and-beverage-trends-watch-2023>.
- Chaves, P. 2018. "What Do Land Rights Mean for Women? Five Insights from Brazil." *World Bank Blogs* (blog), September 4. <https://blogs.worldbank.org/latinamerica/what-do-land-rights-mean-women-five-insights-brazil>.
- CIWF. 2012. "Statistics: Dairy Cows." Compassion in World Farming. <https://www.ciwf.org.uk/media/5235182/Statistics-Dairy-cows.pdf>.
- Climate Justice Alliance. 2019. "Just Transition Principles." https://climatejusticealliance.org/wp-content/uploads/2019/11/CJA_JustTransition_highres.pdf.
- Costa, C., E. Wollenberg, M. Benitez, R. Newman, N. Gardner, and F. Bellone. 2022. "Roadmap for Achieving Net-Zero Emissions in Global Food Systems by 2050." *Scientific Reports* 12 (1): 15064. doi:10.1038/s41598-022-18601-1.

- CSIS and CIF. 2020. "Just Transition Concepts and Relevance for Climate Action." Just Transition Initiative. Washington, DC: Climate Investment Funds and Center for Strategic and International Studies. <https://justtransitioninitiative.org/just-transition-concepts-and-relevance-for-climate-action/?id=1>.
- CSIS and CIF. 2021. "A Framework for Just Transitions." Climate Investment Funds (CIF) and Centre for Strategic and International Studies (CSIS). https://www.cif.org/sites/cif_enc/files/knowledge-documents/framework-for-just-transitions_download.pdf.
- Curtis, P.G., C.M. Slay, N.L. Harris, A. Tyukavina, and M.C. Hansen. 2018. "Classifying drivers of global forest loss." *Science*. 361 (6407): 1108–11. doi:10.1126/science.aau3445
- Damasceno Costa, R. 2016. "Insecure Land Rights in Brazil: Consequences for Rural Areas and Challenges for Improvement." Climate Policy Initiative. https://www.climatepolicyinitiative.org/wp-content/uploads/2016/08/Insecure_Land_Rights_in_Brazil_CPI.pdf.
- Dhialulhaq, A. and W. Berenschot. 2020. "A 150-Year Old Obstacle to Land Rights." *Inside Indonesia* (blog), September 18. <https://www.insideindonesia.org/a-150-year-old-obstacle-to-land-rights>.
- Dijk, M. van, T. Morley, M.L. Rau, and Y. Saghai. 2021. "A Meta-Analysis of Projected Global Food Demand and Population at Risk of Hunger for the Period 2010–2050." *Nature Food* 2 (7): 494–501. doi:10.1038/s43016-021-00322-9.
- DTE. 2022. "Looking Back at Stockholm 1972: What Indira Gandhi Said Half a Century Ago on Man & Environment." *Down To Earth* (blog), May 31. <https://www.downtoearth.org.in/news/environment/looking-back-at-stockholm-1972-what-indira-gandhi-said-half-a-century-ago-on-man-environment-83060>.
- Ephraim, L. 2018. *Who Speaks for Nature?: On the Politics of Science*. University of Pennsylvania Press. <https://www.jstor.org/stable/j.ctv16t6kqj>.
- Eurostat. 2020. "Employment in Food Supply across EU Regions." May 22. <https://ec.europa.eu/eurostat/web/products-eurostat-news/-/ddn-20200522-2>.
- Fan, H. and J. Wu. 2022. "Conventional Use and Sustainable Valorization of Spent Egg-Laying Hens as Functional Foods and Biomaterials: A Review." *Bioresources and Bioprocessing* 9 (1): 43. doi:10.1186/s40643-022-00529-z.
- FAO. 2005. "The Right to Food: Voluntary Guidelines to Support the Progressive Realization of the Right to Adequate Food in the Context of National Food Security." Rome: Food and Agriculture Organization of the United Nations. <https://www.fao.org/3/y7937e/y7937e.pdf>.
- FAO. 2017. "Water for Sustainable Food and Agriculture." Rome, Italy: Food and Agriculture Organization of the United Nations. <https://www.fao.org/3/i7959e/i7959e.pdf>.
- FAO. 2018. "The Future of Food and Agriculture: Alternative Pathways to 2050." Summary Version. Rome, Italy: Food and Agriculture Organization of the United Nations. <https://www.fao.org/3/CA1553EN/ca1553en.pdf>.
- FAO. 2021. "The State of Food and Agriculture 2021: Making Agrifood Systems More Resilient to Shocks and Stresses." Rome, Italy: Food and Agriculture Organization of the United Nations. doi:10.4060/cb4476en.
- FAO. 2022. *The State of Food and Agriculture 2022*. FAO. doi:10.4060/cb9479en.
- FAO. 2022. "World Food and Agriculture – Statistical Yearbook 2022." Rome: Food and Agriculture Organization of the United Nations. doi:10.4060/cc2211en.
- FAO. n.d. "Biodiversity and Nutrition: A Common Path." Food and Agriculture Organization of the United Nations (FAO). https://www.fao.org/fileadmin/templates/food_composition/documents/upload/Interodocumento.pdf.
- FAO, IFAD, UNICEF, WFP, and WHO. 2022. "The State of Food Security and Nutrition in the World 2022: Repurposing Food and Agricultural Policies to Make Healthy Diets More Affordable." Rome: Food and Agriculture Organization of the United Nations, International Fund for Agricultural Development, United Nations Children's Fund, World Food Programme, and World Health Organization. doi:10.4060/cc0639en.
- Feyertag, J., M. Childress, R. Flynn, I. Langdown, A. Locke, and D. Nizalov. 2020. "A Global Assessment of Perceived Tenure Security from 140 Countries: Comparative Report." London: Prindex, Overseas Development Institute. <https://www.prindex.net/reports/prindex-comparative-report-july-2020/>.
- Fiorentini, M. 2016. "How Is The Chinese 'Going Out' Policy Having an Impact on Agriculture-Related Trade with Africa? A Political and Economic Analysis of Sino-African Relations." Working Paper 134. Future Agricultures. <https://www.future-agricultures.org/download/fac-working-paper-134-pdf/>.
- Friends of the Earth International. 2021. "Dismantling Patriarchy While Building Food Sovereignty." Friends of the Earth. https://www.foei.org/wp-content/uploads/2022/03/Friends-of-the-Earth-International_Dismantling-patriarchy-while-building-food-sovereignty_English.pdf.

Getahun, H. 2023. "The High Cost of Eggs Could Give Us a Taste of an Expensive, Ethical, and Cage-Free Future, an Eggspert Says." *Business Insider*, March 4. <https://www.businessinsider.com/why-are-eggs-expensive-cage-free-range-chickens-ethical-2023-3>.

Giller, K.E., T. Delaune, J.V. Silva, K. Descheemaeker, G. van de Ven, A.G.T. Schut, M. van Wijk, et al. 2021. "The Future of Farming: Who Will Produce Our Food?" *Food Security* 13 (5): 1073–99. doi:10.1007/s12571-021-01184-6.

Gindroz, A.-S. 2017. "In Indonesia, Land Allocation Policies and Practices Favor Corporations over Communities." *Rights and Resources Initiative (RRI)* (blog), October 23. <https://rightsandresources.org/blog/indonesia-land-allocation-policies-practices-favor-corporations-communities/>.

Global Witness. 2021. "Last Line of Defence: The Industries Causing the Climate Crisis and Attacks against Land and Environmental Defenders." Global Witness. <https://www.globalwitness.org/en/campaigns/environmental-activists/last-line-defence/>.

Goldstein, H. 2021. "What's the Difference Between Animal Rights and Animal Welfare?" World Animal Protection. *Animals in Farming* (blog), June 11. <https://www.worldanimalprotection.us/blogs/whats-difference-between-animal-rights-and-animal-welfare>.

Gordon, L.J., V. Bignet, B. Crona, P.J.G. Henriksson, T. Van Holt, M. Jonell, T. Lindahl, et al. 2017. "Rewiring Food Systems to Enhance Human Health and Biosphere Stewardship." *Environmental Research Letters* 12 (10): 100201. doi:10.1088/1748-9326/aa81dc.

Hanstad, T. 2020. "Gender Equality: Women, Land, and Data." World Bank blog. November 25. <https://blogs.worldbank.org/opendata/gender-equality-women-land-and-data>.

Hasegawa, T., S. Fujimori, P. Havlik, H. Valin, B.L. Bodirsky, J.C. Doelman, T. Fellmann, et al. 2018. "Risk of Increased Food Insecurity under Stringent Global Climate Change Mitigation Policy." *Nature Climate Change* 8 (8): 699–703. doi:10.1038/s41558-018-0230-x.

Headey, D.D. and T.S. Jayne. 2014. "Adaptation to Land Constraints: Is Africa Different?" *Food Policy* 48 (October): 18–33. doi:10.1016/j.foodpol.2014.05.005.

HRW. 2022. "Brazil: Indigenous Rights Under Serious Threat." *Human Rights Watch* (blog), August 9. <https://www.hrw.org/news/2022/08/09/brazil-indigenous-rights-under-serious-threat>.

Hughes, K. and M. Rescalvo. 2021. "Just Transition Beyond the Energy Sector." ADB Brief No. 195. Asian Development Bank. <https://www.adb.org/sites/default/files/publication/746406/adb-brief-195-just-transition-beyond-energy-sector.pdf>.

IEN. 2017. "Indigenous Principles of Just Transition." Indigenous Environmental Network. <http://www.ienearth.org/wp-content/uploads/2017/10/IENJustTransitionPrinciples.pdf>.

IFAD. n.d. "The Issues: Dig Deeper and Explore the Issues Driving Extreme Poverty." <https://www.ifad.org/en/issues>.

IFIF. 2021. "International Feed Industry Federation Annual Report 2020/21." International Feed Industry Federation. <https://annualreport.ifif.org/wp-content/uploads/Annual-report-2020-21-download.pdf>.

IHRB. 2022. "Just Transitions Dialogue: Exploring the Need for International Rules Based on Local Realities." Report of the IHRB-Wilton Park Just Transitions Dialogue. Institute for Human Rights and Business (IHRB), and Wilton Park. <https://www.wiltonpark.org.uk/wp-content/uploads/2022/04/WP3012-Report.pdf>.

ILO. 2015. "Guidelines for a Just Transition towards Environmentally Sustainable Economies and Societies for All." International Labour Organization.

ILO. 2018. "Women and Men in the Informal Economy: A Statistical Picture." Geneva, Switzerland: International Labour Organization. https://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/documents/publication/wcms_626831.pdf.

ILO. 2018. "World Employment Social Outlook 2018: Greening with Jobs." Geneva, Switzerland: International Labour Organization. https://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/---publ/documents/publication/wcms_628654.pdf.

ILO. 2019. "Implementing the ILO Indigenous and Tribal Peoples Convention No. 169 - Towards an Inclusive, Sustainable and Just Future." International Labour Organization. https://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/---publ/documents/publication/wcms_735607.pdf.

ILO. 2022. "Sectoral Policies for a Just Transition towards Environmentally Sustainable Economies and Societies for All." ILO Just Transition Policy Briefs. Geneva: International Labour Organization. http://www.ilo.org/global/topics/green-jobs/publications/just-transition-pb/WCMS_858856/lang--en/index.htm.

ILO. 2022. "Asia-Pacific Sectoral Labour Market Profile: Agriculture." Geneva, Switzerland: International Labour Organization. https://www.ilo.org/wcmsp5/groups/public/---asia/---ro-bangkok/documents/briefingnote/wcms_863302.pdf.

IPCC. 2019. "Climate Change and Land: An IPCC Special Report on Climate Change, Desertification, Land Degradation, Sustainable Land Management, Food Security, and Greenhouse Gas Fluxes in Terrestrial Ecosystems - Summary for Policy Makers." Intergovernmental Panel on Climate Change. https://www.ipcc.ch/site/assets/uploads/sites/4/2020/02/SPM_Updated-Jan20.pdf.

- IPES-Food. 2022. "The Politics of Protein: Examining Claims about Livestock, Fish, Alternative Proteins, and Sustainability." IPES-Food. https://www.ipes-food.org/_img/upload/files/PoliticsOfProtein.pdf.
- Isakson, S.R. 2014. "Food and Finance: The Financial Transformation of Agro-Food Supply Chains." *The Journal of Peasant Studies* 41 (5): 749–75. doi:10.1080/03066150.2013.874340.
- ITUC. 2010. "Resolution on Combating Climate Change through Sustainable Development and Just Transition (2CO/E/6.10 [Final])." International Trade Union Confederation. <http://ituc-csi.org/resolution-on-combating-climate>.
- IUCN. 2016. "Land Rights and Nature Conservation in Democratic Republic of the Congo." Land Rights and Conservation Issue Brief. International Union for the Conservation of Nature. https://www.iucn.org/sites/default/files/2022-06/tger_drc_final_-english.pdf.
- IUCN. 2021. "Conflict and Conservation." Nature in a Globalised World Report No.1. Gland, Switzerland: International Union for the Conservation of Nature. <https://portals.iucn.org/library/efiles/documents/NGW-001-En.pdf>.
- Jaeger, J., G. Walls, E. Clarke, J.C. Altamirano, A. Harsono, H. Mountford, S. Burrow, S. Smith, and A. Tate. 2021. "The Green Jobs Advantage: How Climate-Friendly Investments Are Better Job Creators." Working Paper. World Resources Institute, ITUC and the New Climate Economy. https://files.wri.org/d8/s3fs-public/2021-10/the-green-jobs-advantage-how-climate-friendly-investments-are-better-job-creators.pdf?VersionId=_4g3pkXM5qB8_DEy1Mhbf8AloDhqGUY.
- Johnson, E., A. Almond, J. Bhatt, D. Edsall, S. Young, and J. Cook. 2022. "Fresh Food as Medicine." *Deloitte Insights* (blog), September 26. <https://www2.deloitte.com/us/en/insights/industry/retail-distribution/future-of-fresh-food-sales/fresh-food-as-medicine-for-the-heartburn-of-high-prices.html>.
- Jones, B.A., D. Grace, R. Kock, S. Alonso, J. Rushton, M.Y. Said, D. McKeever, et al. 2013. "Zoonosis Emergence Linked to Agricultural Intensification and Environmental Change." *Proceedings of the National Academy of Sciences* 110 (21): 8399–8404. doi:10.1073/pnas.1208059110.
- JRT. 2021. "Land Tenure in a Just Rural Transition: Restoring Our Relationships to Land and Natural Resources." Policy Brief. Just Rural Transition. https://justruraltransition.org/wp-content/uploads/sites/12/2022/12/JRT_Land-Tenure_FINAL.pdf.
- JTRC. 2018. "Mapping Just Transition(s) to a Low-Carbon World." Just Transition Research Collaborative. Geneva: Rosa Luxemburg Stiftung, University of London in Paris, and United Nations Research Institute for Social Development. <https://www.unclearn.org/wp-content/uploads/library/report-jtrc-2018.pdf>.
- Krawchenko, T.A. and M. Gordon. 2021. "How Do We Manage a Just Transition? A Comparative Review of National and Regional Just Transition Initiatives." *Sustainability* 13 (11): 6070. doi:10.3390/su13116070.
- Lixia, T., L. Yan, Z. Wenjie, L. Mukwereza, and L. Xiaoyun. 2015. "Blurring the Lines between Aid and Business in the Agricultural Technology Demonstration Centre in Zimbabwe." Working Paper 129. Future Agricultures. https://opendocs.ids.ac.uk/opendocs/bitstream/handle/20.500.12413/7097/FAC_Working_Paper_129.pdf?sequence=1.
- Mittal, A. 2009. "The 2008 Food Price Crisis: Rethinking Food Security Policies." No.56. G-24 Discussion Paper Series. United Nations Conference on Trade and Development (UNCTAD). https://unctad.org/system/files/official-document/gdsmdpg2420093_en.pdf.
- Mohideen, S. 2022. "Why Climate Action Is Critical to the Future of Unemployed Youth in South Africa." *Africa Policy Journal* (blog), September 29. <https://apj.hkspublications.org/why-climate-action-is-critical-to-the-future-of-unemployed-youth-in-south-africa/>.
- Molina Romo, O. 2022. "The Role of Tripartite Social Dialogue in Facilitating a Just Transition: Experiences from Selected Countries." ILO Working Paper 76. International Labour Organization. https://www.ilo.org/global/publications/working-papers/WCMS_854518/lang--en/index.htm.
- Montgomery, D.R. 2007. "Soil Erosion and Agricultural Sustainability." *Proceedings of the National Academy of Sciences* 104 (33): 13268–72. doi:10.1073/pnas.0611508104.
- Montmasson-Clair, G. 2021. "A Policy Toolbox for Just Transition." Trade and Industrial Policy Strategies. <https://www.tips.org.za/research-archive/sustainable-growth/green-economy-2/item/4152-a-policy-toolbox-for-just-transitions>.
- Mood, A., E. Lara, N.K. Boyland, and P. Brooke. 2023. "Estimating Global Numbers of Farmed Fishes Killed for Food Annually from 1990 to 2019." *Animal Welfare* 32: e12. doi:10.1017/awf.2023.4.
- Muller, S. and N. Robbins. 2022. "Just Nature: How Finance Can Support a Just Transition at the Interface of Action on Climate and Biodiversity." London, United Kingdom: Grantham Research Institute on Climate Change and the Environment and Centre for Climate Change Economics and Policy, London School of Economics and Political Science.
- Newton, P., N. Civita, L. Frankel-Goldwater, K. Bartel, and C. Johns. 2020. "What Is Regenerative Agriculture? A Review of Scholar and Practitioner Definitions Based on Processes and Outcomes." *Frontiers in Sustainable Food Systems* 4 (October): 577723. doi:10.3389/fsufs.2020.577723.
- OECD. n.d. "How We Feed the World Today." <https://www.oecd.org/agriculture/understanding-the-global-food-system/how-we-feed-the-world-today/>.

- OECD and FAO. 2022. *OECD-FAO Agricultural Outlook 2022–2031*. Paris and Rome: Organisation for Economic Co-operation and Development and Food and Agriculture Organization of the United Nations. doi:10.1787/19428846-en.
- O'Neill, J. 2001. "Representing People, Representing Nature, Representing the World." *Environment and Planning C: Government and Policy* 19 (4): 483–500. doi:10.1068/c12s.
- Oxfam. 2016. "Desterrados: Tierra, Poder y Desigualdad En América Latina." Oxfam International. <https://www.oxfam.org/es/informes/desterrados-tierra-poder-y-desigualdad-en-america-latina>.
- Page, J., J. Gutman, P. Madden, and D. Gandhi. 2020. "Urban Economic Growth in Africa: A Framework for Analyzing Constraints to Agglomeration." Africa Growth Initiative, Working Paper 24. Washington, DC: Brookings Institution. <https://www.brookings.edu/research/urban-economic-growth-in-africa-a-framework-for-analyzing-constraints-to-agglomeration/>.
- Persson, L., B.M. Carney Almroth, C.D. Collins, S. Cornell, C.A. de Wit, M.L. Diamond, P. Fantke, et al. 2022. "Outside the Safe Operating Space of the Planetary Boundary for Novel Entities." *Environmental Science & Technology* 56 (3): 1510–21. doi:10.1021/acs.est.1c04158.
- PETA. n.d. "Animals Used for Food." *People for the Ethical Treatment of Animals (PETA)* (blog). <https://www.peta.org/issues/animals-used-for-food/>.
- Pollin, R. and S. Chakraborty. 2020. "Job Creation Estimates Through Proposed Economic Stimulus Measures." Political Economy Research Institute, University of Massachusetts Amherst. <https://peri.umass.edu/publication/item/1297-job-creation-estimates-through-proposed-economic-stimulus-measures>.
- Poore, J. and T. Nemecek. 2018. "Reducing Food's Environmental Impacts through Producers and Consumers." *Science* 360 (6392): 987–92. doi:10.1126/science.aaq0216.
- Prosse, C. 2021. "Rising Violence against Environmental Activists Threatens Us All." *Stockholm Environment Institute* (blog), December 20. <https://www.sei.org/perspectives/violence-environmental-activists-threatens/>.
- Qi, J., A. Terton, and S. Vaughan. 2021. "Seeking Common Ground for Climate, Biodiversity, and People: How to Get the Debate on Nature-Based Solutions Right." *IISD Insight* (blog), December 2. <https://www.iisd.org/articles/common-ground-nature>.
- Qii, G., L. Yui, D. Alemuii, S. Cookiii, and X. Li. 2015. "Copying the Extension System of China and Beyond: Implementing the Chinese Agriculture Technology Demonstration Centre in Ethiopia." Working Paper 128. Future Agricultures. https://opendocs.ids.ac.uk/opendocs/bitstream/handle/20.500.12413/7096/FAC_Working_Paper_128.pdf?sequence=1.
- Ricciardi, V., N. Ramankutty, Z. Mehrabi, L. Jarvis, and B. Chookolingo. 2018. "How Much of the World's Food Do Smallholders Produce?" *Global Food Security* 17 (June): 64–72. doi:10.1016/j.gfs.2018.05.002.
- Ritchie, H., P. Rosado, and M. Roser. 2017. "Meat and Dairy Production." *Our World in Data [Online Resource]*. <https://ourworldindata.org/meat-production#number-of-animals-slaughtered>.
- Rockström, J., W. Steffen, K. Noone, Å. Persson, F.S. Chapin, E.F. Lambin, T.M. Lenton, et al. 2009. "A Safe Operating Space for Humanity." *Nature* 461 (7263): 472–75. doi:10.1038/461472a.
- Rodriguez-Delgado, C. and C. Jones. 2021. "Farmworkers Are Dying in Extreme Heat. Few Standards Exist to Protect Them." *PBS NewsHour*, August 6, sec. Health. <https://www.pbs.org/newshour/health/farmworkers-are-dying-in-extreme-heat-few-standards-exist-to-protect-them>.
- Rotz, S., E. Gravely, I. Mosby, E. Duncan, E. Finnis, M. Horgan, J. LeBlanc, et al. 2019. "Automated Pastures and the Digital Divide: How Agricultural Technologies Are Shaping Labour and Rural Communities." *Journal of Rural Studies* 68 (May): 112–22. doi:10.1016/j.jrurstud.2019.01.023.
- RRI. 2021. "Community Land Rights in the Democratic Republic of the Congo (DRC): A Summary of 2020 Analyses." Rights and Resources Initiative. https://rightsandresources.org/wp-content/uploads/Summary-of-2020-DRC-RRI-analyses_Final-EN-Formatted.pdf.
- Saget, C., A. Vogt-Shilb, and T. Luu. 2020. "Jobs in a Net-Zero Emissions Future in Latin America and the Caribbean." Washington, DC and Geneva: Inter-American Development Bank and International Labour Organization. https://www.ilo.org/global/publications/books/WCMS_752069.
- Samberg, L.H., J.S. Gerber, N. Ramankutty, M. Herrero, and P.C. West. 2016. "Subnational Distribution of Average Farm Size and Smallholder Contributions to Global Food Production." *Environmental Research Letters* 11 (12): 124010. doi:10.1088/1748-9326/11/12/124010.
- Sánchez García, J.L., I. Beiro Pérez, and J.M. Díez Sanz. 2019. "Hunger and Sustainability." *Economic Research-Ekonomska Istraživanja* 32 (1): 850–75. doi:10.1080/1331677X.2019.1583588.
- Santos, N., J. Monzini Taccone di Sitizano, E. Pedersen, and E. Borgomeo. 2022. "Investing in Carbon Neutrality: Utopia or the New Green Wave?" Rome, Italy: FAO. doi:10.4060/cc0011en.

- Sarku, R. and S. Whitfield. 2022. "Delivering a Just Transformation through the Koronivia Joint Work on Agriculture." Note No. 6, SRI 31. United Kingdom: University of Leeds.
- Sawyer, M. 2013. "What Is Financialization?" *International Journal of Political Economy* 42 (4): 5–18. doi:10.2753/IJP0891-1916420401.
- Silbergeld, E.K., J. Graham, and L.B. Price. 2008. "Industrial Food Animal Production, Antimicrobial Resistance, and Human Health." *Annual Review of Public Health* 29 (1): 151–69. doi:10.1146/annurev.publhealth.29.020907.090904.
- Steffen, W., W. Broadgate, L. Deutsch, O. Gaffney, and C. Ludwig. 2015. "The Trajectory of the Anthropocene: The Great Acceleration." *The Anthropocene Review* 2 (1): 81–98. doi:10.1177/2053019614564785.
- Stevens, C., R. Winterbottom, J. Springer, and K. Reyntar. 2014. "Securing Rights, Combating Climate Change – How Strengthening Community Forest Rights Mitigates Climate Change." World Resources Institute and Rights and Resources Initiative. <https://www.wri.org/research/securing-rights-combating-climate-change>.
- UN OHCHR. 2013. "Free, Prior and Informed Consent of Indigenous Peoples." Geneva, Switzerland: United Nations Office of the High Commissioner for Human Rights. <https://www.ohchr.org/sites/default/files/Documents/Issues/IPeoples/FreePriorandInformedConsent.pdf>.
- UNCBD. 2020. "Global Biodiversity Outlook 5." Montreal, Canada: Secretariat of the Convention on Biological Diversity. <https://www.cbd.int/gbo/gbo5/publication/gbo-5-en.pdf>.
- UNCBD. 2022. "Kunming-Montreal Global Biodiversity Framework." CBD/COP/15/L.25. Montreal, Canada: United Nations Convention on Biological Diversity (UNCBD). <https://www.cbd.int/doc/c/e6d3/cd1d/daf663719a03902a9b116c34/cop-15-l-25-en.pdf>.
- UNFCCC. 2015. "Paris Agreement." FCCC/CP/2015/10/Add.1. Paris, France: United Nations Framework Convention on Climate Change. <https://unfccc.int/resource/docs/2015/cop21/eng/10a01.pdf>.
- UNSDG. 2020. "The Impact of COVID-19 on Food Security and Nutrition." Policy Brief. United Nations Sustainable Development Group. <https://unsdg.un.org/resources/policy-brief-impact-covid-19-food-security-and-nutrition>.
- Verkuijl, C., C. Strambo, R. Hocquet, R. Butterfield, P. Achakulwisut, M. Boyland, J.A. Vega Araújo, et al. 2022. "A Just Transition in the Meat Sector: Why, Who and How? A Mapping of Affected Stakeholders in High-Income Countries, and Principles to Guide a Just Transition." SEI Report. Stockholm Environment Institute. <https://www.sei.org/wp-content/uploads/2022/11/just-transition-meat-sector.pdf>.
- Wang-Erlandsson, L., A. Tobian, R.J. van der Ent, I. Fetzer, S. te Wierik, M. Porkka, A. Staal, et al. 2022. "A Planetary Boundary for Green Water." *Nature Reviews Earth & Environment* 3 (6): 380–92. doi:10.1038/s43017-022-00287-8.
- Webb, P., G.A. Stordalen, S. Singh, R. Wijesinha-Bettoni, P. Shetty, and A. Lartey. 2018. "Hunger and Malnutrition in the 21st Century." *BMJ*, June, k2238. doi:10.1136/bmj.k2238.
- WFP. 2013. "Labour Market Analysis Guidance For Food Security Analysis and Decision-Making." Rome: World Food Programme Analysis and Nutrition Service. https://documents.wfp.org/stellent/groups/public/documents/manual_guide_proced/wfp258583.pdf.
- WFP. 2022. "Global Report on Food Crises – 2022." World Food Programme. <https://www.wfp.org/publications/global-report-food-crises-2022>.
- Wiebers, D.O. and V.L. Feigin. 2020. "What the COVID-19 Crisis Is Telling Humanity." *Neuroepidemiology* 54 (4): 283–86. doi:10.1159/000508654.
- Willett, W., J. Rockström, B. Loken, M. Springmann, T. Lang, S. Vermeulen, T. Garnett, et al. 2019. "Food in the Anthropocene: The EAT–Lancet Commission on Healthy Diets from Sustainable Food Systems." *The Lancet* 393 (10170): 447–92. doi:10.1016/S0140-6736(18)31788-4.
- Wilton Park. 2022. "Just Transitions Dialogue: Exploring the Need for International Rules Based on Local Realities." Report on a high-level dialogue held October 5–7, 2022. Prepared in association with the Institute for Human Rights and Business. <https://www.wiltonpark.org.uk/wp-content/uploads/2022/04/WP3012-Report.pdf>.
- Witchger, J., T. Gilbertson, E. Soto-Dansec, and N. Pham. 2022. "Climate Smart Agriculture." Indigenous Environmental Network Climate Justice Program Briefing Series. Indigenous Environmental Network. <https://www.ienearth.org/wp-content/uploads/2022/11/Climate-smart-Ag-2.pdf>.
- Wood, A., C. Queiroz, L. Deutsch, B. González-Mon, M. Jonell, L. Pereira, H. Sinare, U. Svedin, and E. Wassénus. 2023. "Reframing the Local–Global Food Systems Debate through a Resilience Lens." *Nature Food* 4 (1): 22–29. doi:10.1038/s43016-022-00662-0.
- WRI. n.d. "Indicators of Forest Extent. Deforestation Linked to Agriculture." <https://research.wri.org/gfr/forest-extent-indicators/deforestation-agriculture#limitations-and-future-prospects>

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