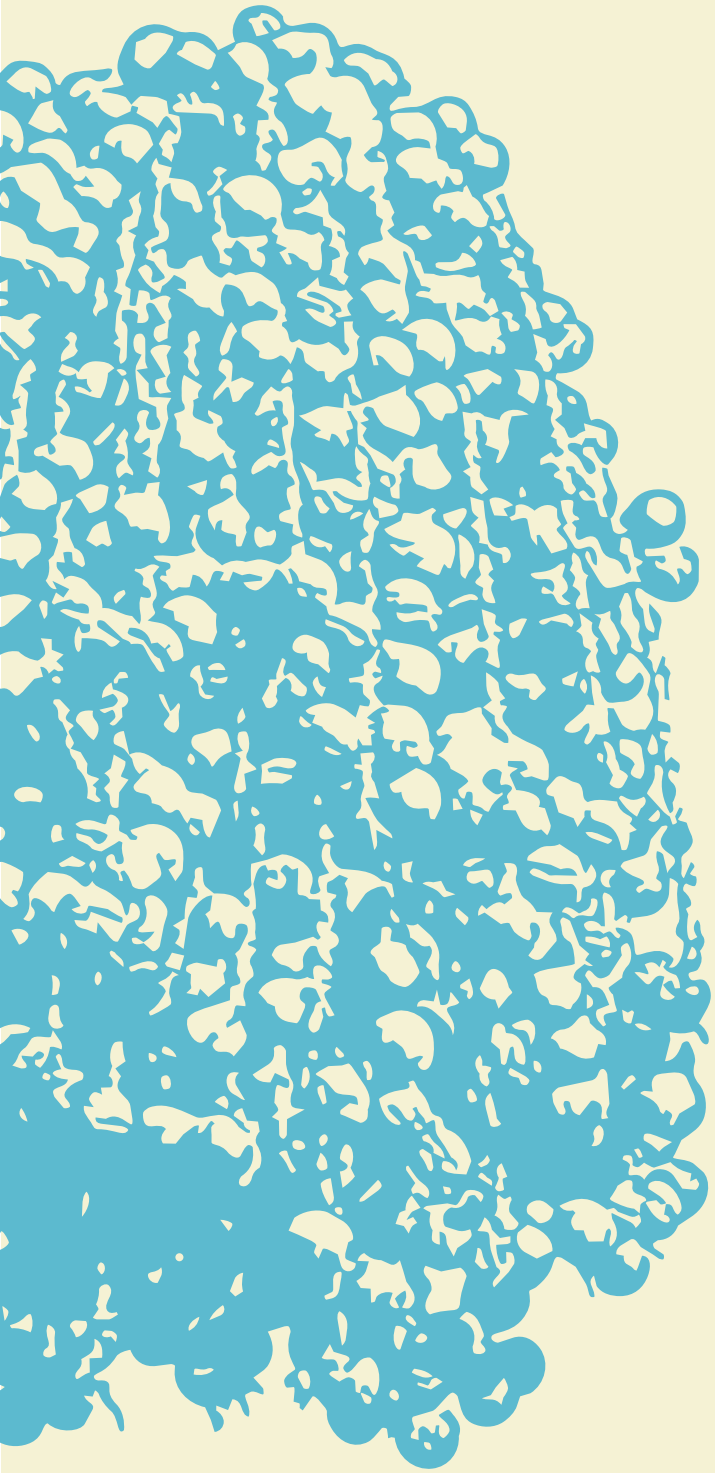
FAMILY FARMING IN THE JUST TRANSITION OF AGRIFOOD SYSTEMS

Contributions to the COP30 Roadmaps





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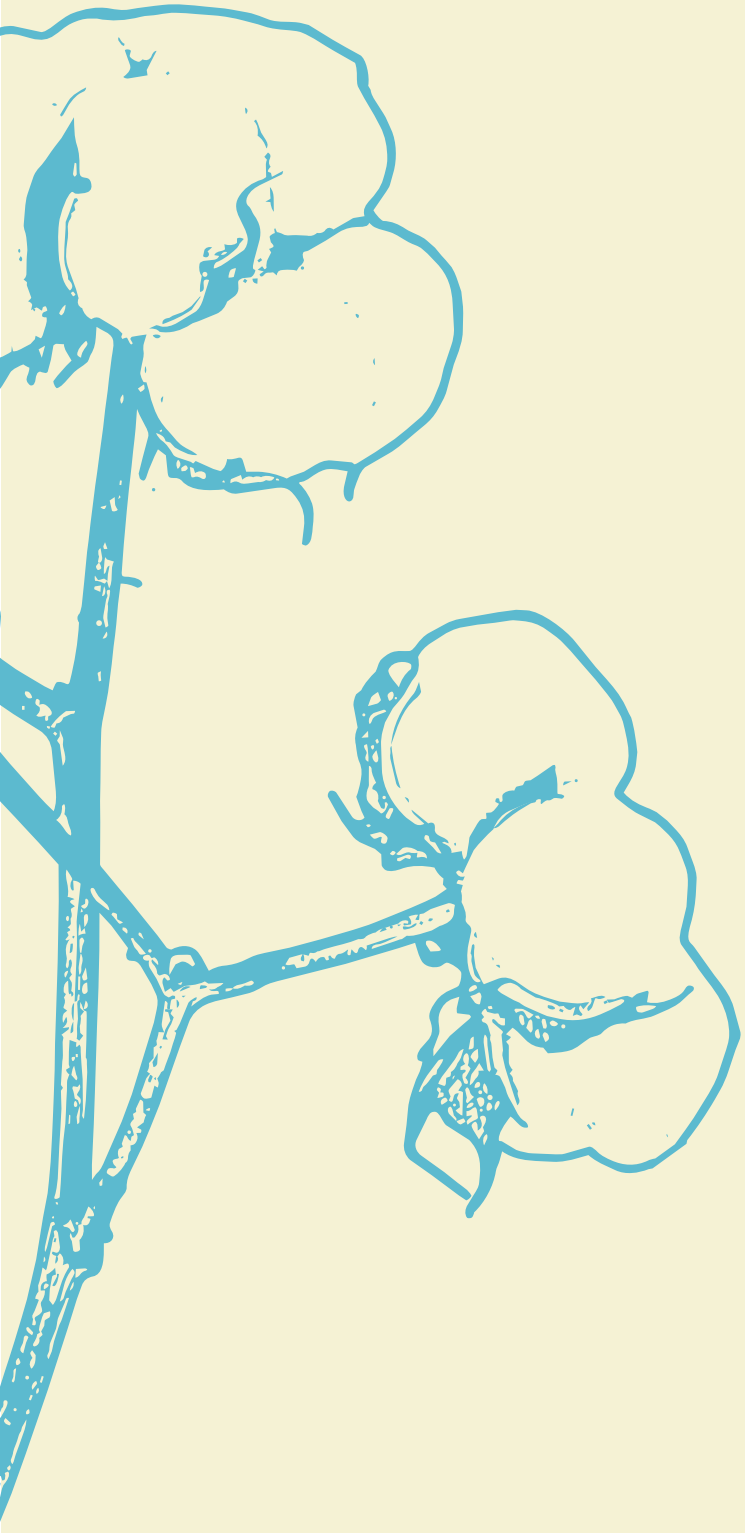
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This document presents the contribution of the COP30 Special Envoy for Family Farming[1], Paulo Petersen, to the development of the COP30 roadmaps on: (i) transitioning away from fossil fuels; (ii) halting and reversing deforestation and forest degradation; and (iii) mobilizing climate finance. The research and drafting were carried out by Marco Antonio Teixeira, under the coordination of Paulo Petersen.

1 The Special Envoys were appointed by the COP30 Presidency to facilitate engagement with and listen to sectors and regions considered priorities for the success of the conference. Serving voluntarily and in their personal capacities, they act as interlocutors, facilitating the exchange of information and perspectives between the COP30 Presidency and the sectors and regions with which they are associated. The group comprises seven international and 22 national envoys. The work of the Special Envoys is directly linked to the pillars of COP30 – mitigation, adaptation and means of implementation – as well as to cross-cutting agendas such as climate justice, social participation and finance. For further information, see: https://cop30.br/pt-br/presidencia-da-cop30/enviados-especiais – Accessed 30 July 2026



“Modern industrial agriculture has been described as a method of using soil to turn petroleum and gas into food....

... I believe we must and can de-industrialize agriculture. The general outline of what I mean by de-industrialization is simple enough: this would imply a radical reduction of fossil-fuel inputs to agriculture accompanied by an increase in labor inputs and a reduction of transport, with production being devoted primarily to local consumption...

... fossil-fuel depletion almost ensures that this will happen, but at the same time it is fairly obvious that if we don’t plan for de-industrialization, the result could be catastrophic.”

Richard Heinberg (2006) [2] [3]

2 A tribute to the memory of Richard Heinberg, who passed away just days before this text was completed. Recognized as one of the world’s leading advocates for transitioning the economy away from fossil fuels, Heinberg served as a Senior Fellow at the **Post Carbon Institute** for nearly twenty years. https://www.postcarbon.org/

3 Heinberg, R. **Fifty million farmers**. Available at: https://centerforneweconomics.org/publications/fifty-million-farmers/ Accessed 30 Jul 2026

Foreword

This document was prepared in response to a request from the COP30 Presidency to its Special Envoys to contribute to the development of the COP30 roadmaps on: (i) transitioning away from fossil fuels; (ii) halting and reversing deforestation and forest degradation; and (iii) mobilizing climate finance.

The document starts from a fundamental premise: none of these roadmaps will chart the right course unless they address the just transition of agrifood systems and recognize family farming as a leading economic force in food production. Without this recognition, the pathways they set out will neither deliver the goals of the Paris Agreement nor, by extension, provide an effective response to the climate crisis.

But the document goes further. It demonstrates that, without a just transition of agrifood systems, it will not be possible to tackle social inequalities and food and nutrition insecurity in all its manifestations, from undernutrition to obesity. Nor will it be possible to overcome the structural barriers to realizing the human right to adequate food.

The just transition of agrifood systems is therefore a strategic pathway for addressing the multiple, mutually reinforcing global crises of our time, which are driven by dominant models of food production, processing, distribution and consumption. In a world marked by wars, trade and tariff conflicts, inflationary pressures on staple foods and threats of food shortages, countries and territories that invest in family

farming and agroecology will be better equipped to ensure that their populations have access to healthy, locally produced and diverse foods with limited dependence on external inputs, especially energy-intensive ones.

To support this argument, the document presents examples of practices already under way that point towards just, sustainable, healthy and resilient agrifood systems. Many of these examples come from Brazil. This reflects both the standpoint of the organizations involved in preparing the document and Brazil's wealth of successful experience in promoting agroecology-based family farming and public policies for food and nutrition security.

By positioning family farming as a key link connecting the different COP30 roadmaps, the document underscores the need for a systemic approach through which different economic sectors can align around converging pathways towards socially just decarbonization. In addition to presenting specific recommendations for each of the roadmaps related to the climate agenda, the document's critical perspective on the dominant economic model places it in close dialogue with the recently launched *Roadmap for Eradicating Poverty Beyond Growth*, developed under the mandate of the United Nations Special Rapporteur on extreme poverty and human rights.

The central argument advanced by this United Nations document on poverty eradication is consistent with the argument we put forward here in proposing pathways to address the climate crisis: poverty and inequality are the social face of an economic model whose other face is the ecological and climate crises it generates. This finding has a twofold implication: (a) pathways for addressing social and environmental crises will be misguided if they follow separate courses; and (b) pathways for confronting the climate crisis will be equally misguided if they are based on the same economic principles that underpin the dominant development model.

Poorly charted pathways will deepen the polycrisis which, unless reversed in time, will inexorably lead us towards civilizational collapse. These are what climate and environmental justice movements denounce as "false solutions". They are false precisely because they adopt sectoral approaches rooted in the dominant economic paradigm, according to which nature must be assigned a financial value and treated as an asset to be traded in globalized markets if it is to be conserved.

Family farming is presented here as a distinct way of organizing agricultural labour that stands in direct opposition to the economic paradigm responsible for producing these false solutions. Whenever enabling political and institutional conditions are in place, family farming generates pathways towards social and economic emancipation while fostering positive relationships with nature and with society in the territories where it is practised. Giving family farming a prominent place in the roadmaps for addressing the climate crisis means mobilizing the world's largest occupational group — family farmers — to build local solutions to the planetary polycrisis through their everyday work.

By publishing this contribution, originally intended for climate negotiators and other key actors in the climate agenda, we hope to inform public debate with arguments demonstrating the central role of family farming and agroecology in jointly addressing the climate crisis and the challenges covered by the other two United Nations conventions that emerged from Rio de Janeiro in 1992 — the conservation of biological diversity and the combating of desertification. This role also extends to the broader set of interconnected social and environmental targets embodied in the Sustainable Development Goals established under the United Nations 2030 Agenda.

Paulo Petersen

COP30 Special Envoy for Family Farming

Executive Coordinator of AS-PTA

Methodological Note

The research underpinning this document drew on a range of methods, including a review of the literature and publicly available documents, a participatory mapping exercise, and conversations and semi-structured interviews with key actors. The entire research process, from its initial design through to the drafting of the document, was conducted between April and May 2026.

The review of the literature and publicly available documents sought to systematize relevant evidence, knowledge and interpretations concerning the issues addressed in this document.

The participatory mapping exercise was conducted through a structured online questionnaire designed to gather and systematize knowledge, experiences and evidence concerning the role of family farming across three priority areas: (i) transitioning away from fossil fuels; (ii) halting and reversing deforestation and forest degradation; and (iii) mobilizing climate finance. Participants were selected using virtual snowball sampling. The sampling process took place in two consecutive stages. First, the questionnaire was purposefully circulated through the professional networks of the coordination and research team, reaching key actors from civil society and academia working directly on the just transition of agrifood systems. Second, respondents and initial contacts were invited to share the research instrument with their professional peers. This activated a referral process that broadened the reach of the mapping exercise across the field under study.

Nine conversations and semi-structured interviews were also conducted with key actors: one with a researcher and university professor, two with representatives of Brazilian civil society organizations, and six with representatives of international organizations. In terms of gender, the sample comprised five men and four women. These conversations and interviews helped identify the perspectives of people with experience in the field concerning the priority issues and approaches to be addressed in the document, assessments of the current context and challenges facing the just transition of agrifood systems, and points of controversy surrounding established ideas. An initial draft was subsequently prepared and shared with a group of readers for corrections, comments and suggestions.

We would like to take this opportunity to thank and acknowledge the organizations of those who responded to the mapping exercise, took part in conversations, were interviewed or critically reviewed the first version of the text, as well as those with which we have worked over recent years through fruitful partnerships to promote climate justice:

ABA-Agroecologia – Associação Brasileira de Agroecologia

ACT Promoção da Saúde

Action Against Hunger

ActionAid Brasil

AFSA - Alliance for Food Sovereignty in Africa

Agroecology Fund

Aliança pela Alimentação Adequada e Saudável

Articulação Nacional de Agroecologia (ANA)

AS-PTA - Agricultura Familiar e Agroecologia

ASA - Articulação Semiárido Brasileiro

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CCFD-Terre Solidaire

Centro Brasileiro de Análise e Planejamento (Cebrap)

Climate Action Network (CAN)

ClimateWorks Foundation

Coalizão Brasil Clima, Florestas e Agricultura

Coaliciones por la Agroecología en Suramérica

Cultivate!

European Climate Foundation

Fase - Solidariedade e Educação

Fundação Oswaldo Cruz (Fiocruz)

Fundação Heinrich Böll

Germanwatch

Global Alliance for Improved Nutrition (GAIN)

Instituto Comida do Amanhã

Instituto de Defesa de Consumidores (Idec)

Instituto de Estudos Avançados da Universidade de São Paulo (IEA/USP)

Instituto Ibirapitanga

Instituto Regenera

International Panel of Experts on Sustainable Food Systems (IPES-Food)

Laboratorio de Historia de los Agroecosistemas - Universidad Pablo de Olavide

Misereor

Pão para o Mundo / Brot für die Welt

Porticus

Proteção Animal Mundial

ProVeg Brasil

Secours Catholique - Caritas França

SOCLA - Sociedad Científica Latinoamericana de Agroecología

Uma Concertação pela Amazônia

terre des hommes schweiz

The Global Alliance for the Future of Food

Tilt Collective

UNFCCC Farmers' Constituency

Universidade Federal do ABC (UFABC)

World Rural Forum (WRF)

WTT - World Transforming Technologies

Executive Summary



Photo: Articulação Nacional de Agroecologia (ANA) archive

1. Introduction

- Agrifood systems are central to a just climate transition. They account for approximately 30% of global greenhouse gas emissions and are the world's second-largest source of emissions, after the energy sector.

- Despite their importance to the climate agenda, agrifood systems remain underfunded. In 2023, the energy and transport sectors received more than 70% of global climate finance, while agriculture, industry and waste combined received less than 10% of total flows.

- The climate crisis will not be resolved by eliminating fossil fuels alone. Current trends in global agrifood systems already place the 1.5°C and 2°C goals at risk because of emissions associated with biological processes and land-use change.

- Achieving the 1.5°C goal requires rapid and ambitious changes in how food is produced, distributed and consumed. In this process, agroecology-based family farming systems can reduce emissions while helping to remove and store carbon in soils, vegetation and landscapes, thereby strengthening resilience.



Photo: Articulação Nacional de Agroecologia (ANA) archive

- Family farming plays a strategic role in the just transition. It is the predominant form of agricultural work organization worldwide, produces a significant share of the world's food and contributes to food and nutrition security. It also grounds agriculture in the ecological and sociocultural specificities of territories; manages and conserves agrobiodiversity; supports multiple uses of territories; structures and manages diversified production systems; and strengthens resilience.

- A just transition of agrifood systems is inseparable from the agrarian question. Without access to land and territories, tenure security, and protection from land grabbing, conflicts and new forms of appropriation, existing inequalities may be reinforced. Where territorial rights are guaranteed, family farming can help halt and reverse deforestation and strengthen sustainable agrifood systems by closing ecological cycles at the landscape level, driven by solar energy captured through photosynthesis.

- Family farming- and agroecology-based agrifood systems connect the agendas of climate action, biodiversity conservation and combating desertification. They simultaneously contribute to reducing emissions, conserving ecosystems, restoring degraded land and strengthening the resilience of territories.

- Placing family farming and agroecology at the centre of the just transition means changing the course of development: producing healthy food, strengthening local economies, protecting territorial rights, reducing inequalities and addressing the climate crisis, biodiversity loss, desertification and food crises in an integrated manner.

2. How did we reach this point?

- Industrial agrifood systems are the result of political and economic choices that have favoured industrial models, global value chains, corporate interests and production based on apparently low costs.

- The transition of agrifood systems depends not only on technical solutions or increased financing, but also on changes in power relations, political priorities, resource flows and governance.

- The international climate agenda still treats agrifood systems as a secondary issue. When they are addressed, the focus is generally limited almost exclusively to agricultural production. This sidelines critical issues such as the sector's dependence on fossil fuels and its contribution to deforestation and forest degradation.

- Corporate concentration and unequal participation in decision-making arenas hinder the construction of agrifood systems guided by the human right to adequate food, climate justice, food sovereignty and the autonomy of territories.

- Industrial agrifood arrangements based on commodity production, large-scale landholdings, the privatization of commons, dependence on fossil fuels and chemical inputs, long supply chains and corporate-led digitalization deepen exclusion, dependency, emissions and vulnerability while eroding democratic governance.

- Land concentration, unequal control over territories and competition for commons place growing pressure on forests, family farming territories, Indigenous Peoples and traditional communities, intensifying conflicts, contamination and biodiversity loss.

- The principal economic and financial barrier is not simply a lack of resources. Much public and private finance, whether agricultural or climate-related, continues to sustain industrial agrifood systems, while family farmers, Indigenous Peoples and traditional communities have limited access to resources for sustainable practices.

- Fragmented public policies, unsuitable instruments and weak coordination between agrarian, food, climate, environmental, health, social and cultural agendas constrain the scaling up of sustainable alternatives.

- The transition also requires sociocultural changes in how farmers, consumers and markets relate to food production, consumption and value.



Photo: Articulação Nacional de Agroecologia (ANA) archive)

3. The nexus between fossil fuels and agrifood systems

- Agrifood systems account for at least 15% of annual global fossil fuel use, including the energy used for synthetic fertilizers, pesticides, mechanization, transport, processing, packaging, retail, consumption and waste disposal.

- Most of this consumption occurs beyond the farm gate: 42% is associated with processing and packaging, including refrigeration and transport, while 38% is linked to retail, consumption and disposal.

- Dependence on synthetic fertilizers, petrochemical inputs and plastics used in food production and consumption has turned agrifood systems into a strategic frontier for the fossil fuel industry.

- Agrifood systems also contribute to energy production through biofuels, biomaterials and other forms of rural energy generation. However, when governed by an industrial logic, this model can reproduce land concentration, territorial conflicts and competition between land used for energy production and land used for food production.

- There can be no effective transition away from fossil fuels without transforming industrial agrifood systems and strengthening territorialized, diverse and agroecology-based alternatives that have limited dependence on external inputs, particularly inputs with a high fossil-fuel energy footprint.



Photo: AS-PTA archive

4. The nexus between deforestation, forest degradation and agrifood systems

- Agricultural expansion is the leading driver of tropical forest loss, fuelled by the expansion of pastureland and monocultures and by commodity chains geared towards animal feed and export markets.

- The world lost 4.3 million hectares of primary tropical forest in 2025. This is equivalent to more than 11 football pitches of forest every minute.

- In temperate and boreal forests, the climate challenge is not limited to preventing deforestation. It also involves addressing fires intensified by heatwaves, prolonged droughts, rural abandonment and the accumulation of biomass in poorly managed landscapes. Increasing tree cover, particularly through homogeneous tree plantations, does not therefore necessarily increase climate resilience.

- The relationship between agrifood systems and forests must also take into account forms of degradation that compromise forests' ecological and social functions even in the absence of complete deforestation. These include logging, inappropriate management, mining, land speculation, urbanization and large-scale bioenergy projects.

- One of the underlying causes of deforestation for agricultural production lies in incentives and financial flows that make forest conversion more profitable than forest conservation: agriculture and fisheries receive more than US$670 billion annually in environmentally harmful subsidies. Agricultural subsidies are associated with the loss of 2.2 million hectares of forest each year, equivalent to 14% of global deforestation.



Photo: Articulação Nacional de Agroecologia (ANA) archive

5. The nexus between agrifood systems, just transitions and the realization of rights

- A just transition of agri-food systems must go beyond reducing greenhouse gas emissions. It needs to incorporate a rights-based perspective.

- This approach requires confronting inequalities based on class, gender, race and territory, while recognizing the rights, knowledge and practices of those who live, work, produce and care within agrifood systems.

- Women and men engaged in family farming, Indigenous Peoples, traditional peoples and communities, fishers, riverine communities, pastoralists, urban farmers and communities living in urban peripheries are not merely vulnerable populations. They are key actors in building alternatives to industrial agri-food systems.

6. Why does a just transition of agrifood systems matter?

- Agrifood systems are among the main drivers of the climate crisis. They account for approximately 30% of global greenhouse gas emissions and are the world's second-largest source of emissions, after the energy sector. Responsibility for these emissions, however, is not shared equally across all agrifood arrangements: it lies primarily with industrial models.

- Their impacts extend far beyond greenhouse gas emissions. Agrifood systems occupy approximately 50% of the world's habitable land, account for around 70% of global biodiversity loss, consume 70% of available freshwater and exert pressure on 86% of species threatened with extinction.

- The climate crisis also directly affects agrifood systems. Droughts, floods, heatwaves, changes in soil fertility and shifts in populations of insect pests, spontaneous plants and pathogenic microorganisms reduce production, increase prices and deepen food and nutrition insecurity. Over the past 30 years, climate-related disasters have caused an estimated US$3.8 trillion in losses to crops and livestock. The most vulnerable groups, including family farmers, are among those most severely affected.

- Transforming agrifood systems can make them a central part of the solution. Sustainable food production, distribution and consumption practices could reduce global emissions by at least 10.3 gigatonnes per year—approximately 20% of the reductions needed by 2050 to keep global warming below 1.5°C.

- The contribution of agrifood systems is not limited to reducing harm. Agroecological practices and agroforestry and agrosilvopastoral systems can expand natural carbon sinks, increasing their capacity to remove some of the CO2 already accumulated in the atmosphere and store it in soils, vegetation and landscapes.



Photo: Articulação Semiárido Brasileiro (ASA)

7. Why adopt a just-transition approach to agrifood systems in addressing the climate crisis?

- An agrifood systems approach broadens the scope of climate action by shifting the focus beyond agricultural production. It adopts an integrated perspective that encompasses food processing, transport, distribution, consumption and waste, as well as the ways in which these stages are connected through governance arrangements that shape the meanings attributed to food and eating in contemporary societies.

- This approach connects agendas that are often addressed separately, including agriculture, energy, health, biodiversity, land use, forests, water, food and culture. It also enables the identification of combined responses that bring together mitigation, adaptation, social justice and food sovereignty.

- Public debate on the transformation of agrifood systems can bring the climate agenda closer to everyday life, making it more concrete, easier to communicate and more capable of mobilizing society.

- The transition towards more diversified, localized and sustainable agrifood systems can increase the availability and accessibility of healthy food, helping prevent all forms of malnutrition, from undernutrition to obesity.

- Addressing the climate crisis through the transition of agrifood systems means debating development models, rather than merely reducing sectoral emissions or making agricultural production more efficient.



Photo: Túlio Martins - AS-PTA

8. What kind of agrifood system can help address the climate crisis?

- Industrial agrifood systems are the result of political and economic choices that have favoured particular production models, corporate interests and ways of organizing markets.

- Agrifood systems capable of addressing the climate crisis are not simply those that emit less carbon. They must simultaneously reduce harm and generate social, ecological, economic, cultural and health benefits.

- The just transition must be guided by shared principles: agroecology, protection of territories and biodiversity, food sovereignty, social, climate and environmental justice, reduced dependence on fossil fuels, and democratic governance.

- These principles do not constitute a universal blueprint. They provide a framework for guiding public policies and international cooperation towards the protection and realization of rights. Family farming is key to putting these principles into practice in an integrated way.



Photo: Acervo Articulação Nacional de Agroecologia (ANA)

9. Who are the leading actors in the just transition of agrifood systems?

- Experiences in family farming and agroecology are already charting pathways towards a just transition of agrifood systems. However, they require enabling political, economic and institutional conditions if they are to be strengthened and expanded.

- Family farming, in all its diverse forms, occupies a strategic place in this transition. It is the predominant form of agricultural organization worldwide, manages between 70% and 80% of agricultural land and produces more than 80% of the world's food by value.

- Recognizing family farming as a central actor does not mean treating it as homogeneous. Segments more closely integrated into conventional value chains must also be supported in transitioning towards agroecological, diversified and territorialized models. At the same time, traditional sectors historically deprived of public support must be recognized and strengthened for their economic rationale, which is based on productive diversity and a high degree of autonomy from external inputs and fossil fuel-intensive services.

- Strengthening family farming means creating the political, economic and institutional conditions for those who already produce food, provide care, conserve ecosystems and sustain territories to expand their economic, political, social and cultural relevance.

- Recognizing and valuing the leading role of women and young people is an indispensable condition for a just transition of agrifood systems.



Photo: Articulação Nacional de Agroecologia (ANA) archive

10. How should the transition of agrifood systems be financed?

- Agrifood systems are underfunded within the global climate finance architecture. They received 7.2% of total climate finance in 2021–2022 and only 2.5% of international public climate finance for development.
- Funding for agroecology-based initiatives is even more limited: only US$9.1 billion, equivalent to 1.5% of global public climate finance.
- Only 8% of development-related climate finance for agrifood systems focuses on methane emissions.
- Global agricultural subsidies remain profoundly misaligned with climate, social and ecological objectives.
- The narrative of resource scarcity is insufficient. The problem is not simply a lack of money, but the direction of financial flows that continue to sustain models harmful to the climate, territories and agrifood systems.
- Financing the just transition requires a new political choice: rebalancing the climate finance architecture; redirecting resources towards just, sustainable, healthy and resilient agrifood systems; and reorienting the economy so that it is compatible with climate goals and planetary boundaries.



1.
INTRODUCTION



1. Introduction

The debate over fossil fuels occupies a central place in international climate negotiations for an evident reason: their combustion accounts for the majority of global greenhouse gas (GHG) emissions. Rapidly reducing their use is an indispensable condition for limiting global warming to 1.5°C, avoiding the crossing of multiple tipping points and preventing the further erosion or transgression of other planetary boundaries[4]. In this context, the COP30 Presidency's initiative to develop a roadmap for transitioning away from fossil fuels is welcome.

In parallel, the Brazilian Presidency of the climate conference proposed a second roadmap aimed at halting and reversing deforestation and forest degradation by 2030. Both agendas are urgent and necessary, and they point to a central challenge for climate governance: bridging the gap between negotiation and implementation by shifting the focus from broad commitments to concrete pathways for action. In the same vein, the COP29 and COP30 Presidencies presented the Baku to Belém Roadmap to 1.3T, aimed at building a new global climate finance architecture. However, the roadmap must go further in defining the sources and mechanisms capable of mobilizing the volume of resources required to support the transition in developing countries.

Despite these advances, one agenda remains marginal to both the roadmap strategy and the dominant climate debate: the just transition of agrifood systems. Agrifood systems account for approximately 30% of global GHG emissions and are the world's second-largest source of emissions, after energy systems[5,6].

4 Tipping points are critical components of the Earth system that risk undergoing irreversible change if pushed beyond their thresholds by rising global temperatures and climate change. The Amazon rainforest is one example. See: https://www.pik-potsdam.de/en/output/infodesk/tipping-elements. Accessed 13 jul. 2026.

Planetary boundaries define a safe operating space for humanity based on nine processes that regulate the stability of the Earth system. By 2025, seven of these boundaries had already been transgressed: climate change, biosphere integrity, land-system change, freshwater change, modification of biogeochemical flows, introduction of novel entities and ocean acidification. The two planetary boundaries that remained within the safe operating space were atmospheric aerosol loading and stratospheric ozone depletion SAKSCHEWSKI, B. *et al.* Planetary health check 2025: a scientific assessment of the state of the planet. In: KITZMANN, N. H. *et al.* (eds.). Potsdam: Potsdam Institute for Climate Impact Research, 2025. Available at: https://doi.org/10.48485/PIK.2025.017. Accessed 13 jul. 2026.

For further information, see: https://www.pik-potsdam.de/en/output/infodesk/planetary-boundaries. Accessed 13 jul. 2026.

5 CLIC. Landscape of climate finance for agrifood systems 2025. **CLIC**, 2025. Available at: https://climateshotinvestor.org/publications/landscape-of-climate-finance-for-agrifood-systems-2025. Accessed 13 jul. 2026.

6 CRIPPA, M. *et al.* Food systems are responsible for a third of global anthropogenic GHG emissions. **Nature Food**, v. 2, p. 198–209, 2021. Available at: https://doi.org/10.1038/s43016-021-00225-9. Accessed 13 jul. 2026.

Box 1 – Why do agrifood systems matter, and how should they be organized to help address the climate crisis?

Discussing agrifood systems is different from discussing agriculture and livestock production alone. The latter terms are more commonly used in official climate diplomacy documents and are generally associated with the agricultural production stage. This distinction is essential for analysing the structural and systemic causes and effects of climate change associated with agrifood sector, as well as for developing effective solutions that address food and climate challenges together.

Agrifood systems as an approach

We use the term "agrifood systems" to underscore a systemic approach to the just transition. This means recognizing that climate challenges will not be resolved through changes in agricultural production alone. Transformation must also encompass the processing, distribution, consumption and disposal of agricultural and food products. More importantly, this approach draws attention to the architecture, mechanisms, governance arrangements and power relations that determine what is produced, how and for whom; how food is distributed and to whom; how it is consumed; and what impacts are generated across these different dimensions.

We also refer to agrifood systems in the plural to emphasize that different arrangements organize the production, processing, distribution, consumption and disposal of food through power relations that structure societies. On the one hand, there are industrial agrifood systems, which are more harmful to the planet, people and other living beings and which therefore drive and intensify the climate crisis. These systems are hegemonic and must be transformed. On the other hand, there are agrifood systems structured around family farming and grounded in agroecological principles, with low or no environmental impacts and positive effects for the planet, people and other living beings. These systems remain counter-hegemonic and must be strengthened and supported so that they can become predominant.

Agrifood systems as arrangements

The terms “food systems” and “agrifood systems” – sometimes accompanied by qualifiers such as “sustainable” – are commonly used to describe the defining characteristics of the practices included in these arrangements. For example, the High Level Panel of Experts on Food Security and Nutrition of the Committee on World Food Security defines sustainable food systems according to six dimensions: productive and prosperous, to ensure the availability of sufficient food; equitable and inclusive, to ensure access to food and livelihoods for all within the system; empowering and respectful, to ensure the agency of all people and groups, including those in situations of greater vulnerability and marginalization, enabling them to make choices and exercise their voice in shaping the system; resilient, to ensure stability in the face of shocks and crises; regenerative, to ensure sustainability in all its dimensions; and healthy and nutritious, to ensure the proper absorption and utilization of nutrients[7].

7 HLPE. **Food security and nutrition:** building a global narrative towards 2030. Rome: High Level Panel of Experts on Food Security and Nutrition of the Committee on World Food Security, 2020, p. XV.



Photo: Acervo Articulação Nacional de Agroecologia (ANA)

The dominance of the fossil fuel agenda in climate debates is also reflected in the central place it occupies within climate finance flows. In 2023, global climate finance reached a record US$1.9 trillion. Energy and transport received more than 70% of these resources, while other high-emitting sectors, including agriculture, industry and waste, collectively received less than 10% of total flows[8]. Although reducing fossil fuel emissions is essential to achieving the Paris Agreement goal of limiting global temperature rise to 1.5°C or 2°C above pre-industrial levels, other sources of emissions could also prevent these goals from being met. Clark and colleagues[9] demonstrated that, even if fossil fuel emissions were halted immediately, current trends in global food systems would preclude the achievement of the 1.5°C target and, by the end of the century, would also jeopardize the 2°C target. This is because, although emissions from fossil fuel use within agrifood systems are accounted for under the energy and transport sectors, a large share of agrifood system emissions arises from biological processes and land-use change. These processes account for a significant proportion of emissions and cannot be addressed solely through the adoption of renewable energy.

8 CLIMATE POLICY INITIATIVE. Global landscape of climate finance 2025. **Climate Policy Initiative**, 2025. Available at: https://www.climatepolicyinitiative.org/publication/global-landscape-of-climate-finance-2025/. Accessed 13 jul. 2026.

9 CLARK, M. A. *et al.* Global food system emissions could preclude achieving the 1.5 and 2°C climate change targets. Science, v. 370, n. 6517, p. 705–708, 2020. Available at:: https://doi.org/10.1126/science.aba7357. Accessed 13 jul. 2026.

Box 2 – Some of the main sources of greenhouse gas emissions associated with the global agrifood system

- **Deforestation and land-use change:** Converting forests and other native ecosystems into pasture or cropland releases large amounts of carbon dioxide (CO_2) stored in biomass and soils. In some contexts, soil disturbance may also generate nitrous oxide (N_2O) emissions.
- **Production and use of fertilizers and other agrochemicals:** The production of nitrogen fertilizers is energy-intensive and generates CO_2 emissions. Their application to soils releases nitrous oxide (N_2O), a greenhouse gas with high global warming potential.
- **Enteric fermentation in ruminant production:** Methane (CH_4) is produced during the digestion of ruminants such as cattle, sheep and goats;
- **Rice production:** Rice cultivation in flooded fields is a significant source of methane (CH_4) because of anaerobic soil conditions.
- **Animal manure management:** Depending on how it is stored and treated, manure emits both methane (CH_4) and nitrous oxide (N_2O).;
- **Fossil fuel combustion throughout food supply chains:** CO_2 emissions result from energy use across food production, processing, refrigeration, transport and distribution.

Source: Prepared by the authors based on data from Clark *et al.* [10]

10 CLARK *et al.*, Global food system emissions could preclude achieving the 1.5 and 2 °C climate change targets.

Achieving the 1.5°C target therefore requires rapid and ambitious changes in agrifood systems. According to a study by the Global Alliance for the Future of Food[11], transforming how food is produced, distributed and consumed could deliver approximately 20% of the global GHG emission reductions required by 2050 to keep warming below 1.5°C. More than that, agrifood systems whose productive foundations lie primarily in agroecology-based family farming (Box 3) have the potential to remove part of the CO_2 already accumulated in the atmosphere and store it more durably in soils, vegetation and landscapes[12].

This means, for example, grounding production in solar energy captured through photosynthesis and organizing distribution predominantly through short supply chains. It also entails prioritizing fresh, seasonal, minimally processed and processed foods in ways that take local food cultures into account. Priority should be given to plant-based foods, which have substantially lower environmental and climate impacts, contribute positively to public health and increase the incomes of many family farmers. The transformation envisaged is therefore one that reconnects agriculture with ecological processes and food production with consumption at the local level.

Family farming integrated into territorial markets constitutes a technical and economic arrangement capable of enabling this dual reconnection, summarized by the concept of the "relocalization of agrifood systems". Agroecology-based family farming has even greater potential to reduce emissions and generate positive climate outcomes. By bringing production and consumption closer together, diversifying agricultural landscapes, strengthening local economies and reducing dependence on long and vulnerable supply chains, relocalization also increases the resilience of agrifood systems to droughts, floods, extreme events, price volatility and supply crises.

11 GLOBAL ALLIANCE FOR THE FUTURE OF FOOD. **Public climate finance for food systems transformation:** 2024 update. Toronto: Global Alliance for the Future of Food, 2024.

12 PIMBERT, M. P. Financing agroecological transformations for territorial agri-food systems: beyond the myth of financial scarcity. **Elementa:** Science of the Anthropocene, v. 13, n. 1, art. 00026, 2025. Available at: https://doi.org/10.1525/elementa.2025.00026. Accessed 13 jul. 2026.

Box 3 – Agroecology-based family farming

Family farming is the predominant form of agricultural work organization worldwide. It manages between 70% and 80% of agricultural land and produces more than 80% of the world's food by value[13]. It contributes to food and nutrition security and to the multiple uses of territories by rooting agriculture in their ecological and sociocultural characteristics, managing and conserving agrobiodiversity, and structuring diversified production systems. In doing so, it constitutes a local response to global climate change.

Family farming is, however, a heterogeneous category. Within this broad group, agroecology-based family farming is the form that most closely embodies the principles of environmental, climate and social justice. Agroecology is a paradigm for the development of agriculture and agrifood systems that applies ecological and social justice principles to the production and management of these systems. Its approach seeks to minimize external inputs, particularly chemical inputs and those derived from fossil fuels, and optimize positive interactions among plants, animals, human beings and the wider environment, while reducing both the physical and social distances separating food production from consumption. Agroecology is also grounded in social and political processes rooted in specific territories, cultures and socioecological contexts. It is guided by the co-creation of knowledge, combining academic and traditional knowledge in the search for context-specific solutions to local problems. This means that agroecology recognizes and values the knowledge, autonomy and decision-making capacity of family farmers, Indigenous Peoples, peasants, landless workers, pastoralists, urban farmers and fishers in shaping agrifood policies and practices.

13 LOWDER, S. K.; SÁNCHEZ, M. V.; BERTINI, R. **Farms, family farms, farmland distribution and farm labour:** what do we know today? FAO Agricultural Development Economics Working Paper 19-08. Rome: FAO, 2019.

Agroecology is not a new invention. Its foundations lie in the knowledge systems and intellectual contributions of peoples and communities in different regions of the world. Because of its multiple dimensions, agroecology is commonly understood as simultaneously a science, a set of practices and a social movement.

Numerous agroecological experiences around the world already bring together knowledge, practices and collective action. In Brazil, the National Articulation of Agroecology (ANA) serves as a space of convergence among social movements, networks and civil society organizations engaged in promoting agroecology, strengthening family farming and building sustainable alternatives for rural development. Established in 2002, ANA provides a concrete example of how the just transition of agrifood systems has already been under construction for decades[14].

Source: Prepared by the author based on the references cited in[15,16].

14 See: https://agroecologia.org.br/. Accessed 13 jul. 2026.

15 PIMBERT, M. P. *et al.* Agroecology. *In:* **Oxford Research Encyclopedia of Anthropology**. Oxford: Oxford University Press, 2021; PIMBERT, **Financing agroecological transformations for territorial agri-food systems**.

16 See also: AGROECOLOGY FUND. O que é agroecologia? **Agroecology Fund**, [s.d.]. Available at: https://agroecologyfund.org/pt-br/o-que-e-agroecologia/. Accessed 13 jul. 2026.

Finally, the debate on the just transition of agrifood systems is inseparable from the agrarian question. How land is appropriated, controlled and used is directly related to deforestation, environmental degradation, greenhouse gas emissions and the reproduction of historical social inequalities. The expansion of industrial agricultural models based on large-scale landholdings, monocultures, commodity production and corporate control of agrifood supply chains has contributed to deepening the climate crisis. According to the Food and Agriculture Organization of the United Nations, more than 90% of global deforestation between 2000 and 2018 was associated with agricultural expansion[17]. At the same time, climate mitigation and adaptation measures such as REDD+ — Reducing Emissions from Deforestation and Forest Degradation — and wind and solar power facilities, when designed without guarantees for territorial rights, can generate new forms of land appropriation and restrict family farmers', Indigenous Peoples' and traditional communities' access to the resources required for their social and economic reproduction[18].

A just transition of agrifood systems must therefore directly address questions of land and territory. Family farming plays a strategic role in this process by connecting food production, environmental conservation, territorial management, the reproduction of knowledge and the strengthening of local economies. For family farmers, land and territory are not merely means of production; they are also the ecological, social and political foundations of life. Their contribution, however, depends on concrete conditions, including land tenure security, land tenure regularization, access to appropriate public policies, and protection from land grabbing, conflicts, and pressures arising from disruptive economic activities associated with large-scale business ventures or even organised crime.

Unless these obstacles are addressed, the just transition of agrifood systems risks reinforcing inequalities and processes of dispossession. Conversely, where access to land and territorial rights are guaranteed, family farming can

17 FAO. COP26: Agricultural expansion drives almost 90 percent of global deforestation. **Food and Agriculture Organization of the United Nations**, 11 nov. 2021. Available at: https://www.fao.org/newsroom/detail/cop26-agricultural-expansion-drives-almost-90-percent-of-global-deforestation/en. Accessed 13 jul. 2026.

18 FROESE, R.; SCHILLING, J. The nexus of climate change, land use, and conflicts. **Current Climate Change Reports**, v. 5, p. 24–35, 2019. Available at: https://doi.org/10.1007/s40641-019-00122-1. Accessed 13 jul. 2026.

help halt and reverse deforestation and forest degradation, strengthen sustainable agrifood systems, protect biodiversity, restore soils, and advance social and climate justice.

The just transition of agrifood systems, particularly when grounded in family farming and agroecology, therefore contributes to more than the Paris Agreement's climate goals. It also provides an integrated response to the challenges addressed by the three Rio Conventions: the United Nations Framework Convention on Climate Change, by contributing to emission reductions, carbon sequestration and territorial adaptation; the Convention on Biological Diversity, by conserving ecosystems, species, seeds, landscapes and associated knowledge; and the United Nations Convention to Combat Desertification, by promoting sustainable land use, restoring degraded areas and strengthening resilience to drought.

Strengthening agrifood systems based on family farming, agroecology, territorial markets and territorial rights should therefore not be regarded as a complementary or compensatory policy. It must be understood as a central component of a new model of agrarian development. This pathway can produce healthy food, protect ecosystems and biodiversity, regenerate soils and territories, reduce inequalities, strengthen local economies, and increase territorial resilience to climate impacts, food crises and environmental degradation.

As this document demonstrates, such alternatives already exist in different parts of the world. Yet they remain marginalized by a dominant agrifood model based on land concentration, commodity production, environmental degradation and corporate control over agribusiness value chains. Simultaneously confronting the climate crisis, biodiversity loss and land degradation therefore requires more than isolated investments. It demands a change in the course of development that places family farming and agroecology at the centre of just transition strategies.

Objectives and structure of the document

This document has four main objectives.

The first is to contribute to the roadmaps being developed under the COP30 Presidency. Its central argument is that without a just transition of agrifood systems, there can be no effective transition away from fossil fuels, nor will it be possible to halt and reverse deforestation and forest degradation.

The second objective is to advocate for the just transition of agrifood systems to be given the central place it deserves in climate negotiations and implementation strategies, extending beyond the roadmaps currently under development. This agenda must receive due attention in discussions on mitigation, adaptation, loss and damage, finance and just transition. Without transforming agrifood systems, it will not be possible to limit warming to 1.5°C, avoid crossing planetary tipping points, or address in an integrated manner the multiple inequalities intensified by the climate crisis.

The third objective is to contribute to the climate finance debate. We argue that mobilizing new sources of finance is necessary but insufficient. Redirecting resources already allocated to agrifood systems is an indispensable condition for advancing just transitions. In other words, the economics and financing of agrifood systems must be brought into alignment with climate goals, planetary boundaries and socioenvironmental rights, preventing public and private resources from continuing to sustain models that increase emissions, degrade ecosystems, deepen inequalities and perpetuate hunger and all forms of malnutrition.

The fourth objective is to inform civil society debates on the climate agenda, particularly among family farming organizations and other organizations directly engaged in the just transition of agrifood systems. By bringing together evidence, arguments and proposals for action, the document seeks to support advocacy strategies capable of strengthening this agenda within national and international arenas for climate negotiation and implementation.

The structure of the document reflects these objectives. Section 2 presents the main barriers that must be addressed to advance the necessary transitions and achieve structural transformations of agrifood systems. Sections 3 and 4 bring together evidence on the links between the transition of agrifood systems, transitioning away from fossil fuels, and halting and reversing deforestation and forest degradation. Section 5 explains the importance of an approach grounded in justice and the realization of rights. Sections 6 to 9 discuss the relevance of a just transition of agrifood systems to the mitigation, adaptation, loss and damage, finance and just-transition agendas. Section 10 examines climate finance in greater depth, while Section 11 presents proposals for systemic action capable of contributing to the achievement of climate goals, respect for planetary boundaries and the protection of socioenvironmental rights.

2.

HOW DID WE REACH THIS POINT?

2. How did we reach this point?

Industrial agrifood systems are the result of political and economic choices[19]. These decisions are shaped by power struggles and, over time, have favoured particular actors, interest groups, and models of production and consumption. To a large extent, these systems perform well in relation to the purposes for which they were designed: increasing labour productivity, expanding the profitability of the food industry and agribusiness sectors, producing food at an apparently low cost, and sustaining global value chains based on scale, standardization and "economic efficiency", as understood by the dominant sector. From an energy perspective, however, these systems are highly inefficient and undermine the biophysical foundations necessary for their own reproduction over the medium and long term.

Transforming these systems into arrangements that are just, sustainable, healthy and resilient to the climate crisis requires confronting barriers of different kinds — political, economic, financial, institutional, territorial and sociocultural. This section presents the main barriers that prevent or hinder the just transition of agrifood systems and shows how they relate to the challenges of transitioning away from fossil fuels and halting and reversing deforestation and forest degradation.

The seven barriers presented below do not encompass every possible obstacle. Nor do they operate in isolation or apply equally in all contexts. Rather, they are interconnected dimensions that tend to reinforce one another, hindering transformative change. Taken together, they demonstrate that the just transition of agrifood systems depends not only on technical or technological solutions or increased financing, but also on changes in power relations, resource flows, political priorities, production models and the governance of agrifood systems.

In short, the transition of agrifood systems depends on new political and economic choices. This will require confronting the barriers described below.

19 GONZALEZ DE MOLINA, M. *et al.* **Political Agroecology:** advancing the transition to sustainable food systems. Boca Raton: CRC Press, 2019.

2.1. International agenda barrier — the marginalization of agrifood systems within the climate agenda

The first barrier lies in the way the international climate agenda has treated agrifood systems as a secondary issue or, at most, as a matter confined to the food production stage. Negotiations, policies and climate finance flows focus primarily on the energy and transport sectors, even though agrifood systems are major consumers of fossil fuels, both directly as fuels and as essential inputs in the production of agrochemicals[20]. This lack of priority reduces the visibility of and support for political actors engaged in building sustainable agrifood systems, such as family farmers, who can make systemic and structural contributions to addressing the climate crisis.

20 IPES-FOOD. Fuel to fork: what will it take to get fossil fuels out of our food systems? **iPES-Food**, 2025. Available at: https://ipes-food.org/report/fuel-to-fork/. Accessed 13 jul. 2026.

2.2. Power barrier — corporate concentration and asymmetries in political participation

Clapp[21] argues that agriculture has ceased to operate as a dispersed system of producers and has instead come under a logic of corporate dominance built over decades through public policies favourable to consolidation, acquisitions and the advantages of economies of scale. As a result, the governance of the global agricultural sector has increasingly come under the influence of a small number of transnational corporations. These corporations have gained control over key inputs such as seeds, pesticides, fertilizers and machinery. This concentration affects prices, farmers' dependency, political power and, consequently, the sustainability of agrifood systems. The seed and pesticide sector is dominated by companies such as Bayer, Corteva — created through the merger of Dow and DuPont — Syngenta and BASF. Leading agricultural machinery corporations include John Deere, CNH Industrial, AGCO and Kubota, some of which hold multiple brands in their portfolios. The fertilizer sector is dominated by Nutrien, Mosaic, Yara and CF Industries[22].

In a report published in 2017, IPES-Food had already drawn attention to a far-reaching reorganization of food systems. According to the report, a wave of mega-mergers was bringing the

21 CLAPP, J. **Titans of industrial agriculture:** how a few giant corporations came to dominate the farm sector and why it matters. Cambridge: MIT Press, 2025. Available at: https://doi.org/10.7551/mitpress/15661.001.0001. Accessed 13 jul. 2026.

22 CLAPP, **Titans of industrial agriculture...**



Photo: Articulação Nacional de Agroecologia (ANA) archive

seed, agrochemical, fertilizer, animal genetics and agricultural machinery sectors under unprecedented levels of concentrated control, while also giving rise to ever-larger corporations in food processing and retail[23]. Leading corporations have strengthened their control by influencing the creation of rules favourable to their interests, shaping trade and investment agreements, restricting competition, funding research and making political donations[24].

COPs, in particular, have been marked by increasing corporate lobbying, not only by fossil fuel companies but also by interests linked to the agro-industrial sector. According to *The Guardian*, more than 300 agribusiness lobbyists attended COP30 in Belém, Brazil, often as members of national delegations, to promote industrial agriculture[25]. The high concentration of economic and political power among actors associated with industrial agrifood systems hinders — and may even prevent — the transition towards sustainable arrangements. The dominance of the corporate agenda tends to orient decisions towards profit and market expansion rather than prioritizing the right to food, climate justice, food sovereignty and the autonomy of territories. Family farmers and their organizations, in turn, face greater difficulties in accessing decision-making and participatory spaces and in making their voices heard.

23 IPES-FOOD. **Too big to feed:** exploring the impacts of mega-mergers, concentration and concentration of power in the agri-food sector. Brussels: International Panel of Experts on Sustainable Food Systems, 2017.

24 IPES-FOOD. Who's tipping the scales? The growing influence of corporations on the governance of food systems, and how to counter it. **iPES-Food**, 2023a. Available at: https://ipes-food.org/report/whos-tipping-the-scales/. Accessed 13 jul. 2026.

25 SHERRINGTON, R; LAKHANI, N. More than 300 big agriculture lobbyists have taken part in Cop30, investigation finds. **The Guardian**, 18 nov. 2025. Available at: https://www.theguardian.com/environment/2025/nov/18/big-agriculture-lobbyists-cop30-climate-summit. Accessed 13 jul. 2026.

2.3. Productive and technological barriers — the dominance of commodity-based industrial agrifood systems, dependence on fossil fuels and chemical inputs, long supply chains, and the drive towards digital agriculture

Industrial agrifood systems are centred on commodities and depend on large areas of land, the privatization of commons, fossil fuels, synthetic fertilizers, pesticides, heavy mechanization and long supply chains. Because this model is structured through global value chains, it is particularly vulnerable to geopolitical shocks. The recent conflict involving the United States, Israel and Iran, for example, is having a major impact on the global fertilizer supply, affecting production costs and, in turn, increasing food prices and food and nutrition insecurity, particularly among the most vulnerable populations. The Strait of Hormuz is a critical trade route for almost half of the global supply of urea, the main synthetic fertilizer derived from natural gas through its conversion into ammonia. With the Strait affected by Iran's blockades, urea prices have risen by 35% since the beginning of the war[26]. The dependence of numerous economies on nitrogen fertilizers produced by only a few corporations therefore undermines the sovereignty of many countries and has repercussions for economies worldwide.

Corporate-led agricultural digitalization has not delivered greater ecological resilience, equity or sustainability. On the contrary, it deepens dependence on corporate models, excludes significant segments of different social groups, and locks agriculture into pathways characterized by high financial costs, intensive energy consumption and input-intensive production. These models of innovation tend to be extractive, expensive, polluting and misaligned with farmers' actual needs[27]. They therefore deepen dependency and inequality while eroding democratic control over and sovereignty within agrifood systems. By organizing food production around exports, standardization and short-term profitability, they reduce the political and economic space available for territorialized, diverse, healthy and resilient agrifood systems.

Within this political and institutional environment, which favours the expansion of commodity production, some segments of family farming become integrated into agribusiness value chains in subordinate positions.

26 LUIG, L.; LAPPÉ, A. Middle East war is another wake-up call for fossil fuel-reliant food systems. **Climate Home News**, 19 mar. 2026. Available at: https://www.climatechangenews.com/2026/03/19/middle-east-war-is-another-wake-up-call-for-fossil-fuel-reliant-food-systems/. Accessed 13 jul. 2026.

27 IPES-FOOD. Head in the cloud: challenging the false promise of digital agriculture and cultivating innovation from the ground up. **iPES-Food**, 2026. Available at: https://ipes-food.org/report/head-in-the-cloud/. Accessed 13 jul. 2026.

2.4. Territorial barriers — land concentration, control over territories and disputes over the commons

The just transition of agrifood systems is also obstructed by land concentration, unequal control over territories and disputes over essential commons such as water, forests, biodiversity and seeds. The industrial agrifood model depends on continual expansion across large areas of land and tends to place pressure on forests, family farming territories, Indigenous Peoples, and traditional and Quilombola communities. This expansionist character increases territorial insecurity and land conflicts, causes the poisoning of people, water and soils by pesticides, and drives biodiversity loss.

This barrier reveals a central contradiction within contemporary agrifood systems: small-scale producers, rural workers and communities embedded in "peasant food webs" control less than one third of the world's agricultural land and resources, even though civil society estimates indicate that they feed more than 70% of the global population. The absence of land titles, overlapping land registries and insecurity over land tenure and use make it more difficult for family farmers to access public policies. At the same time, agrifood arrangements that concentrate land, water and natural resources continue to receive disproportionate political, economic and financial support[28].

Territorial disputes are also intensifying with the expansion of activities associated with the energy transition, including biofuels, rare-earth mining, large-scale renewable energy projects and the production of feedstocks for biodiesel. These initiatives reproduce monocultures, land concentration and the private appropriation of commons; compete with food production; generate new conflicts; and shift the costs of the transition onto rural populations, Indigenous Peoples, traditional peoples and communities, and Afro-descendant communities.

28 IPES-FOOD. Food from somewhere: building food security and resilience through territorial markets. **iPES-Food**, 2024.

2.5. Economic and financial barriers — financing directed towards the reproduction of industrial agrifood systems

The fifth barrier lies in the contradiction between the narrative of resource scarcity for the climate transition and the continued allocation of public and private resources to practices that are poorly aligned — or not aligned at all — with climate goals. This barrier is compounded by the fragmentation and incoherence between agricultural and climate finance, which prevents an integrated approach to allocating resources for sustainable practices.

The narrative of financial scarcity suggests that insufficient resources are available to undertake the necessary transitions. Yet significant volumes of funding continue to be channelled into subsidies, credit, tax incentives and investments that sustain models harmful to the planet, people and other living beings because of their intensive use of land, water, energy and other commons. The *Fuel to Fork* report[29] reveals that government support for agriculture remains above US$800 billion per year, mainly sustaining the production of chemical input-intensive agricultural commodities. Much of this finance takes the form of price support and payments linked to specific agricultural commodities or production inputs, thereby reinforcing unsustainable practices. Fertilizer subsidies, in particular, encourage the excessive use of these inputs[30]. In Brazil, for example, estimated federal tax expenditures for the soy value chain reached R$57 billion in 2022 — twice the amount of tax relief provided for basic food basket products[31].

Meanwhile, family farmers, Indigenous Peoples and traditional communities face difficulties in accessing these resources directly. The main obstacles include bureaucratic requirements, financial instruments that are ill-suited to their realities, dependence on intermediary organizations, a lack of

29 IPES-FOOD. Fuel to fork: what will it take to get fossil fuels out of our food systems? **iPES-Food**, 2025. Available at: https://ipes-food.org/report/fuel-to-fork/. Accessed 13 jul. 2026.

30 IPES-FOOD, Fuel to fork: what will it take to get fossil fuels out of our food systems?...

31 CAMPOS, A. **O custo da soja para o Brasil: renúncias fiscais, subsídios e isenções da cadeia produtiva**. [Ficha técnica]. ACT Promoção da Saúde; Instituto Democracia e Sustentabilidade; Instituto Brasileiro de Defesa do Consumidor; Instituto Sociedade, População e Natureza; Observatório das Economias da Sociobiodiversidade, 2023. Available at: https://idec.org.br/sites/default/files/o-custo-da-soja-para-o-brasil_renuncias-fiscais-subsidios-e-isencoes-da-cadeia-produtiva.pdf. Accessed 13 jul. 2026.

technical assistance and resistance among financial institutions to investing in activities that fall outside conventional models.

Even where financing is available to address climate challenges, increasing amounts of funding are being allocated to solutions that fail to confront the structural causes of emissions. These mechanisms include carbon markets, which critical sectors of civil society describe as "false solutions" because of their reductionist focus on accounting for carbon emission reductions and the risk that they may create new barriers to the development of genuinely multifunctional and systemic alternatives. Consistent financial incentives are still lacking to foster broader recognition and valuation of the sustainable conservation of biomes such as tropical forests, making their preservation economically attractive in addition to its social, cultural and environmental benefits. Moreover, the limited incorporation of climate and socioenvironmental criteria into credit assessments constrains their capacity to encourage resilient, low-carbon or zero-emission practices.

2.6. Political and institutional barriers — fragmented public policies and unsuitable institutional instruments

The transition is hindered by the absence, fragmentation or inadequacy of public policies in relation to the challenges posed by the climate crisis, as well as by limited coordination among agrarian, food, climate, environmental, health, social and cultural agendas. Even where climate plans or sectoral agriculture and food policies exist, they frequently lack measurable targets, integrated approaches encompassing the entire agrifood system, coordination across levels of government[32], and instruments suited to the realities of agroecology-based family farming, which depends on maintaining biodiverse production systems linked to territorial markets.

The promotion of sustainable agrifood systems depends on a set of conditions that, in many cases, remain absent. These include continuous technical assistance, territorial markets, appropriate credit, investment in research and development aimed at creating suitable technologies, and territorial governance mechanisms. The absence of these conditions constrains the adoption and expansion of sustainable practices.

32 IPES-FOOD. From plate to planet: how local governments are driving action on climate change through food. **iPES-Food**, 2023b. Available at: https://ipes-food.org/report/from-plate-to-planet/. Accessed 13 jul. 2026.

2.7. Sociocultural barriers — shaping mindsets around production and consumption practices

The transition of agrifood systems also faces sociocultural barriers produced and reinforced through advertising campaigns, marketing strategies and corporate narratives. These mechanisms help consolidate the idea that the industrial model is the only model capable of ensuring scale, efficiency, and food and nutrition security. At the same time, they normalize the consumption of ultra-processed foods and devalue sustainable agrifood systems.

At the production level, this shaping of mindsets influences farmers' perceptions of the transition. In many contexts, environmental measures are associated with increased costs, bureaucracy and economic risk, particularly when they are not accompanied by financing, technical assistance, institutional coordination and markets that adequately reward sustainable practices. This helps explain why the adoption of structural changes tends to be slower when the transition is perceived as an individual burden rather than as a collective strategy for reorienting production.

At the consumption level, food industry marketing plays a central role in expanding dietary patterns based on ultra-processed products. Studies and institutional analyses show that advertising shapes not only individual choices but also social imaginaries, associating convenience, pleasure and modernity with foods of low nutritional value that increase the risk of noncommunicable diseases. In doing so, it weakens ties to local food cultures and to fresh or minimally processed foods[33].

Taking Brazil as an example, this shaping of mindsets occurs through television campaigns such as *"Agro: a indústria-riqueza do Brasil" ("Agribusiness: Brazil's Wealth-Generating Industry")*, which emerged as part of efforts to modernize agribusiness communications and emphasize the sector's modernity, technology and supposed virtues[34]. It also occurs through campaigns involving influencers and public personalities. An investigation by Agência Pública found that, during the 12 months leading up to COP30, at least 195 Brazilian influencers — including models, television presenters, prominent physicians and digital content creators — published content sponsored by ten of the world's largest meat, fertilizer and food companies[35].

33 CARDOSO, T. Marketing da indústria alimentícia prejudica hábitos alimentares. **IEA**, 22 mar. 2022. Available at: https://www.iea.usp.br/noticias/marketing-da-industria-alimenticia-prejudica-habitos-alimentares. Accessed 13 jul. 2026.

34 SOOMA, J. V. L. O Agro não é Pop: o papel do Grupo Globo como um aparelho privado de hegemonia a serviço do agronegócio. **Revista IDeAS**, v. 18, p. 1–31, e024002, 2024.

35 JORDAN, T. J. *et al.* O agro é publi: gigantes do agronegócio pagam personalidades brasileiras antes da COP30. **Publica**, 14 nov. 2025. Available at: https://apublica.org/2025/11/publi-do-agro-empresas-pagam-personalidades-antes-da-cop30/. Accessed 13 jul. 2025.

3.

THE FOSSIL FUEL–AGRIFOOD SYSTEMS NEXUS

3. The fossil fuel–agrifood systems nexus

It is widely recognized that fossil fuel consumption is the main driver of climate change, which is why the energy transition occupies a central place on the international climate agenda. However, this transition cannot be conceived solely through the lens of the energy and transport sectors. Agrifood systems are also deeply dependent on fossil fuels and, unless they are transformed, it will not be possible to reduce this dependence in a just, rapid and sustainable manner.

According to the Global Alliance for the Future of Food[36], food systems account for at least 15% of annual global fossil fuel use, a level comparable to the combined emissions of all European Union countries and Russia. This dependence is evident across different stages: the production of synthetic fertilizers and pesticides; the operation of machinery, irrigation systems, greenhouse heating and crop-drying equipment; the long-distance transport of food; industrial processing; refrigeration; plastic packaging; retail; and food preparation and waste.

This distribution explains why focusing solely on agriculture or agricultural production is inadequate, since most fossil fuel consumption within agrifood systems occurs outside primary production. According to the Global Alliance, 42% of this consumption is concentrated in processing and packaging, while 38% occurs in retail consumption and waste. Agricultural production and land use account for approximately 15%, and the production of agricultural inputs for around 5%[37]. This does not diminish the importance of agricultural production, particularly when emissions associated with land-use change, livestock production and fisheries are taken into account.

36 GLOBAL ALLIANCE FOR THE FUTURE OF FOOD. **Power shift: why we need to wean industrial food systems off fossil fuels.** Toronto: Global Alliance for the Future of Food, 2023.

37 GLOBAL ALLIANCE FOR THE FUTURE OF FOOD, **Power shift...**

The production of agricultural inputs is a particularly important dimension of this nexus. Synthetic fertilizers, especially nitrogen fertilizers, depend on highly energy-intensive processes, primarily involving the use of natural gas. At the same time, the agricultural model consolidated by the Green Revolution promoted the development of seeds selected to respond to the intensive use of chemical fertilizers and pesticides[38], creating a relationship of dependence among seeds, agrochemicals and fossil fuels.

Genetically modified seeds have been designed to create profitable synergies with petroleum-derived pesticides. Genetically modified herbicide-tolerant seed varieties enable corporations to sell technological packages in which the seed depends on the use of a proprietary herbicide produced by the same company. This model keeps farmers dependent on corporate suppliers of energy-intensive external inputs and pesticides[39].

The Global Alliance warns that the use of fossil fuels to produce fertilizers is likely to increase substantially by 2050. Agrifood systems also consume petrochemicals on a large scale. Food- and fertilizer-related plastics account for approximately 40% of petrochemical products, while the fossil fuel industry has been investing heavily in this sector as a new frontier for growth, including more than US$164 billion in planned investments in the United States alone between 2016 and 2023[40].

This dependence is likely to deepen as industrial agrifood systems become increasingly energy-intensive. Growing mechanization, the expanding use of fertilizers and other fossil fuel-based inputs, global supply chains, rising demand for meat, dairy products and ultra-processed foods, and emerging food trends have all increased energy consumption within food systems[41]. The expansion of pesticide and fertilizer use in certain national contexts reflects this same trajectory of dependence on external inputs, particularly synthetic and energy-intensive ones.

38 ABRAMOVAY, R. *et al.* **Transformando a monotonia do sistema agroalimentar global:** soluções colaborativas para a saúde, a sustentabilidade e as desigualdades. São Paulo: Cátedra Josué de Castro – USP, 2025.

39 IPES-FOOD, **Too big to feed...**

40 GLOBAL ALLIANCE FOR THE FUTURE OF FOOD, **Power shift...**

41 GLOBAL ALLIANCE FOR THE FUTURE OF FOOD, **Power shift...**



Photo: Articulação Nacional de Agroecologia (ANA) archivede Agroecologia (ANA)

A study by Instituto Escolhas[42] showed that, in Brazil, pesticide use per hectare planted with soy increased fivefold between 2003 and 2023.

The links between energy and agrifood systems extend beyond fossil fuel use to encompass the production of energy and materials, often supported by public subsidies. This includes the production of biogas and biomethane from waste such as cattle manure and pig and poultry effluent; energy from residual biomass such as rice husks, sugarcane bagasse, soy straw, pruning residues and sawdust; and liquid biofuels such as sugarcane and corn ethanol and soy biodiesel. Agrifood systems also contribute to the production of plant-based materials such as eucalyptus cellulose, cotton fibres, vegetable oils and starches. These materials are used to manufacture paper, packaging, textiles — including cotton and cellulose fibres — cosmetics, such as oils used in creams and wet wipes, and medicines containing plant-derived active ingredients.

According to the Global Alliance (2023), some of these forms of production, including biofuels, may generate benefits but also entail risks: the displacement of food production, pressure on social groups such as family farmers, land disputes and rising food prices. Other risks include intensive water and land use and environmental impacts such as deforestation and biodiversity loss. The problem, however, lies not in the energy technology itself but in the transition model adopted. Centralized, large-scale projects controlled by a small number of economic actors may reproduce corporate and land concentration and generate territorial conflicts. Decentralized, territorialized models integrated with agricultural production, by contrast, can open pathways towards an energy transition grounded in social and climate justice.

42 INSTITUTO ESCOLHAS. **Brasil como líder mundial em produção de soja:** até quando e a que custo? Sumário executivo. São Paulo: Instituto Escolhas, 2025.

Collaboration between the energy and food sectors is therefore indispensable. As the Global Alliance argues, food systems cannot be transformed without reducing fossil fuel consumption. Conversely, it will not be possible to phase out fossil fuels and avert catastrophic climate change without transforming food systems[43]. This is the principal reason why the transition of agrifood systems must be given due prominence in the roadmap for transitioning away from fossil fuels.

The central issue, therefore, is not simply to reduce energy consumption or replace one energy source with another. It is to transform those agrifood systems that are most dependent on fossil fuels: industrial, standardized systems based on long supply chains for productive inputs and food; intensive use of synthetic inputs; ultra-processing; plastic packaging; heavy reliance on refrigeration; and specialized production geared towards market expansion. Addressing this arrangement requires strengthening territorialized agrifood systems grounded in agroecology. In concrete terms, this means promoting diversified production systems with little or no dependence on synthetic fertilizers and pesticides, appropriate use of renewable energy, and distribution and food supply systems based on short circuits. It also means promoting healthy and adequate diets grounded in local food cultures, while restricting the consumption of ultra-processed foods as much as possible. By reducing external dependencies, diversifying production and bringing production and consumption closer together, these systems increase territorial resilience and strengthen the capacity of territories to withstand extreme events, supply crises and fluctuations in the prices of food and agricultural inputs.

43 GLOBAL ALLIANCE FOR THE FUTURE OF FOOD, **Power shift...**

4.

THE DEFORESTATION, FOREST DEGRADATION AND AGRIFOOD SYSTEMS NEXUS

4. The deforestation, forest degradation and agrifood systems nexus

Concerns about deforestation very often focus on tropical forest loss. This reflects the rapid pace at which these forests are being cleared. In 2025 alone, the world lost 4.3 million hectares of primary tropical forest — equivalent to more than 11 football pitches of forest every minute. Although this represented a 36% decline from 2024, primary tropical forest loss was still 46% higher than a decade earlier. Deforestation and forest degradation are directly related to how agrifood systems are organized. Across much of the tropical forest biome, agricultural expansion remains the main driver of forest loss, whether through the clearing of land for pasture or the expansion of monocultures intended for animal feed, export or agricultural commodity production[44].

This relationship is particularly evident in commodity value chains. Demand for cattle, soy, palm oil, gold and other minerals has continued to drive forest loss in different countries, especially in parts of Latin America and Southeast Asia[45]. According to the World Resources Institute, permanent agriculture was the leading driver of primary forest loss in Brazil between 2002 and 2025, accounting for 73% of this loss, largely in connection with soy and cattle production. In other words, certain models of industrial agriculture are among the principal causes of forest loss. Livestock production, for example, occupies vast areas of land, requires water and is associated with the direct conversion of forests and other ecosystems into pasture, while also being indirectly connected to the expansion of soy and maize production for animal feed.

The meat industry accounts for a significant share of global greenhouse gas emissions and for nearly 60% of emissions from the agrifood sector. Global livestock production alone is estimated to account for between

44 WORLD RESOURCES INSTITUTE. Latest analysis—Deforestation trends. **Global Forest Review**, 29 abr. 2026. Available at: https://research.wri.org/gfr/latest-analysis-deforestation-trends. Accessed 13 jul. 2026.

45 WORLD RESOURCES INSTITUTE, Latest analysis — Deforestation trends...

14% and 18% of anthropogenic greenhouse gas emissions, making it one of the activities that contribute most to global warming[46].

Deforestation is therefore associated with an industrial agrifood model based on territorial expansion, commodity production, long supply chains and economic incentives that continue to favour forest conversion. This process continues despite the numerous benefits that these ecosystems provide for biodiversity, carbon storage, water regulation, the production of food and medicines, and the reproduction of cultural identities and ways of life[47].

Forest loss affects and threatens the livelihoods of populations whose relationship with these ecosystems is direct. Martin Krause, Director of the Climate Change Division of the United Nations Environment Programme (UNEP), has highlighted the high social cost of this process. According to Krause, 25 million people living in poverty depend on tropical forests for cooking fuel and non-timber forest products. Without these forests, these populations become even more vulnerable to food and nutrition insecurity[48]. In regions such as the Amazon and East Africa, the expansion of pasture for cattle production has been one of the main drivers of deforestation and the loss of native wildlife[49].

However, not all forest loss results from large-scale commodity production. In some contexts, including parts of the Congo Basin, Madagascar and regions of Southeast Asia, forest loss is more directly linked to local needs for food, fuelwood and income in situations marked by poverty, a lack of economic alternatives, population growth, adverse economic conditions and unstable governance[50]. Approximately one quarter of global tropical deforestation is estimated to result from small-scale or subsistence agriculture, often driven by insecure access to land and means of production,

46 See: https://earth.org/amsterdams-ban-on-meat-and-fossil-fuel-advertising-comes-into-effect/; https://woods.stanford.edu/news/meats-environmental-impact Accessed 13 jul. 2026.

47 WORLD RESOURCES INSTITUTE, Latest analysis — Deforestation trends...

48 CHIARETTI, D. Perdas florestais chegam a US$ 81 bi por ano e afetam os mercados de energia, agro e de infraestrutura. **Valor Econômico**, 5 nov. 2025. Available at: https://valor.globo.com/mundo/noticia/2026/05/11/perdas-florestais-chegam-a-r-81-bi-por-ano-e-afetam-os-mercados-de-energia-agro-e-de-infraestrutura.ghtml. Accessed 13 jul. 2026.

49 STANFORD UNIVERSITY. Meat's Environmental Impact. **Stanford Woods Institute for the Environment**, 21 nov. 2025. Available at: https://woods.stanford.edu/news/meats-environmental-impact. Acessso em: 13 jul. 2026.

50 WORLD RESOURCES INSTITUTE, Latest analysis—Deforestation trends...

poverty and the absence of alternatives[51].

In other forest biomes, such as temperate and boreal forests, the challenges take a different form. In these contexts, wildfires have been one of the principal drivers of tree cover loss, particularly in North America and parts of Europe, where heatwaves, prolonged droughts and the accumulation of biomass in poorly managed landscapes have increased both the occurrence and intensity of fires. In 2025, fires accounted for 42% of the 25.5 million hectares of global tree cover loss — an area larger than the United Kingdom[52].

The nexus between agrifood systems and forests must therefore take different realities into account. In some contexts, such as Brazil, it is essential to halt deforestation and forest degradation without displacing the populations that live and produce in these territories. In others, including parts of Europe, the abandonment of agricultural and livestock areas has led to the unchecked expansion of poorly managed forested areas, biomass accumulation and a heightened risk of wildfires.

This difference shows that the climate challenge facing forests concerns not only the presence or absence of vegetation but also how territories are organized, used and inhabited. When rural areas are abandoned — whether because they lose competitiveness in the face of cheap imports or because policies supporting rural economies are absent — forests may expand without adequate management, increasing the risk of wildfires. In such cases, greater tree cover does not automatically translate into greater climate resilience.

Forest degradation must also be considered within this nexus, since logging, inadequate management, mining, land speculation, urbanization and large-scale bioenergy projects can undermine the ecological and social functions of forests even in the absence of complete deforestation.

Economic incentives represent another dimension of the problem, reinforcing patterns of deforestation and forest degradation. Sectors such as agriculture and fisheries receive more than US$670 billion per year in subsidies considered harmful. In agriculture, these subsidies are associated with the loss of 2.2 million hectares of forest annually, equivalent to 14% of global deforestation[53]. This demonstrates that the problem lies not only in agricultural production itself but also in the rules, incentives and financial flows that make forest conversion more profitable than forest conservation.

51 FAMILY FARMERS FOR CLIMATE ACTION. Feeding the world in a changing climate: adaptation finance needs of small-scale producers. **Family Farmers For Climate Action**, out. 2025. Available at: https://familyfarmersclimateaction.org/wp-content/uploads/2025/10/FINAL_Feeding_the_world_report_EN.pdf. Accessed 13 jul. 2026.

52 WORLD RESOURCES INSTITUTE, Latest analysis — Deforestation trends...

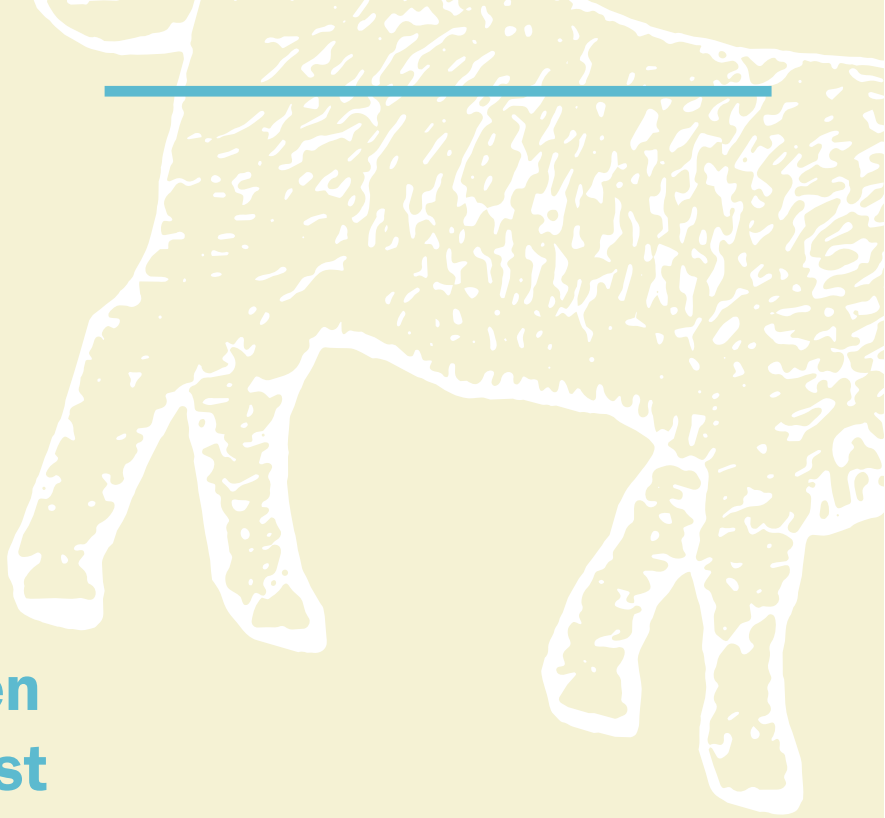
53 GLOBAL ALLIANCE FOR THE FUTURE OF FOOD, **Public climate finance for food systems transformation...**



5.

THE NEXUS BETWEEN AGRIFOOD SYSTEMS, JUST TRANSITIONS AND THE PROMOTION OF RIGHTS





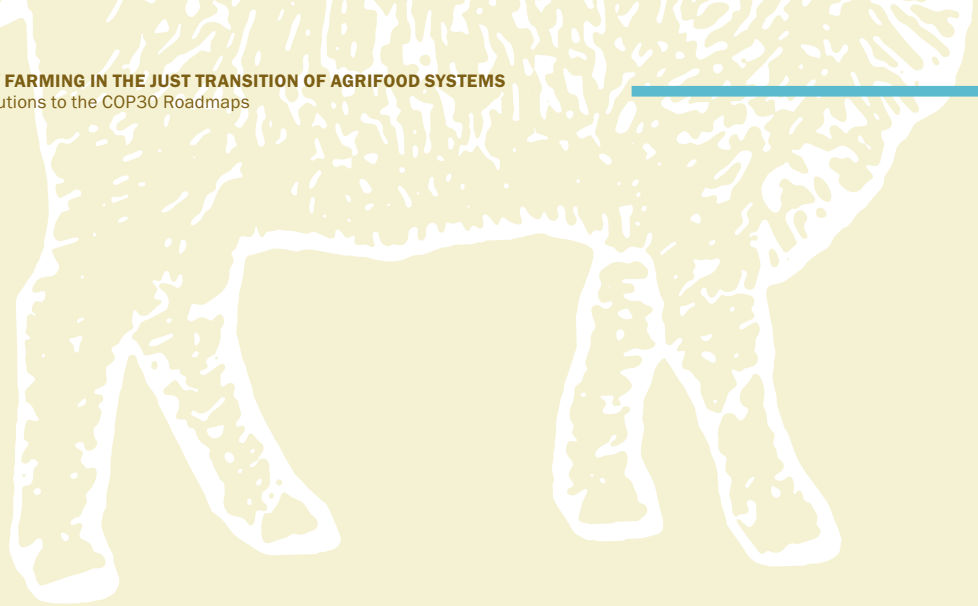
5. The nexus between agrifood systems, just transitions and the promotion of rights

The previous sections have shown how agrifood systems are connected to transitioning away from fossil fuels and to addressing deforestation and forest degradation. These interconnections demonstrate that the just transition of agrifood systems is essential to tackling the climate crisis, particularly with regard to reducing greenhouse gas emissions. However, addressing these challenges cannot be limited to a perspective focused solely on emission reductions Cortar essa parte.

The notion of a "just transition of agrifood systems" underscores the centrality of protecting and promoting rights within the transformation processes to be advanced. These processes must confront inequalities and take into account the different peoples and social groups who live, work, produce, provide care and derive their livelihoods from agrifood systems.

This requires a perspective that considers differences in levels of development among countries, the diversity of territorial contexts, the knowledge and practices of different social groups, and the unequal effects of both the climate crisis and responses to it on people and other living beings. A just-transition approach must recognize intersecting inequalities of class, gender, race, ethnicity and territory and promote mechanisms capable of addressing them.

Family farmers, Indigenous Peoples, traditional peoples and communities, fishers, riverine communities, pastoralists, urban farmers and peripheral urban communities are not merely populations made vulnerable by the combined effects of the climate crisis, food and nutrition insecurity, environmental degradation and social inequalities. They are also leading actors in practices, knowledge



systems and forms of organization that build alternatives for more just, sustainable, healthy and resilient agrifood systems.

A just transition of agrifood systems entails, in particular, protecting workers throughout agrifood systems, including family farmers, and ensuring that they have access to economic alternatives, social protection, technical assistance, training and capacity-building. More than that, it means recognizing the needs of different actors and territories, bearing in mind that transition processes involve distinct timelines, capacities and demands.

Within a just-transition approach, it is especially important to recognize the role of women. As Conway notes[54], women produce 80% of the food in poor countries, but their contribution extends far beyond food production in the strict sense, encompassing seed conservation, the use of medicinal plants, animal husbandry and biodiversity protection. Women also sustain practices of care, food production and preparation, biodiversity conservation, knowledge transmission, community organization and social reproduction. Yet they also face specific inequalities in access to land, income, credit, technical assistance, decision-making spaces and political recognition. A transition of agrifood systems that fails to confront gender inequalities will therefore reproduce existing injustices, even when it seeks to achieve environmental and climate goals.

This approach makes it possible to recognize that agrifood systems perform multiple functions. They concern not only food production or emission reductions, but also the realization of the human right to adequate food, the generation of work and income, public health, the protection of territories, biodiversity conservation, the reproduction of food cultures and the strengthening of democratic forms of governance. Addressing the climate crisis through agrifood systems therefore requires more than reducing carbon emissions: it requires transforming social, economic, political and ecological relations in ways that guarantee and promote rights.

54 CONWAY, J. M. When food becomes a feminist issue: popular feminism and subaltern agency in the World March of Women. **International Feminist Journal of Politics**, v. 20, n. 2, p. 188–203, 2018.

6.

WHY DOES THE JUST TRANSITION OF AGRIFOOD SYSTEMS MATTER?

6. Why does the just transition of agrifood systems matter?

In climate negotiations, numbers carry political weight. Greenhouse gas emissions, carbon captured, hectares restored, volumes of finance and economic costs are metrics used to set priorities, guide decisions and mobilize resources. Although important, these numbers are not neutral: they shape agendas, giving visibility to certain problems while relegating others to the background. This section therefore draws on the main available data on agrifood systems and their environmental and climate impacts without reducing their assessment to isolated metrics. After all, food and eating also hold social, cultural, economic and political value for people, territories, other living beings and the planet.

The first reason why the transition of agrifood systems matters is that these systems are among the main drivers of the climate and ecological crisis. According to the *Planetary Health Check 2025*, seven of the nine planetary boundaries have already been transgressed: climate change, biosphere integrity, land-system change, freshwater change, modification of biogeochemical flows, introduction of novel entities and ocean acidification[55].

When the focus is strictly on the climate crisis, one of the most frequently cited figures is the share of global emissions generated by food systems — approximately 30% — making them the second-largest source of emissions after energy systems[56,57]. Agriculture also accounts for approximately 40% of anthropogenic methane emissions, primarily because of livestock production, animal

55 SAKSCHEWSKI *et al.*, **Planetary health check 2025...**

Os dois limites planetários que permanecem dentro do espaço operacional seguro são: carga de aerossóis atmosféricos e depleção do ozônio estratosférico.

56 CLIC, Landscape of climate finance for agrifood systems 2025...

57 CRIPPA, M. *et al.* Food systems are responsible for a third of global anthropogenic GHG emissions...



Photo: AS-PTA ArchiveAS-PTA

manure management and rice cultivation[58].

The impacts of current agrifood systems, however, extend beyond emissions. According to data presented by Pimbert[59], based on UNEP's *Global Environment Outlook*[60], agrifood systems occupy approximately 50% of the world's habitable land, account for around 70% of global biodiversity loss and consume approximately 70% of the world's available freshwater. At the same time, although the global agrifood system produces enough food to feed 10 billion people, a large share of the population still lacks access to healthy diets, while more than 30% of all food produced is lost or wasted each year[61]. Food systems also place pressure on 86% of species threatened with extinction[62].

What these figures do not show is that not all models of agrifood systems are equally responsible for these impacts. Industrial agrifood systems play a decisive role, exerting direct pressure on land use, biodiversity, water and nutrient cycles.

These impacts are also reflected in the so-called hidden costs of agrifood systems. According to FAO's *The State of Food and Agriculture 2024*, these costs exceed US$12 trillion in 2020 purchasing power parity terms[63]. More than US$9 trillion of this total, or 73%, is health-related. The remaining costs are environmental — including emissions, nitrogen pollution and water use — and social, including poverty

58 COP29; COP30. **Report on the Baku to Belém Roadmap to 1.3T:** executive summary. nov. 2025.

59 PIMBERT, **Financing agroecological transformations for territorial agri-food systems...**

60 UNEP. **Global environment outlook—GEO-6:** healthy planet, healthy people. Cambridge: Cambridge University Press, 2019. Available at: https://doi.org/10.1017/9781108627146. Accessed 13 jul. 2026.

61 HLPE. **Food losses and waste in the context of sustainable food systems**. Rome: High Level Panel of Experts on Food Security and Nutrition, 2014. Available at: https://openknowledge.fao.org/server/api/core/bitstreams/b1949fae-23d4-473c-8b87-8c4359b74d6c/content. Accessed 13 jul. 2026.

62 CLIC, Landscape of climate finance for agrifood systems 2025...

63 Purchasing power parity (PPP) is used to enable comparisons of costs among different countries by eliminating distortions caused by exchange rates and variations in local costs of living. Expressing values in 2020 PPP dollars standardizes the analysis by reflecting the actual quantity of goods and services that could have been purchased with the amount in any part of the world in that specific year. FAO. **The state of food and agriculture 2024:** value-driven transformation of agrifood systems. Roma: FAO, 2024. Available at: https://doi.org/10.4060/cd2616en. Accessed 13 jul. 2026.

and undernutrition[64]. They are described as hidden because they are not reflected in the final price of food but are borne by society through public expenditure, illness, productivity losses, poverty and the degradation of natural resources. In other words, hidden costs privatize profits while socializing losses.

The second reason is that, in addition to contributing to the climate crisis, agrifood systems are profoundly affected by it. Droughts, floods, heatwaves, heat stress and changes in populations of insect pests, spontaneous plants and pathogenic microorganisms reduce food and agricultural production, affect livestock and compromise fish stocks. According to FAO[65], climate-related disasters caused an estimated US$3.8 trillion in losses to crop and livestock production over the past 30 years, equivalent to an average of US$123 billion per year. These impacts increase food price volatility, deepen food and nutrition insecurity and may intensify conflicts, particularly in contexts marked by water scarcity, land degradation and protracted crises. Family farming is the most severely affected by these impacts while also having the fewest resources available to adapt to them.

The third reason is that agrifood systems can be transformed from part of the problem into part of the climate solution. Even if all fossil fuel emissions were to cease suddenly, current trends in global agrifood systems, if maintained, would preclude achievement of the 1.5°C target and jeopardize the 2°C threshold by the end of the century[66]. Conversely, transforming how food is produced, distributed and consumed could reduce global greenhouse gas emissions by at least 10.3 gigatonnes per year, equivalent to 20% of the reductions required by 2050 to keep warming below 1.5°C[67]. Achieving this does not necessarily require the creation of new practices — although innovation is always welcome — but rather the strengthening,

64 FAO, **The state of food and agriculture 2024...**

65 FAO. The impact of disasters on agriculture and food security. **FAO**, 2023. Available at: https://openknowledge.fao.org/items/cd76116f-0269-43e4-8146-d912329f411c. Accessed 28 maio 2026.

66 CLARK *et al.*, Global food system emissions could preclude achieving the 1.5 and 2°C climate change targets.

67 GLOBAL ALLIANCE FOR THE FUTURE OF FOOD, **Public climate finance for food systems transformation...**



Photo: Articulação Nacional de Agroecologia (ANA) archive

expansion and dissemination of practices already consolidated within agrifood systems grounded in agroecology-based family farming.

Moreover, the contribution of these systems is not limited to reducing harm. Agroecological practices can also repair some of the damage already caused by increasing the capacity of natural carbon sinks through, for example, biodiverse agroforestry and agrosilvipastoral systems. As Pimbert notes[68], reducing future emissions will not be enough: it will also be necessary to remove some of the CO_2 already accumulated in the atmosphere and store it more durably in soils, vegetation and landscapes.

These data show that the just transition of agrifood systems is essential because it makes it possible to address at least three challenges simultaneously: reducing emissions generated by agrifood systems; protecting these systems from the effects of the climate crisis; and strengthening their capacity to contribute to mitigation, adaptation and resilience solutions across other sectors of the economy. Achieving this, however, requires more than isolated changes in agriculture or actions limited to reducing emissions from agricultural production. It requires a systemic and structural approach capable of integrating food production, processing, distribution, preparation, consumption and waste, together with their social, economic, political, ecological, cultural and health dimensions. Such an approach makes it possible to overcome the limitations of fragmented and potentially contradictory responses by connecting agendas that are frequently addressed in isolation and thereby expanding the range of possibilities for generating effective solutions.

68 PIMBERT, **Financing agroecological transformations for territorial agri-food systems...**

7.

WHY ADDRESS THE CLIMATE CRISIS THROUGH A JUST-TRANSITION APPROACH TO AGRIFOOD SYSTEMS?

7. Why address the climate crisis through a just-transition approach to agrifood systems?

The first benefit of this approach is that it broadens the scope of climate action and increases the likelihood of more comprehensive and sustainable outcomes. When debate focuses solely on agriculture and livestock production, responses tend to be restricted to the production stage and to reducing emissions from the agricultural sector. An agrifood-systems approach also encompasses other stages that are equally decisive for the climate agenda, including food processing, transport, distribution, consumption and waste. A significant share of emissions, for example, occurs along supply chains through energy-intensive processes associated with food processing, industrialization, packaging and transport to retailers and final consumers. This approach also considers the architecture and functioning of agrifood systems, which are permeated by power relations. It therefore expands the possibilities for developing integrated responses to the climate crisis that can reduce emissions across all the links connecting food production and consumption.

The second benefit is that it connects economic sectors and political agendas that are usually addressed separately. Agriculture, energy, health, biodiversity, land use, forests, water, food and culture are generally treated as sectoral issues. Within an agrifood-systems approach, however, they are intrinsically connected. Sustainable agrifood systems are inseparable from biodiversity conservation, the reversal of land degradation, water protection, reduced dependence on fossil fuels, the strengthening of climate resilience, and the renewed recognition of food cultures and traditional knowledge. For this reason, the approach can bring together government sectors and civil society organizations around a convergent agenda oriented towards structural transformations with multidimensional effects.

The third benefit is that it brings the climate agenda closer to everyday life. Although in highly unequal ways, food and eating are part of the concrete experience of individuals, families and communities. They are readily recognizable issues that mobilize emotions and attachments. This characteristic makes agrifood systems a potential political arena through which the climate agenda can be addressed in connection with the material agrifood practices experienced at the grassroots level. In a field often perceived as technical, inaccessible and remote, food makes the climate agenda more tangible and socially understandable.

The fourth benefit concerns public health. The transition towards more diversified and territorialized agrifood systems grounded in local production tends to increase the availability of and access to healthy foods, thereby contributing directly to the prevention of all forms of malnutrition, from undernutrition to obesity. This point is particularly relevant in light of the debate on the Global Syndemic, which highlights the interrelationship among malnutrition, climate change and obesity. According to *The Lancet* Commission report[69], obesity, undernutrition and climate change should not be understood as isolated crises, but as pandemics that interact synergistically and reinforce one another, constituting a syndemic. Taken together, these three pandemics represent one of the foremost contemporary challenges to human health, social justice, the environment and planetary integrity. In this sense, a just-transition approach to agrifood systems can generate multiple benefits: while promoting healthier and culturally appropriate diets, it can also reduce socioenvironmental vulnerabilities and contribute to integrated responses to the interconnected crises of health, malnutrition and climate change.

Finally, an agrifood-systems transition approach helps reposition the climate debate within the realm of structural transformation. The climate crisis is linked not only to fossil fuel use in the

69 SWINBURN, B. *et al.* The global syndemic of obesity, undernutrition, and climate change: The Lancet Commission report. **The Lancet**, v. 393, p. 791–846, 2019.

strict sense but also to the historical models of production, circulation and consumption that have shaped relationships among societies, territories and nature. In this regard, debates around the *Plantationocene* draw attention to the enduring socioecological consequences of industrial agriculture and to the persistence of its forms of exploitation across time and space[70,71]. Complementarily, the notion of the *food regime* helps explain how different historical periods have articulated agriculture, international trade, states and corporations around relatively stable organizing principles. According to McMichael[72], since the 1980s we have lived under a corporate food regime organized around financial markets, global agribusiness, vertically integrated supply chains and free-trade policies.

These reflections are important because they show that agrifood systems are not simply one more sector alongside energy and transport. They represent one of the historical and material roots of the climate crisis, embodying development models based on territorial expansion, the concentration of power, the commodification of nature and the exploitation of territories, human beings and other living beings. Addressing the climate crisis through an agrifood-systems approach therefore means more than mitigating emissions or making agriculture and livestock production more efficient. It means transforming the political and institutional arrangements that shape the current food regime[73], which continue to increase emissions, degrade ecosystems, deepen inequalities and jeopardize the continuity of life on the planet. Agrifood systems therefore constitute a strategic entry point for restructuring the models of social and political organization that characterize contemporary societies.

70 HARAWAY, D. J. Anthropocene, Capitalocene, Plantationocene, Chthulucene: making kin. **Environmental Humanities**, v. 6, n. 1, p. 159–165, 2015. Available at: https://doi.org/10.1215/22011919-3615934. Accessed 13 jul. 2026.

71 TSING, A. L. **The mushroom at the end of the world:** on the possibility of life in capitalist ruins. Princeton: Princeton University Press, 2015.

72 MCMICHAEL, P. **Food regimes and agrarian questions**. Rugby: Practical Action Publishing, 2014.

73 GONZALEZ DE MOLINA, M. *et al.* **Political Agroecology:** advancing the transition to sustainable food systems. Boca Raton: CRC Press, 2019.

8.

WHICH AGRIFOOD SYSTEM CAN HELP ADDRESS THE CLIMATE CRISIS?



8. Which agrifood system can help address the climate crisis?

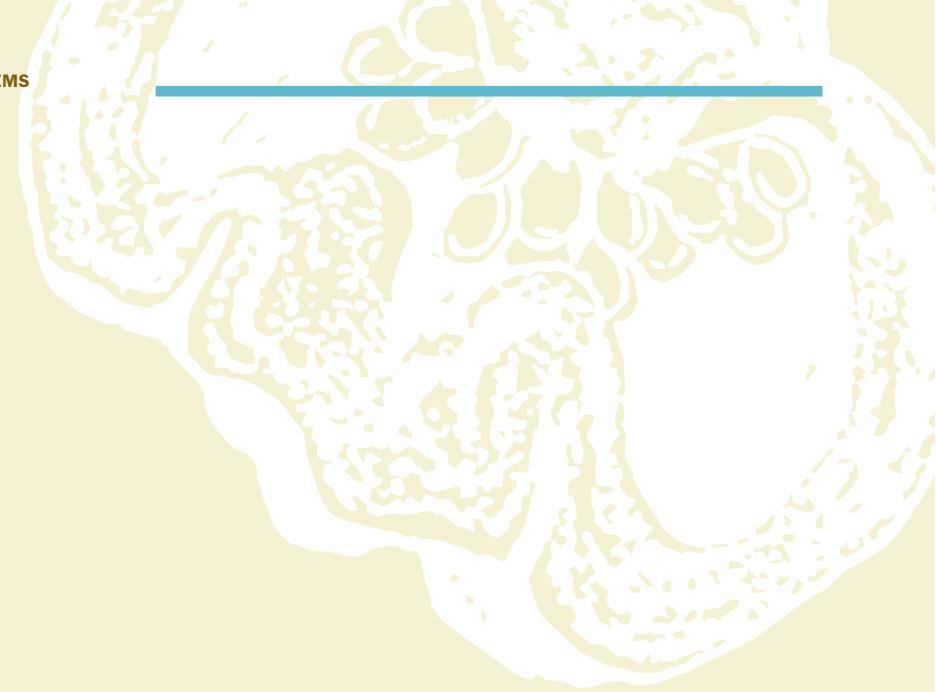
Agrifood systems are organized in different ways across the world, at different scales and in different territories. This report starts from the assessment that today's hegemonic industrial agrifood systems have contributed to increasing emissions, ecosystem degradation, biodiversity loss, the concentration of power and growing inequalities. These effects are not accidental. Rather, they result from political and economic choices that, over time, have favoured particular production models, corporate interests and forms of market organization.

For this reason, the just transition of agrifood systems cannot be understood merely as the adoption of more efficient technologies or the achievement of isolated emission reductions in the agricultural sector. It entails, first and foremost, transforming the governance of agrifood systems. The pace, pathways and priorities of this transformation will vary according to context, but it must be guided by common principles capable of replacing industrial agrifood systems with systems that are more just, sustainable, healthy and resilient to the climate crisis.

In this document, we argue that agrifood systems capable of helping address the climate crisis are those that reduce harm while simultaneously generating social, ecological, economic and cultural benefits. This means supporting forms of production and food supply grounded in family farming, agroecology, food sovereignty, social, climate and environmental justice, biodiversity conservation, reduced dependence on fossil fuels, and democratic governance.

Badgley and colleagues[74] demonstrated through estimates that organic methods could produce enough food, on a global per capita

74 BADGLEY, C. *et al.* Organic agriculture and the global food supply. **Renewable Agriculture and Food Systems**, v. 22, n. 2, p. 86–108, 2007. Available at: https://doi.org/10.1017/S1742170507001640. Accessed 13 jul. 2026.



basis, to sustain the human population at the time of the study and potentially an even larger population, without expanding the area of agricultural land. By reducing dependence on fossil fuels and external inputs — particularly through the use of leguminous cover crops capable of fixing nitrogen and replacing synthetic fertilizers — these systems can mitigate negative environmental impacts such as soil erosion and greenhouse gas emissions[75]. The challenge, therefore, is not merely to reduce the environmental footprint of food production, but to reorganize agrifood systems so that they sustain lives, territories and ecosystems through democratic governance and social justice.

To this end, Table 1 presents a set of guiding principles for agrifood systems that are just, sustainable, healthy and resilient to the climate crisis. These principles draw on scientific evidence and documented practical experiences, including the 13 principles of agroecology systematized in 2019 by the High Level Panel of Experts on Food Security and Nutrition of the Committee on World Food Security[76]. They should not be read as a single blueprint to be applied uniformly across all contexts, but as a common reference for guiding public policies and international cooperation.

The principles presented below reinforce a central message: an agrifood system capable of addressing the climate crisis is not merely one that emits less carbon, but one that transforms power relations, protects the commons, democratizes decision-making, reduces inequalities and creates the conditions necessary for healthy food to be produced, distributed and consumed in a just and sustainable manner.

75 BADGLEY, C. *et al.*, Organic agriculture and the global food supply...

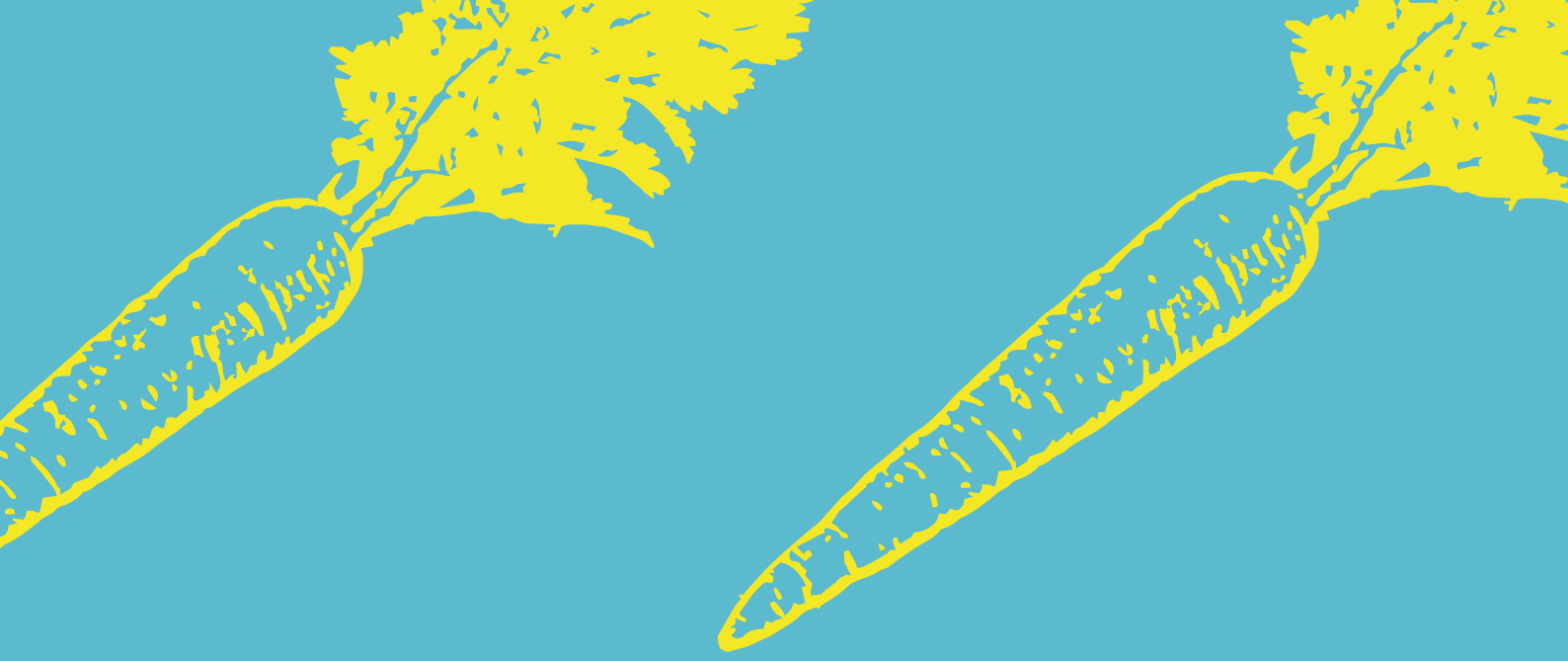
76 These principles are directly aligned with the 13 principles of agroecology systematized by the High Level Panel of Experts on Food Security and Nutrition of the Committee on World Food Security, which have been widely recognized as a reference framework for the holistic transformation of food systems. The 13 principles are: recycling; input reduction; soil health; animal health; biodiversity; synergies; economic diversification; co-creation of knowledge; social values and diets; fairness; connectivity; land and natural resource governance; and participation. In this report, these principles are revisited and expanded to respond more directly to the challenges of the climate crisis, social justice, the energy transition, democratic governance and the protection of territories. HLPE, **Agroecological and other innovative approaches for sustainable agriculture and food systems that enhance food security and nutrition...**

Table 1 – Ten principles for agrifood systems that are just, sustainable, healthy and resilient to the climate crisis

1	**Agroecological foundations –** Redesign agrifood systems according to agroecological principles. This entails guiding agroecosystem management and distribution channels through the diversification and integration of productive activities; closing material and energy cycles at the landscape scale; reducing waste; using renewable, local and adapted resources; and protecting and continuously regenerating soil fertility, water resources and biodiversity. It also entails bringing academic and popular knowledge into dialogue through processes of learning, experimentation and innovation.
2	**Biodiversity, productive diversity and ecosystem functions –** Value the diversity of plants, animals, microorganisms, production systems and food cultures, thereby strengthening the resilience of agroecosystems and agrifood systems. This principle entails public recognition of the work carried out by family farmers, Indigenous Peoples, traditional peoples and communities, and other territorial producers in conserving biodiversity, sequestering carbon, and protecting water and soils..
3	**Democratizing access to land, territories and the commons –** Ensure equitable access to land, territories, water, seeds, forests and natural ecosystems, recognizing their centrality to life, food production and the reproduction of ways of life. This entails confronting land concentration; guaranteeing territorial, cultural and collective rights; supporting forms of land use associated with conservation, social justice and food sovereignty; and ensuring free, prior and informed consent in relation to policies, climate projects and nature-based solutions.
4	**Recognition of collective subjects –** Value family farmers, fishing and riverine communities, pastoralists, Indigenous Peoples, traditional peoples and communities, and Afro-descendant communities as leading actors in the transition. This means recognizing their knowledge, practices, organizations, ways of life, historically rooted forms of environmental management and care, and territorially contextualized models of production and consumption.
5	**Democratic governance, direct financing and stronger territorial networks –** Ensure that public policies, research and innovation, and markets are guided by climate justice, sovereignty, food and nutrition security, and protection of the commons. This requires strengthening the participation of collective subjects and their organizations in decision-making; directing resources to them in ways suited to their realities; and supporting territorial networks, cooperative initiatives, social movements, NGOs and other forms of civil society organization.

6	**Just transition, global justice and historical reparation –** Ensure that workers, communities and regions dependent on sectors intensive in fossil fuels, agrochemicals or monocultures are not "left behind". This entails confronting the legacies of colonialism, extractive economies, debt and unequal ecological exchange between the Global North and Global South, as well as within these geopolitical groupings.
7	**Territorial autonomy and reduced external dependence, particularly on fossil fuels –** Promote agrifood systems that expand the productive, energy, financial, technological and food autonomy of territories, prioritizing reduced dependence on fossil fuels and on external inputs associated with fossil fuel value chains, such as synthetic fertilizers, pesticides and energy. This transition should favour appropriate renewable energy sources, agroecological practices, bioinputs and territorialized production circuits, without inducing land concentration, technological dependence or new forms of socioenvironmental injustice.
8	**Territorialization, short supply chains and fair markets –** Reconnect production, distribution and consumption by strengthening local economies, territorial infrastructure, short supply chains and proximity markets. This principle seeks to reduce long supply chains, unnecessary transport, external dependence and GHG emissions. At the same time, it strengthens markets governed by relationships of solidarity and reciprocity, safeguards the public interest, promotes fair prices, retains locally generated wealth within the territory, and increases income, value addition and the economic autonomy of family farmers and other local economic actors associated with agrifood systems.
9	**Food sovereignty and the right to adequate and healthy food –** Guarantee the human right to adequate food, food sovereignty, and food and nutrition security through agrifood systems oriented towards the production of and access to healthy, diverse, fresh, seasonal, minimally processed and culturally appropriate foods, while confronting the expansion of ultra-processed foods.
10	**Social, gender, generational, racial and ethnic equity –** Guarantee dignified livelihoods and decent work by recognizing and confronting the intersecting inequalities that permeate agrifood systems, including inequalities of class, gender, generation, race, ethnicity and territory, as well as other forms of exclusion.

Source: Prepared by the authors.



9.

WHO ARE THE LEADING ACTORS IN THE JUST TRANSITION OF AGRIFOOD SYSTEMS?



9. Who are the leading actors in the just transition of agrifood systems?

The just transition of agrifood systems is already being prefigured in different territories by family farmers, Indigenous Peoples, traditional peoples and communities, afro-descendant communities, artisanal fishers, pastoralists, urban farmers and other collective subjects. These groups are not merely potential beneficiaries of climate policies; they are leading actors in productive practices, management systems, knowledge and ways of life that point to concrete pathways towards agrifood systems that are more just, sustainable, healthy and resilient. Yet these experiences frequently remain confined to the local scale, not because they lack relevance or transformative potential, but because they face structural, political, economic and institutional barriers that limit their continuity, articulation and expansion. Recognizing these initiatives as experiences that point towards transition therefore also requires creating the conditions for them to cease being territorialized exceptions and begin shaping public policies, financial flows, markets, territorial rights, and national and international climate-action strategies.

As highlighted by the World Rural Forum[77], family farming occupies a strategic position in this process and can therefore be regarded as the central actor in the transition of agrifood systems. It is the predominant form of agricultural organization worldwide, managing between 70% and 80% of agricultural land and producing more than 80% of the world's food by value[78]. Because of its multifunctional character, its importance extends beyond food production: it contributes to food and nutrition security, territorial development, biodiversity conservation, land management and efforts to address climate change. This recognition was incorporated by the United Nations General Assembly into the United Nations Decade of Family Farming (2019–2028), established by Resolution A/RES/72/239[79].

77 WORLD RURAL FORUM. Contributions from the World Rural Forum to the COP30 Presidency roadmaps on transitioning away from fossil fuels in a just, orderly and equitable manner; and halting and reversing deforestation and forest degradation by 2030. **World Rural Forum**, mar. 2026.

78 LOWDER; SÁNCHEZ; BERTINI, **Farms, family farms, farmland distribution and farm labour...**

79 WORLD RURAL FORUM, Contributions from the World Rural Forum to the COP30 Presidency roadmaps on transitioning away from fossil fuels in a just, orderly and equitable manner...

Recognizing the importance of family farming in the just transition of agrifood systems does not, however, mean treating it as a homogeneous category. Some segments of family farming are integrated into conventional commodity chains and may reproduce practices associated with the hegemonic industrial agrifood model. These segments must also be included in transition strategies through incentives, public policies, technical assistance and institutional conditions that support sustainable productive pathways.

In this sense, the principal agents of the transition of agrifood systems are family farmers and other territorial actors who already practise—or have the potential to strengthen—agroecology, agroforestry and agrosilvipastoral systems, diversified production, the management and care of the commons, and territorialized food-supply mechanisms.

Urban communities, particularly those located in peripheral territories, also play a fundamental role in this process. Through initiatives such as community gardens, orchards, urban agroforestry systems, solidarity kitchens, popular markets and other collective forms of food production, circulation and access, these communities rebuild connections among food, territory, care and the right to the city. Such experiences broaden the scope of the just transition by demonstrating that the transformation of agrifood systems is not limited to rural areas but also involves new forms of food supply, solidarity and social organization in urban territories.

The just transition of agrifood systems also depends on recognizing women, in all their diversity, as leading actors in this process. By leading the defence of food and nutrition security and affirming the inseparability of feminism and agroecology, they connect the production of healthy food with efforts to confront gender-based violence, recognize the value of care work and sustain life. They are joined by rural youth, who assert their political and productive centrality in the present, not merely as agents of the future, as well as Indigenous Peoples, afro-descendant communities, and other traditional communities, whose ancestral knowledge and sustainable agroextractive practices constitute essential safeguards for biodiversity in the face of the expanding logic of agribusiness.

These actors must be recognized and prioritized and provided with the economic, political and institutional conditions required for their participation in transition strategies. Recognizing their leading role does not mean transferring responsibility for the transition to them; that responsibility must be shared among governments, companies, financial institutions, international organizations and society as a whole. Rather, it means acknowledging that there can be no just and effective transformation of agrifood systems without recognizing, strengthening and expanding the capacity for action of those who already produce food, care for territories, conserve biodiversity and sustain ways of life grounded in sustainability.

Box 4 — Marcha das Margaridas: women mobilizing for the just transition of agrifood systems

The Marcha das Margaridas is a mobilization of women from the countryside, forests and waters in Brazil. The first March took place in 2000 and, since 2003, it has been held every four years in Brasília, the country's capital. Its name honours Margarida Maria Alves, a trade union leader from Paraíba who was murdered in 1983 because of her struggle to defend workers' rights.

According to the general coordinating body of the *Marcha das Margaridas*, it is the largest mobilization of rural women in Latin America, bringing together between 20,000 and more than 100,000 participants, depending on the edition. The mobilization is led by the National Commission of Rural Working Women, composed of the Women's Secretariat of the National Confederation of Rural Workers and Family Farmers (Contag) and the women's secretariats of the Confederation's 27 affiliated state federations. It also has an extended coordinating body comprising social movements, feminist organizations, women's organizations, trade-union confederations and international organizations, including the Women's Working Group of the National Articulation of Agroecology.

The March embodies the diversity of the political subjects involved in the just transformation of agrifood systems. It brings together women who are family farmers, peasants, Indigenous and Quilombola women, agrarian-reform settlers and encamped landless workers, rural wage workers, extractivists, babassu coconut breakers, fishers, shellfish gatherers, members of riverine communities and many other groups. It is a powerful expression of why recognizing women in all their social, territorial, racial, generational and political diversity is an indispensable condition for the just transition of agrifood systems.

The March's agrifood agenda connects the democratization of access to commons such as land and water; the promotion of agroecology and sustainable ways of life; the defence of sociobiodiversity; recognition of the knowledge of the peoples of the countryside, forests and waters; and social participation as a condition for popular sovereignty and the self-determination of peoples. At the same time, the March opposes the concentration of corporate power, the privatization of the commons, market deregulation and the expansion of exploitative logics associated with agribusiness, mining and transnational extractive activities[80].

More than a mobilization for specific demands, the *Marcha das Margaridas* advances a political project for society grounded in gender equality, social, environmental and climate justice, the defence of nature, food sovereignty, democracy and *bem viver*[81].

80 TEIXEIRA, M. A.; GALINDO, E. A Marcha das Margaridas e as desigualdades alimentares: diagnósticos e alternativas para a política agroalimentar no Brasil. **Raízes: Revista de Ciências Sociais e Econômicas**, v. 45, n. 1, p. 150–170, 2025. Available at: https://doi.org/10.37370/raizes.2025.v45.908. Accessed 13 jul. 2026.

81 To know more, see: https://www.marchadasmargaridas.org.br/.

10.

HOW CAN THE TRANSITION OF AGRIFOOD SYSTEMS BE FINANCED?

10. How can the transition of agrifood systems be financed?

A snapshot of climate finance for agrifood systems

According to the Climate Policy Initiative[82], global climate finance from public and private sources reached approximately US$1.3 trillion per year in the 2021–2022 biennium. Within this broader total, agrifood systems received approximately US$94.9 billion per year, equivalent to 7.2% of total climate finance.

When a narrower perspective is adopted, focusing on international public climate finance for development as recorded in the Organisation for Economic Co-operation and Development (OECD) dataset on climate-related development finance, the figures reveal an even more limited allocation. According to the Global Alliance for the Future of Food[83], of the US$640 billion in annual public climate finance provided in 2021–2022, only US$16.3 billion was directed towards food systems, corresponding to 2.5% of the total.

The share allocated to initiatives classified as sustainable or agroecological was even smaller. Of the US$16.3 billion allocated to the sector, only US$9.1 billion — equivalent to 1.5% of global public climate finance — met agroecological criteria to some extent[84].

This insufficiency is also evident in areas of strategic importance to climate mitigation. Only 8% of climate-related development finance for agrifood systems focuses on reducing methane emissions, revealing a significant mismatch between the scale of the problem and the resources mobilized to address it[85].

82 CLIC, Landscape of climate finance for agrifood systems 2025...

83 GLOBAL ALLIANCE FOR THE FUTURE OF FOOD, **Public climate finance for food systems transformation...**

84 GLOBAL ALLIANCE FOR THE FUTURE OF FOOD, **Public climate finance for food systems transformation...**

85 COP29; COP30, **Report on the Baku to Belém Roadmap to 1.3T**...

This gap is particularly concerning because mitigating methane emissions from agrifood systems is among the fastest and most cost-effective ways to slow global warming.

Between 2021 and 2023, global agricultural subsidies amounted to approximately US$842 billion per year[86]. This figure includes public resources derived from tax revenues as well as indirect forms of support, such as policies that raise domestic food prices above those prevailing on international markets. In general, these subsidies are intended to support farmers and ensure food supplies for the population[87]. However, the way these resources are allocated remains profoundly misaligned with climate, social and ecological objectives. Using a different calculation, the Food and Land Use Coalition concludes that 15% of the approximately US$700 billion provided annually to the agriculture and fisheries sectors is used for "public goods", including services that create enabling conditions for these sectors[88].

Agrifood systems are not prioritized within the climate finance architecture

Agriculture and agrifood systems remain severely underfunded relative to their climate vulnerability and mitigation potential. Despite the recent growth in financial flows to agrifood systems, the sector continues to occupy a secondary position within the global climate finance architecture. Moreover, the increase in these resources has been proportionally smaller than that observed in other sectors, particularly energy and transport.

In 2021–2022, the energy and transport sectors attracted approximately US$482 billion and US$331 billion, respectively, in mitigation finance — amounts roughly ten and seven times greater than those directed towards agrifood systems[89].

This asymmetry is particularly concerning when considered in light of the contribution of agrifood systems to the climate crisis. The sector is estimated to account for more than 30% of global greenhouse gas emissions — approximately 17% more than the emissions

86 PIMBERT, **Financing agroecological transformations for territorial agri-food systems...**

87 OECD. **Agricultural policy monitoring and evaluation 2024:** innovation for sustainable productivity growth. Paris: OECD Publishing, 2024. Available at: https://doi.org/10.1787/74da57ed-en. Accessed 13 jul. 2026.

88 FOOD AND LAND USE COALITION. **Growing better:** Ten critical transitions to transform food and land use. The Food and Land Use Coalition. 2019. Available at: https://www.foodandlandusecoalition.org/globalreport/. Accessed 16 jul. 2024.

89 CLIMATE POLICY INITIATIVE; FAO. The triple gap in finance for agrifood systems. **Climate Policy Initiative**, 2024. Available at: https://www.climatepolicyinitiative.org/publication/the-triple-gap-in-finance-for-agrifood-systems/. Accessed 13 jul. 2026.



Photot: Acervo AS-PTA

associated with heat and electricity production[90].

The mismatch between the systemic importance of agrifood systems and the volume of resources allocated to them demonstrates that their underfunding results not only from a shortage of resources but also from decisions about priorities. In other words, the current distribution of climate finance reflects political choices that privilege certain sectors at the expense of others that are equally strategic for mitigation, adaptation and the strengthening of climate resilience.

The narrative of resource scarcity

Given the gap between current levels of climate finance and estimates of the amount required, the prevailing assessment within the climate community is that there is a substantial financing gap, both overall and specifically for agrifood systems. As stated in the Baku to Belém report, "international public climate finance for agrifood systems is simply insufficient and must be scaled up exponentially, including by mobilizing private finance and instruments such as blended finance"[91], which combine public, private and/or philanthropic resources[92].

90 WORLD BANK. Financing the agrifood system transformation—There is no lack of money to do it. **World Bank**, 2024a. Available at: https://blogs.worldbank.org/en/agfood/financing-agrifood-system-transformation-there-no-lack-money-do-it. Accessed 13 jul. 2026.

91 COP29; COP30, **Report on the Baku to Belém Roadmap to 1.3T**... p. 77.

92 UNITED NATIONS CLIMATE CHANGE CONFERENCE COP29; UNITED NATIONS CLIMATE CHANGE CONFERENCE COP30. **Report on the Baku to Belém Roadmap to 1.3T**. nov. 2025a, p. 77.



Photo: AS-PTA archive

Approximately US$1.1 trillion per year is estimated to be required by 2030 to align agrifood systems with global climate goals[93]. Other estimates indicate that the transition towards sustainable agrifood systems would require investments of between US$430 billion and US$500 billion per year[94].

Despite the disparities among these figures, they converge on the same conclusion: the resources available are insufficient to meet the needs of the transition. This interpretation, however, raises a central question: is resource scarcity truly the principal problem affecting finance for agrifood systems?

The centrality of the scarcity narrative tends to reinforce the idea that barriers to transformation arise fundamentally from a lack of available resources. In doing so, it neglects the necessary debate on how existing resources are distributed and used.

More than a problem of scarcity, the financing of agrifood systems is a matter of political choice: existing financial flows are not being consistently directed towards supporting agrifood systems that are just, sustainable, healthy and resilient.

The public sector provides an average of US$650 billion per year in support to agriculture, 88% of which (US$572 billion) presents moderate to high risks of negative

93 CLIMATE POLICY INITIATIVE; FAO. The triple gap in finance for agrifood systems. **Climate Policy Initiative**, 2024. Available at: https://www.climatepolicyinitiative.org/publication/the-triple-gap-in-finance-for-agrifood-systems/. Accessed 28 maio 2026.

94 GLOBAL ALLIANCE FOR THE FUTURE OF FOOD, **Public climate finance for food systems transformation...**

environmental impacts[95]. The misalignment is equally significant in the private sector: in 2023, financial institutions held US$6.1 trillion in assets linked to commodity supply chains associated with tropical deforestation[96,97]. These figures also indicate that the challenge lies not in the availability of capital, but in how it is directed. As the CLIC report (2025) concludes, the investments required to transform agrifood systems could be mobilized by redirecting existing financial flows towards sustainable initiatives.

The central obstacle therefore cannot be attributed to resource scarcity, but rather to how resources are used — in other words, to political choices concerning measures to increase finance, including the redirection of existing resources, taxation and tax expenditures. In this sense, the claim that there is insufficient money to finance the transition tends to obscure the significant volumes of capital that remain allocated to activities that deepen the climate crisis. As Pimbert argues, public and private resources are abundant and potentially available to support the transformation of agrifood systems; the first step is to make them visible and redirect them[98].

A new political direction for financing the just transition of agrifood systems

The assessment presented above points to three main changes that must be made.

First, it is necessary to address the lack of priority given to agrifood systems within the climate finance architecture by rebalancing the distribution of resources currently concentrated in sectors such as energy and transport.

Second, climate finance must be redirected towards agrifood systems that are just, sustainable, healthy and resilient to the climate crisis, in accordance with the principles set out in Table 1 of this document.

Third, and more structurally, the transformation of agrifood systems cannot depend on climate finance alone. A broader reconfiguration is required of the financial flows that shape the economy and development pathways more generally.

95 WORLD BANK. The World Bank's support for repurposing of agrifood public policies and programs: moving from advocacy to action. **World Bank**, 2024b. Available at: https://openknowledge.worldbank.org/server/api/core/bitstreams/955f9576-15a9-42ae-bc93-8440b272297d/content. Accessed 13 jul. 2026.

96 FOREST DECLARATION ASSESSMENT. **Transforming forest finance**. 2025. Available at: https://forestdeclaration.org/wp-content/uploads/2025/03/Transforming-forest-finance-2025.pdf. Accessed 13 jul. 2026.

97 CLIC, Landscape of climate finance for agrifood systems 2025...

98 PIMBERT, **Financing agroecological transformations for territorial agri-food systems...**

Box 5 — From climate finance to the reorientation of the economy

Generally speaking, climate finance refers to resources directed towards reducing greenhouse gas emissions, increasing carbon sinks, reducing vulnerability, and strengthening the resilience of human and ecological systems to climate change[99]. Promoting systemic transformations, however, requires these principles to guide not only climate finance but finance more broadly. In other words, it entails moving towards a new economy guided by climate goals and planetary boundaries.

When applied to agrifood systems, this principle requires the redirection of investments throughout the value chain, from production to consumption. Among other dimensions, this reorientation encompasses food transport, the reduction of food loss and waste, the promotion of sustainable diets and the strengthening of inclusive governance mechanisms.

99 NITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE. Food loss and waste account for 8–10% of annual global greenhouse gas emissions; cost US$ 1 trillion annually. UNFCCC, 30 set. 2024. Available at: https://unfccc.int/news/food-loss-and-waste-account-for-8-10-of-annual-global-greenhouse-gas-emissions-cost-usd-1-trillion. Accessed 13 jul. 2026.



11.

WHERE DO WE GO FROM HERE?

11. Where do we go from here?

Transforming agrifood systems requires the coordinated combination of policies across different sectors of public administration (intersectoral action) and the effective participation of civil society through democratic governance. Experiences already under way in several countries point to concrete pathways for building agrifood systems that are more just, healthy, sustainable and resilient.

The state has a central role in expanding the reach of these initiatives and connecting them with one another. At the same time, private actors, financial institutions, donors, international organizations and civil society organizations must coherently redirect their practices, investments and financial flows.

As emphasized in previous sections, the transition must be guided by a climate-justice perspective. Family farming must be placed at the centre of policies and financing, not as a passive beneficiary, but as a collective subject of transformation. In practice, the just transition of agrifood systems must recognize and support family farming in all its diversity, including traditional farmers, traditional peoples and communities, Afro-descendant communities and Indigenous Peoples. Particular attention must be given to gender and generational perspectives, explicitly recognizing the leading role of women and youth in agroecological-transition pathways. Family farmers are on the front lines of food production, forest protection and the conservation of sociobiodiversity. At the same time, because of their historical marginalization within public policies, they are also among those most vulnerable to the impacts of the climate crisis.

This recognition must be reflected in roadmaps, official documents, climate



Photo: AS-PTA archive

plans, national strategies, and agricultural, agrarian, environmental and food policies. It cannot be merely formal or confined to adaptation measures that portray family farmers only as victims of climate change. It must translate into effective participation, resources, implementation instruments and accountability mechanisms that strengthen family farming as a leading actor in the formulation, implementation and monitoring of transition policies, encompassing both adaptation and mitigation strategies.

Climate policies, investments and mechanisms must also establish robust socioenvironmental safeguards capable of protecting the environment, ways of life, food cultures and other collective territorial rights. These safeguards are necessary to prevent transition initiatives – such as carbon-market projects, corporate bioeconomy initiatives, forest restoration, renewable energy or sustainable value chains – from generating new territorial conflicts, exclusion or loss of livelihoods.

To this end, the roadmaps must be aligned with existing international human-rights instruments and standards, including the *United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP)*[100] and the *United Nations Declaration on the Rights of Peasants and Other People Working in Rural Areas (UNDROP)*[101], which recognize the fundamental rights of Indigenous Peoples, peasants and other populations who live and work in rural territories.

Taking the centrality of family farming into account, the proposals below are organized

100 UNITED NATIONS. **Declaration on the Rights of Indigenous Peoples**. United Nations, 2007. Available at: https://docs.un.org/en/A/RES/61/295. Accessed 13 jul. 2026.

101 UNITED NATIONS. **Resolution adopted by the Human Rights Council on 28 September 2018**. United Nations Declaration on the Rights of Peasants and Other People Working in Rural Areas. A/HRC/RES/39/12, 8 October 2028. Available at: https://www.fao.org/family-farming/detail/en/c/1197482/. Accessed 13 jul. 2026.



Photo: Articulação Semiárido Brasileiro (ASA)

according to objective criteria that should guide efforts to reverse the negative effects of agrifood systems on climate stability and ensure that the transition is conducted from a climate-justice perspective. Taken together, these proposals form a coherent response to the assessment presented in the previous sections. In addition to converging towards reduced dependence on fossil fuels, they seek to eliminate the pressure exerted by agrifood systems on forests and promote the ecological restoration of agricultural landscapes. For presentational purposes, they are grouped into two main areas: the first brings together measures (mechanisms, instruments and initiatives) directly aimed at transforming agrifood systems; the second addresses the mobilization, raising and allocation of the resources required to finance these measures.

11.1 Mechanisms, instruments and initiatives for the just transition of agrifood systems

The just transition of agrifood systems requires action capable of simultaneously addressing production, processing, food supply, consumption, financing, governance and territorial protection. To contribute to the roadmaps, this section organizes mechanisms, instruments and initiatives for the just transition of agrifood systems into four areas, summarized in Table 2: transforming the productive base and reducing dependence on fossil fuels; protecting forests, territories and productive landscapes; redirecting markets, food supply and dietary patterns; and democratizing the governance of agrifood systems.

Table 2 – Mechanisms, instruments and initiatives for the just transition of agrifood systems

I	**Transform the productive base and reduce dependence on fossil fuels**
1	Support the agroecological transition through incentives, guarantees and income
2	Strengthen technical assistance and rural extension for the agroecological transition
3	Reduce fossil fuel use in food-distribution circuits through short supply chains and renewable energy
4	Replace synthetic fertilizers and agrochemicals with bioinputs and the ecological management of soils and agrobiodiversity.
II	**Protect forests, territories and productive landscapes**
5	Democratize access to land and guarantee territorial rights
6	Restore degraded agricultural land and regenerate productive landscapes
7	Strengthen agroforestry systems, sustainable forest management and sociobiodiversity-based agroextractive practices
III	**Redirect markets, food supply and dietary patterns**
8	Strengthen food-supply policies, public procurement and territorial markets
9	Promote healthy and sustainable diets
10	Reduce food loss and waste
11	Coordinate urban, regional and national food policies
IV	**Democratize the governance of agrifood systems and integrate climate, food and territorial policies**
12	Include agrifood systems and family farming in national climate plans
13	Strengthen civil society in the governance of agrifood systems
14	Democratize the governance of agrifood systems
15	Promote coordination among climate, food, energy, health, urban and forest policies

Source: Prepared by the authors.

Area I — Transform the productive base and reduce dependence on fossil fuels

Support the agroecological transition through incentives, guarantees and income

Supporting family farmers in the agroecological transition is a central strategy for transforming agrifood systems, reducing dependence on synthetic inputs, and strengthening food and nutrition security at the individual, household and regional levels[102]. This transition also contributes to moving away from fossil fuels, reducing deforestation and forest degradation, and building more resilient agrifood systems.

This requires a combination of political, technical and financial support, including rural credit, technical assistance and rural extension, incentives, market guarantees and income mechanisms that reduce the risks borne by family farmers. Public policies can enable this transition by, for example, expanding credit for the adoption of agroecological practices—such as agroforestry systems and the ecological management of soils and agrobiodiversity—and for the implementation of decentralized renewable energy; creating technical-assistance programmes oriented towards agroecological and energy transitions; providing incentives for systems that combine agricultural production with forest conservation; and prioritizing the public procurement of food produced by family farmers on an agroecological basis.

Agroecological practices are estimated to have the potential to provide 37% of the CO_2 mitigation required to keep global warming below 2°C by 2030[103]. These practices include soil conservation, restoration and management measures, such as reducing the use of synthetic fertilizers and integrating trees into cropping systems.

102 IPES-FOOD, **Fuel to fork**: what will it take to get fossil fuels out of our food systems?...

103 GRISCOM, B. W.; *et al.* **Natural climate solutions. Proceedings of the National Academy of Sciences of the United States of America**, v. 114, n. 44, p. 11645–11650, 2017. Available at: https://doi.org/10.1073/pnas.1710465114. Accessed 28 maio 2026.

Strengthen technical assistance and rural extension for the agroecological transition

Technical assistance and rural extension policies provide a bridge between other public policies and their implementation in territories. To respond to current social, productive and climate challenges, these services must be strengthened and redirected towards supporting family farmers in processes of agroecological transition, productive restoration and adaptation to the climate crisis.

This requires investment in the continuing education of extension workers so that they can guide complex productive changes, such as the transition from conventional livestock production to silvipastoral systems and other diversified production systems. These systems provide better conditions for adaptation to the climate crisis by creating shade, improving soil quality, increasing productive diversity and reducing dependence on synthetic fertilizers and pesticides—in many cases eliminating that dependence entirely. They also strengthen the resilience of production systems to extreme climate events.

Technical-assistance and rural-extension policies must also support production decisions connected to social demand for healthy, fresh, whole and plant-based foods, ensuring economic viability for farming families and strengthening more sustainable, territorially based agrifood systems.

A recent study of Brazil's technical-assistance and rural-extension policy conducted by Instituto Escolhas presented a detailed assessment of its current state, challenges and importance to the just transition of agrifood systems. The research shows that public rural-extension services require more financing, better governance and more effective reorientation to respond to climate challenges, including through professional training[104].

Reduce fossil fuel use in food-distribution

104 INSTITUTO ESCOLHAS. **Why and how do we strengthen Technical Assistance and Rural Extension policy?** Executive Summary. São Paulo, 2026. Avaiable at: https://escolhas.org/wp-content/uploads/2026/05/strengthening-technical-assistance-rural-extension-policy.pdf. Accessed 5 Oct. 2026.

circuits through short supply chains and renewable energy

Reducing fossil fuel use and dependence within agrifood systems requires strengthening short and territorial food-supply circuits and expanding the use of renewable energy in production, processing and food-distribution logistics. Relocalizing part of the food-supply chain is an important lever for reducing dependence on fossil fuels, particularly in food transport, logistics and distribution[105].

This does not mean eliminating trade between regions, but strengthening closer connections among production, distribution and consumption, thereby reducing unnecessary transport and increasing territorial resilience. Cities and regions have a central role in this process. According to IPES-Food[106], an average of 80% of urban food needs worldwide are met by production located within a radius of up to 500 kilometres. Urban and peri-urban agriculture, territorial markets and family farming already perform a strategic function in this food supply but still receive insufficient recognition and support within national policies and international climate negotiations.

The energy transition within agrifood systems must also promote renewable energy in productive equipment, food processing and transport, particularly where long-distance transportation is unavoidable. This entails adopting refrigeration, heating and drying technologies powered by renewable energy, thereby reducing dependence on fossil fuels at critical stages of agrifood supply chains[107].

One example of an initiative that encourages short supply chains is São Paulo's Ligue os Pontos project, which protects forests, reservoirs and agricultural land on the city's rural periphery from uncontrolled urban expansion. The project provides farmers with technical assistance to improve productivity, transition towards sustainable practices and access urban markets for organic products. The city also manages one of the world's largest school-meal programmes, whose procurement supports food supplied by local and sustainable family-farming units.

Replace synthetic fertilizers and agrochemicals with bioinputs

105 IPES-FOOD, **Fuel to fork**: what will it take to get fossil fuels out of our food systems?...

106 IPES-FOOD, **From plate to planet**...

107 GLOBAL ALLIANCE FOR THE FUTURE OF FOOD, **Power shift...**

and the ecological management of soils and agrobiodiversity

Reducing dependence on synthetic fertilizers and agrochemicals is central to lowering emissions from agrifood systems and increasing their autonomy. Nitrogen fertilizers and other synthetic inputs connect agriculture to fossil-energy supply chains, concentrated markets and geopolitical vulnerabilities, increasing agricultural dependence on a small number of countries and corporations.

Agroecological approaches that recycle biomass as a source of nutrients and energy can significantly reduce this dependence and create pathways towards production systems that rely less on synthetic inputs. This requires supporting the local production of biofertilizers, composting, green manure, cover crops and other bioinputs for the ecological management of soils and crops. Productive diversification within agricultural landscapes is also an important strategy for closing nutrient and energy cycles and regenerating the fertility of agroecosystems.

These alternatives reduce climate and environmental impacts while strengthening food sovereignty and the technical and economic autonomy of family farmers and their communities. The objective should not merely be to replace one input with another, but to ground the regeneration of productive-system fertility in the closing of local ecological cycles, making these systems less dependent on external input and knowledge markets.

An emblematic example is the *Andhra Pradesh Community-Managed Natural Farming* (APCNF) programme in India. Launched in 2016, it supports the transition towards systems without synthetic inputs by promoting practices such as crop diversification, biological pest control, soil conservation, local seeds and natural inputs[108]. Another example, based on a method developed in Brazil, is biological nitrogen fixation[109], a technology that reduces dependence on synthetic nitrogen fertilizers and consequently decreases nitrous oxide emissions.

108 See: https://apcnf.in/. Accessed 13 jul. 2026.

In 2026, APCNF received the Food Planet Prize, awarded by the Curt Bergfors Foundation, in recognition of its role in one of the world's largest ongoing agroecological transitions. According to the prize organizers, the program involves approximately 1.8 million farming families in Andhra Pradesh and was selected from more than one thousand international nominations. The prize recognizes initiatives with the potential to transform food systems at scale and reduce their environmental impact. For further information, see: https://apcnf.in/food-planet-prize-gallery.html. Accessed 13 jul. 2026.

109 See: https://www.embrapa.br/tema-fixacao-biologica-de-nitrogenio. Accessed 13 jul. 2026.

Area II — Protect forests, territories and productive landscapes

Democratize access to land and guarantee territorial rights

Democratizing access to land and guaranteeing territorial rights are structural conditions for the just transition of agrifood systems. Without secure tenure, recognition of territorial rights and access to land, family farmers, Indigenous Peoples, traditional peoples and communities, and Afro-descendant communities cannot sustain their ways of life, invest in diversified production systems or protect the territories in which they live and produce.

Land demarcation, tenure regularization, agrarian reform and territorial-protection policies must therefore be treated as central transition mechanisms. They enable agrarian spaces to be organized according to the logics of production, care and the reproduction of life instead of being subordinated to the expansion of monocultures, extensive livestock production, mining, predatory infrastructure – even when promoted in the name of the energy transition – or other fossil fuel-intensive land uses.

Restore degraded agricultural land and regenerate productive landscapes

Restoring degraded agricultural land through the revegetation of agricultural landscapes and the regeneration of production systems is an important strategy for reducing emissions, capturing CO_2, strengthening climate resilience and generating social, economic and environmental benefits.

Restoration must be connected to food production, the recovery of soil fertility, the protection of water bodies, biodiversity conservation and the strengthening of rural livelihoods. Public policies should therefore support agroforestry systems, the restoration of degraded areas through ecological soil-management practices, productive diversification and other strategies that integrate agricultural production with environmental regeneration.

Productive restoration can constitute an important mechanism for the just transition of agrifood systems when it strengthens family farming, Indigenous Peoples and traditional communities, invigorates local economies, restores ecological functions and promotes more resilient production systems.

Strengthen agroforestry systems, sustainable forest management and sociobiodiversity-based agroextractive practices

Strengthening agroforestry systems, sustainable forest management and sociobiodiversity-based agroextractive practices is a central lever for reconciling food production, forest conservation and income generation. These strategies are grounded in keeping forests standing and valuing their productive, cultural and ecological functions.

To achieve scale, these initiatives require appropriate environmental regulations, technical assistance and rural extension, financing, and well-structured, economically viable value chains. This entails developing markets capable of valuing sociobiodiversity products, appropriate infrastructure, support for community organization, and public-procurement instruments that recognize and value the diversity of sustainable agroextractive systems.

This approach requires broadening conventional understandings of family farming. In many territories, production is not confined to formally owned property or the conventional family-farming unit. It encompasses areas of community forest use, gathering, management and governance, often without formal land titles but grounded in extensive territorial knowledge and productive practices associated with sociobiodiversity. Recognizing this diversity of ways of appropriating agrarian spaces is essential if climate, agricultural, environmental and land policies are to effectively support those who conserve, manage and produce in coexistence with forest ecosystems.

Brazil has a wealth of state-recognized family-farming experiences that combine forest conservation, income generation and the recognition of sociobiodiversity. Examples include extractive reserves in the Amazon, fundo de pasto communities in Bahia and faxinais in Paraná. In the same direction, the Brazilian federal government has implemented the Productive Forests Programme.

Area III — Redirect markets, food supply and dietary patterns

Strengthen food-supply policies, public procurement and territorial markets

Strengthening food-supply policies, public procurement and territorial markets is essential for connecting sustainable production with the distribution and consumption of healthy and adequate food. Public procurement, institutional markets, decentralized public food-supply and storage facilities, and municipal food policies can create stable demand for healthy, diverse and culturally appropriate food.

Creating market guarantees reduces the risks associated with food production and helps ensure stable and economically viable livelihoods. This requires strengthening public procurement and commercialization instruments and supporting cooperatives and community organizations capable of expanding access to short supply chains, institutional markets and public procurement.

These policies can also reduce pressure on forests by redirecting markets, public-procurement instruments and incentives towards production models that do not place pressure on remaining forest areas. Public-procurement mechanisms, institutional markets and municipal food policies should therefore prioritize sustainably produced and deforestation-free food, aligning food supply with forest conservation and climate action.

Brazil's National School Feeding Programme (PNAE) is a federal programme that provides school meals and food and nutrition education to students at every stage of public basic education. It is one of the most emblematic examples of coordination among family farming, food and nutrition security, and territorial development. By establishing mandatory procurement of food from family farmers for school meals, the programme strengthens local economies, encourages short supply chains and contributes to more resilient and diversified agrifood systems. Beyond its rural dimension, it strengthens local rural–urban connections by linking family production, urban food supply, healthy eating, education and public-health policies.

Within this context, initiatives such as Agroecological PNAE expand the transformative potential of public policy by promoting the agroecological transition within local agrifood systems. The initiative seeks to increase the inclusion of agroecological food in school meals by supporting family farming, improving public management and building institutional arrangements that favour sustainable public procurement. It works both through pilot projects in Brazilian municipalities and by improving debate and regulation concerning PNAE, thereby helping consolidate healthier, more sustainable and territorialized food models.



Promote healthy and sustainable diets

The transition of agrifood systems also requires changes in dietary patterns, particularly in regions with high per capita consumption of meat, dairy products and ultra-processed foods. Reducing consumption of these products can decrease pressure from land-use conversion, fossil fuel use, greenhouse gas emissions and plastic packaging[110].

At the same time, food environments must protect and promote healthy practices. Increasing the consumption of plant-based and minimally processed foods with lower environmental and climate impacts has positive effects on public health and can potentially increase producers' incomes[111 112]. Measures that can support these changes in consumption patterns include regulating sales and marketing within institutional environments such as schools and public services; fiscal mechanisms; dietary guidelines; food and nutrition policies; and regulatory instruments that promote healthy food environments.

Examples include dietary guidelines, official documents that consolidate evidence and guidance for structuring public policies and nutrition and health programmes, such as the Dietary Guidelines for the Brazilian Population[113]; Denmark's Action Plan for Plant-Based Foods; and its plant diplomacy initiative[114]. In addition, a study coordinated by ProVeg Brazil[115] indicates that transitioning from livestock production to plant-based agroforestry can increase producers' incomes and be financially advantageous across all Brazilian biomes.

110 IPES-FOOD. **Fuel to fork**: what will it take to get fossil fuels out of our food systems?...

111 BRASIL. Ministério da Saúde. Secretaria de Atenção à Saúde. Departamento de Atenção Básica. **Guia alimentar para a população brasileira**. 2. ed. 1. reimp. Brasília: Ministério da Saúde, 2014.

112 GLOBAL ALLIANCE FOR THE FUTURE OF FOOD, **Power shift...**

113 BRASIL, **Guia alimentar para a população brasileira**...

114 See: https://plantdiplomacy.eu/. Accessed 13 jul. 2026.

115 PROVEG INTERNATIONAL. Aumentando Renda, Respeitando o Planeta, Nutrindo Pessoas: Promovendo a transição da pecuária para agroflorestas vegetais. Coordenação de Aline Barone. Proveg International, 2025. Available at: https://proveg.org/br/report/transicao-agroflorestas-vegetais/. Accessed 13 jul. 2026.

Reduce food loss and waste

Reducing food loss and waste must be treated as an important component of the just transition of agrifood systems. In addition to accounting for between 8% and 10% of total global greenhouse gas emissions[116], food loss and waste expose the dysfunction of a system incapable of guaranteeing the human right to healthy food for a significant share of the world's population. By reducing the need to expand production to compensate for waste throughout agrifood supply chains, measures to address food loss and waste also alleviate pressure on land, forests, energy and other commons.

Achieving this objective requires action at different stages of agrifood systems, including production, storage, transport, distribution, commercialization and consumption. It also requires food-supply policies, adequate infrastructure, short supply chains, food education and public-management instruments capable of preventing food from being lost or discarded.

116 UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE, Food loss and waste account for 8–10% of annual global greenhouse gas emissions...

Coordinate urban, regional and national food policies

The just transition of agrifood systems requires coordinated action among municipalities, regions, national governments and international processes. This coordination is necessary to ensure that local food-supply and agricultural policies interact with national strategies and global commitments concerning climate, biodiversity, health and development.

In Brazil, the National Strategy for Food and Nutrition Security in Cities (Alimenta Cidades) has promoted initiatives aimed at establishing an urban food policy that expands the production, availability, access and consumption of healthy food, with an emphasis on communities in situations of vulnerability, particularly those located on urban peripheries[117]. The Urban Laboratory for Public Food Policies (LUPPA) supports and connects Brazilian cities engaged in democratic and sustainable urban food policies, seeking to expand and replicate successful strategies[118].

117 See: https://alimentacidades.digital/. Accessed 18 jul. 2026.

118 See: https://luppa.comidadoamanha.org/. Accessed 18 jul. 2026.

Area IV — Democratize the governance of agrifood systems and integrate climate, food and territorial policies

Include agrifood systems and family farming in national climate plans

Effectively including agrifood systems and family farming in national climate plans is fundamental to aligning the just transition of agrifood systems with climate mitigation, adaptation and financing strategies. This entails incorporating clear objectives, targets and plans for transforming agrifood systems into Nationally Determined Contributions (NDCs) and National Adaptation Plans (NAPs).

NDCs, NAPs and other climate-planning instruments must explicitly establish targets, instruments, financing sources and monitoring mechanisms for transforming agrifood systems. They must also ensure the effective participation of family farmers, Indigenous Peoples and traditional peoples and communities, who play a central role in food production, territorial protection and the conservation of sociobiodiversity.

Strengthen civil society in the governance of agrifood systems

Strengthening civil society is a condition for increasing the legitimacy, representativeness, transparency and social oversight of transition policies. Social organizations, grassroots movements, territorial networks, family-farming organizations, and collectives of Indigenous Peoples and traditional communities must participate effectively in decision-making processes.

Such participation must extend beyond occasional consultations. It requires permanent spaces for dialogue, advocacy, monitoring and evaluation concerning food, climate, territorial and financial policies.

An emblematic Brazilian example of how civil-society participation can influence food policy is the National Council for Food and Nutrition Security (Consea). Consea is a

collegiate advisory body directly linked to the Presidency of the Republic and is responsible for proposing, coordinating and monitoring public policies intended to guarantee the human right to adequate food. Its composition gives civil society a leading role: civil-society representatives hold two-thirds of its seats, while public authorities hold the remaining third. Its president is also a civil-society representative nominated from among its members and appointed by the Presidency of the Republic.

Brazil also has State Councils for Food and Nutrition Security and Municipal Councils for Food and Nutrition Security. The significant number of councils across Brazil, connected in a decentralized and intersectoral manner through the National Food and Nutrition Security System (SISAN), demonstrates the possibility of civil-society participation in and influence over public food and nutrition security policies. According to 2022 data from the Food and Nutrition Security Mapping initiative (MapaSAN), 900 Brazilian municipalities had Municipal Councils among the 1,935 municipalities surveyed[119].

Democratize the governance of agrifood systems

Democratizing the governance of agrifood systems requires reducing the concentration of corporate power and preventing the private capture of public decision-making processes. There is an urgent need to confront corporate capture within the governance of agrifood systems and place the participation of family farmers and civil society at its centre[120].

This includes strengthening rules to prevent conflicts of interest and ensuring that the global governance of agrifood systems remains grounded in multilateral decision-making led by governments, instead of being replaced by multistakeholder structures favoured by corporations and financial institutions[121].

Relevant initiatives in this area include calls for more robust conflict-of-interest policies, connected to the development of a legally binding instrument for the entire United Nations system, particularly its food-related bodies. In this context, the United Nations Binding Treaty on Transnational Corporations and Human Rights, under negotiation since 2014, provides an important reference. Other references can be found in processes led by the World Health Organization (WHO), including the Framework Convention on Tobacco Control, the Framework of Engagement with Non-State Actors (FENSA), and the organization's Financial Regulations and Financial Rules. Together, these mechanisms seek to ensure that initiatives intended to advance the well-being of people and the planet are not compromised by corporate interests.

119 FAO; BRASIL. **Apoio ao aprimoramento e à consolidação da Política Nacional de Segurança Alimentar e Nutricional:** Produto de consultoria [Produto 3] (Código do Projeto UTF/BRA/085/BRA). Ministério do Desenvolvimento e Assistência Social, Família e Combate à Fome/Secretaria Nacional de Segurança Alimentar e Nutricional/ Secretaria Extraordinária de Combate à Pobreza e à Fome, 2023.

120 IPES-FOOD, **Who's tipping the scales?...**

121 PIMBERT, **Financing agroecological transformations for territorial agri-food systems...**

Integrate climate, agrifood, energy, health, urban and forest policies

The just transition of agrifood systems cannot be treated as a sectoral agenda. It requires integration among climate, food, energy, health, urban and forest policies in ways that align the objectives of mitigation, adaptation, food and nutrition security, territorial protection, public health and social justice.

This integration makes it possible to address agrifood systems as part of a broader transformation of modes of production, consumption, financing, care and democratic governance.

11.2. Mechanisms, instruments and initiatives for financing the just transition of agrifood systems

This section presents proposed mechanisms, instruments and initiatives for financing the just transition of agrifood systems in alignment with the principles of social justice, sustainability, health promotion and resilience to the climate crisis. Its principal focus is not only the origin of resources, but especially their allocation and the instruments used to ensure that they are applied consistently with these principles.

The destination of the resources has already been defined: agrifood systems that are just, sustainable, healthy and resilient to the climate crisis and grounded in family farming (see Table 1). The greater their alignment with the principles presented in Table 1, the greater their potential to drive the transition of agrifood systems and contribute to addressing the climate crisis.

Once the destination of the resources has been established, the central question becomes one of means: which mechanisms, instruments and initiatives can enable this redirection at scale? To answer this question, proposals were gathered from the literature, documents, the mapping exercise and interviews. One particularly relevant source was Pimbert's recent work[122], which identifies three principal pathways for mobilizing finance for large-scale, territorialized agroecological transitions.

For these measures to succeed, coordination among public policies and financial institutions, as well as concerted action among the different stakeholders, will be indispensable.

Moreover, all the means listed below must be guided by a systemic and territorialized approach to climate finance grounded in climate justice and must increase resources for every link connecting food production to consumption. This entails recognizing family farming as a strategic sector in the transition of agrifood systems and financing production, storage, logistics, agro-industrial processing, commercialization and access to healthy food, thereby changing how agrifood systems are organized.

122 PIMBERT, **Financing agroecological transformations for territorial agri-food systems...**

Table 3 – Mechanisms, instruments and initiatives for financing the just transition of agrifood systems

I	**Redirect existing financial flows**
1	Redirect financing
2	Review public subsidies and tax expenditures
3	Change the focus of research and development financing
4	Redirect climate and biodiversity funds away from false solutions
II	**Mobilize new resources through fiscal and financial justice**
5	Tax extreme wealth and multinational corporations
6	Tax polluting industries
7	Tax windfall profits
8	Combat tax havens
9	Tax speculative markets
10	Cancel and relieve debt
11	Provide historical reparations for the transatlantic trafficking of enslaved people
12	Reduce military expenditure
13	Introduce health taxes
III	**Reform financial instruments and financing criteria**
14	Develop financial instruments for the transition
15	Adapt instruments to local realitie
16	Review agricultural credit policies
17	Review climate-impact metrics
18	Regulate allocation criteria and safeguards
IV	**Guarantee direct, simplified and democratic access to financing**
19	Finance democratic participation in the just transition of agrifood systems
20	Ensure the participation of family-farming organizations in climate-finance governance
21	Guarantee direct and simplified access to climate funds
22	Reform international rules that limit the autonomy of transitions
23	Expand economic democracy

Source: Prepared by the authors.



Photo: AS-PTA archive

Area 1 — Redirect existing financial flows

The proposals in this area respond to a basic question: which resources currently finance destructive models and therefore need to be redirected?

Redirect financing

Financial flows currently directed towards industrial agrifood systems based on intensive fossil fuel use must be redirected towards agrifood systems aligned with the principles presented in this report (Table 1). This entails divesting from models dependent on external inputs and fossil fuel-intensive long supply chains while investing in systems capable of reducing emissions across the entire agrifood chain, promoting deforestation-free supply chains and generating benefits for nature, such as carbon sequestration and the conservation of water and biodiversity.

Governments must ensure that this redirection forms part of climate mitigation and adaptation priorities, with an emphasis on justice and equity. Agricultural finance must therefore be aligned with climate goals and coordinated with environmental policies, social protection, vocational retraining, rural infrastructure, guarantees of territorial rights and stronger labour legislation. This approach makes it possible to combine climate, environmental, social and economic benefits.

Review public subsidies and tax expenditures

Public subsidies and tax expenditures that sustain agrifood systems structurally dependent on fossil fuel consumption must be progressively eliminated. These include public resources derived from taxation, indirect support and policies that raise domestic food prices relative to the international market. Instead, public resources must finance agrifood systems that are just, sustainable, healthy and resilient.

In Brazil, many tax incentives continue to perpetuate inequalities and aggravate environmental impacts. These include R$65.72 billion in tax benefits granted to the fossil fuel

and renewable-energy industries, with strong concentration in fossil sources: for every R$2.52 directed towards fossil fuels, only R$1 is spent on renewable energy. The same inconsistency is evident in the soft-drinks industry, which avoids approximately R$3 billion in taxes every year through the Manaus Free Trade Zone—an amount equivalent to the annual expenditure of Brazil's Unified Health System (SUS) on diseases associated with the consumption of these beverages[123]. A similar situation occurs with federal tax exemptions granted to agribusiness companies: in 2024, the ten largest beneficiaries avoided paying at least R$26 billion in taxes[124]. These examples demonstrate that a significant share of public resources continues to sustain activities incompatible with climate and socioenvironmental objectives, reinforcing the need to redirect fiscal and financial incentives towards agrifood systems aligned with the just transition.

Change the focus of research and development financing

Research and development (R&D) financing must be redirected in alignment with the guiding principles for the just transition of food systems presented in Table 1. According to Pimbert[125], between 2014 and 2020, projects with an emphasis on agroecology received only 0.6% to 1.5% of international agricultural financing. Similar percentages were identified in Brazil, particularly in public calls issued by Finep, the research and project financing agency associated with the Ministry of Science, Technology and Innovation. According to a study by WTT, Finep support granted in 2023 and 2024 to projects related to family farming and the transition of agrifood systems represented, respectively, 1.33% and 1.6% of all the agency's operations.[126]

Redirecting finance requires significantly expanding public funds for the decentralized co-creation of knowledge among family

123 INSTITUTO DE EFECTIVIDAD CLÍNICA Y SANITARIA. **O lado oculto das bebidas açucaradas no Brasil**. Coordenação de A. Alcaraz *et al.* Buenos Aires, Argentina, nov. 2020. Available at: https://actbr.org.br/uploads/arquivos/IECS-e-Infografi%CC%81as-bebidas-azucaradas-Brasil.pdf. Accessed 13 jul. 2026.

124 ANTUNES, C. Boi, soja e agrotóxicos: as isenções tributárias do agro que alimentam o desmatamento e a poluição. **Sumaúma**, 14 jul. 2025. Available at: https://sumauma.com/boi-soja-agrotoxicos-isencoes-tributarias-agroindustria-alimentam-desmatamento-poluicao/. Accessed 13 jul. 2026.

125 PIMBERT, **Financing agroecological transformations for territorial agri-food systems...**

126 WTT. **Programa Nacional de Pesquisa e Inovação para a Agricultura Familiar e Agroecologia (PNPIAF)**; avanços e desafios (Forthcoming; to be made available at https://wttventures.net/)



Photo: AS-PTA archive

farmers, Indigenous Peoples, scientists and citizen-consumers. It also requires financing institutional arrangements capable of connecting the human right to adequate food, universal food provision and the guarantee of fair incomes for agroecological farmers[127]. The institutionalization of the National Research and Innovation Programme for Family Farming and Agroecology (PNPIAF) offers a promising pathway for directing resources from Brazil's National Fund for Scientific and Technological Development—the country's principal public instrument for financing R&D—towards addressing the climate crisis in conjunction with other political priorities adopted by the federal government, including promoting food and nutrition security and confronting social inequalities.

127 Ver: PIMBERT, **Financing agroecological transformations for territorial agri-food systems...**

Redirect climate and biodiversity funds away from false solutions

Climate and biodiversity funds must be redirected away from initiatives associated with greenwashing, weak offsetting mechanisms and false solutions, which not only fail to reduce emissions effectively but may also cause harm in other sectors, contexts and countries.

Recent studies of carbon credits and offsets show that, in most of the cases analysed, their effect on reducing deforestation was negligible and the baselines used by certification bodies were inflated. A comprehensive analysis also concluded that more than 90% of tropical-forest carbon offsets certified by the world's largest certifier had no effective value[128].

128 Greenfield, 2023 *apud* **PIMBERT, Financing agroecological transformations for territorial agri-food systems...** p. 11.

Area 2 – Mobilize new resources through fiscal and financial justice[129]

This area addresses the following question: how can new resources be generated fairly? The proposed strategy is to mobilize sources of wealth that are currently undertaxed, discourage environmentally destructive activities and economic models, and increase the availability of public resources for financing agrifood systems that are just, sustainable, healthy and resilient. It combines progressive taxation, international financial-justice measures and the redirection of public expenditure.

2.1 Progressive taxation and accountability for major emitters

Tax extreme wealth and multinational corporations

One of the principal proposals is to increase taxation on extreme wealth and large multinational corporations. The EU Tax Observatory proposes an annual 2% tax on billionaires' wealth, which could raise approximately US$250 billion per year[130]. Pimbert also notes that a strengthened global minimum tax on multinational corporations, without legal loopholes, could generate a further US$250 billion per year.

This proposal responds to the low effective taxation of the super-rich. Many billionaires currently pay extremely low effective tax rates of between 0% and 0.6%, while the wealth of this group increases by approximately US$5.7 billion per day[131].

An Oxfam study[132] shows that the world's wealthiest people generate extremely high and unsustainable carbon emissions and that, unlike most of the population, between 50% and 70% of these emissions arise from their

129 Most taxation examples were drawn and adapted from PIMBERT, **Financing agroecological transformations for territorial agri-food systems...**

130 EU Tax Observatory, 2024; Zucman, 2024a, 2024b *apud* PIMBERT, **Financing agroecological transformations for territorial agri-food systems...**

131 EU Tax Observatory, 2024; Zucman, 2024a, 2024b apud PIMBERT, **Financing agroecological transformations for territorial agri-food systems...**

132 OXFAM. **Carbon billionaires:** the investment emissions of the world's richest people. Oxford: Oxfam International, 2022. Available at: https://doi.org/10.21201/2022.9684. Accessed 13 jul. 2026.

investments. An analysis of 125 of the world's wealthiest individuals found that each produces an average of approximately 3 million tonnes of CO_2 e per year – more than one million times the average emissions of a person belonging to the poorest 90% of the world's population.

Existing experiences demonstrate the potential of this approach. In Spain, a tax on large fortunes raised more than €1.8 billion in 2023. According to the Tax Justice Network, similar measures targeting the wealthiest 0.5% could raise US$2.1 trillion globally each year[133].

Tax polluting industries

The taxation of polluting industries must follow the principle of climate justice: those who contribute most to emissions must assume a larger share of the costs of the transition. This applies both within countries and to international relations, taking historical and per capita inequalities in emissions into account. One example is a Climate Damages Tax on oil, coal and gas extraction, targeting the highest-emitting countries and major fossil-energy corporations such as BP, Shell, ExxonMobil, TotalEnergies, Chevron and Eni[134]. The resources raised could finance the transition of agrifood systems while creating incentives for the largest emitters to advance their own transitions.

Tax windfall profits

A windfall-profits tax can capture exceptional gains obtained by large corporations during periods of crisis. Between 2021 and 2022, 722 of the world's largest corporations accumulated more than US$1 trillion in windfall profits. Based on Oxfam estimates[135], taxing these profits at rates of between 50% and 90% could have generated between US$523 billion and US$941 billion during that period[136].

Combat tax havens

Approximately 10% of global GDP is estimated to be held in tax havens[137]. Measures to combat these mechanisms, including greater transparency, closing legal loopholes and repatriating wealth, could increase the resources available[138].

133 Tax Justice Network, 2024a *apud* PIMBERT, **Financing agroecological transformations for territorial agri-food systems...**

134 PIMBERT, **Financing agroecological transformations for territorial agri-food systems...**

135 OXFAM. Corporation windfall profits rocket to $1 trillion a year. **OXFAM**, 2023. Available at: https://www.oxfam.org.uk/mc/9ano9s. Accessed 13 jul. 2026.

136 PIMBERT, **Financing agroecological transformations for territorial agri-food systems...**

137 Alstadsætera *et al.*, 2018, p. 12

138 Zucman, 2015 *apud* PIMBERT, **Financing agroecological transformations for territorial agri-food systems...** p. 14.

Tax speculative markets

Taxing global financial transactions can discourage short-term speculation that destabilizes markets, including food markets. Inspired by James Tobin's proposal, a Tobin tax would apply to transactions involving currencies, shares, bonds and derivatives and could raise billions of dollars even at low tax rates[139]. In line with this proposal, a recent initiative to tax speculation on Wall Street estimates that such a measure could raise up to US$220 billion in its first year and more than US$2.4 trillion over a decade[140].

2.2 International financial justice

Cancel and relieve debt

Debt cancellation and relief can free public resources to finance the transition of agrifood systems. According to IIED[141], low-income countries allocate almost twice as much to servicing external debt as they receive in climate finance. In 2022, least developed countries and small island developing states received US$28 billion in climate finance, just over half of which—US$14.8 billion—was provided as loans rather than grants. As Pimbert emphasizes[142], the form of financing is as important as its volume, since the predominance of loans can deepen the indebtedness of developing countries and undermine their capacity to finance a just transition.

Provide historical reparations for the transatlantic trafficking of enslaved people

Reparations related to the transatlantic trafficking of enslaved people could mobilize significant funds for countries marked by a long history of colonial exploitation and human-rights violations. This approach connects climate finance, historical justice and the transformation of food systems[143].

139 PIMBERT, **Financing agroecological transformations for territorial agri-food systems...** p. 14.

140 Sanders, 2021 *apud* PIMBERT, **Financing agroecological transformations for territorial agri-food system...** p. 14.

141 IIED. 2024. **World's least developed countries spend twice as much servicing debts as they receive in climate finance.** ...

142 PIMBERT, **Financing agroecological transformations for territorial agri-food systems**.

143 PIMBERT, **Financing agroecological transformations for territorial agri-food systems**...



Photo: Acervo AS-PTA

2.3 Redirect public expenditure

Reduce military expenditure

Reducing military expenditure can free resources to finance agroecology and other sustainable transitions. In 2023, global military expenditure reached a record of approximately US$2.44 trillion[144]. Redirecting part of these resources towards sustainable agrifood systems, adaptation to the climate crisis, biodiversity conservation and social policies is a fundamental measure for confronting the contemporary polycrisis. In this sense, the peace agenda also forms part of the response to the ecological crisis, among other reasons because it can expand the fiscal and political space required to finance just transitions.

Introduce health taxes

Health taxes can discourage consumption of harmful products, such as tobacco, alcoholic beverages and sugar-sweetened beverages, while generating resources for public policies. The World Health Organization's "3 by 35" initiative recommends increasing the real prices of these products by at least 50% by 2035, a measure that could raise US$1 trillion over ten years and strengthen the financing of health and sustainable development[145].

In Brazil, a selective tax of at least 30% on soft drinks could reduce consumption by 30% and raise approximately R$4 billion per year, connecting public health, fiscal policy and the transformation of food systems[146].

144 SIPRI. 2024. T**rends in world military expenditure, 2023.** Stockholm International Peace Research Institute. DOI: https://doi.org/10.55163/BQGA2180.

145 WORLD HEALTH ORGANIZATION. **The 3 by 35 Initiative**. WHO, 2025. Available at: https://www.who.int/initiatives/3-by-35. Accessed 13 jul. 2026.

146 Ver: https://actbr.org.br/wp-content/uploads/2025/10/FACTSHEET-IMPOSTO-SELETIVO-PARA-BEBIDAS-ACUCARADAS-HIPERLINKS.pdf?utm_source. Accessed 13 jul. 2026.

Area 3 – Reform financial instruments and financing criteria

This area addresses the question: through which instruments and rules do resources reach agrifood systems that are just, sustainable, healthy and resilient?

Develop financial instruments for the transition

Different financial instruments can be mobilized to finance sustainable agrifood systems in accordance with the principles proposed in this report (Table 1). These include debt swaps, green bonds, development banks, sustainable public procurement and blended-finance mechanisms. Their use, however, must avoid reproducing standardized models and must take into account the territorial, social and ecological realities in which they will be applied.

Adapt instruments to local realities

Adapting financial instruments to local realities is essential if they are to provide effective support for the transition of agrifood systems. Public banks, such as Brazil's BNDES and Banco do Brasil, private banks and development banks must establish divestment policies for systems that place pressure on sensitive biomes while encouraging the transition towards diverse agricultural systems grounded in biodiversity, agroecology and healthy food production. This requires developing financial mechanisms capable of recognizing that crop diversity can reduce risk, instead of imposing models based on monocultures, livestock production or commodity production on farmers[147] [148].

Review agricultural credit policies

Agricultural credit policies must be reviewed so that they finance agrifood systems capable of providing consistent responses to the climate crisis. This redirection requires accessible funds and credit lines for agroecology, urban agriculture, agroforestry systems, local food supply and community infrastructure. It also requires aligning credit, forest conservation and climate policy by prioritizing plant production, local integration between plant and animal production, and the restoration of degraded areas.

In Brazil, for example, although the National

147 PROVEG INTERNATIONAL, Aumentando Renda, **Respeitando o Planeta, Nutrindo Pessoas...**

148 Makombore, L. and C. R. Anderson. (2025). **Agroecology and Public Development Banks:** Transforming Development Finance for Equity and Resilience. UVM Institute for Agroecology. Burlington, Vermont.

Programme for Strengthening Family Farming (Pronaf) has existed for more than 30 years, it continues to direct a significant share of its credit towards consolidated supply chains strongly controlled by large corporations, including poultry, pork, tobacco, soy and maize. This pattern reinforces the subordinate and poorly diversified integration of family farming into markets and reproduces the dominant technological model. Rural credit must therefore be coordinated with technical assistance and rural extension and with agricultural research so that it supports the agroecological transition and the diversification of production systems[149].

Review climate-impact metrics

Climate finance must go beyond the quantitative verification of tonnes of carbon emissions avoided. This requirement can become a barrier for family-farming organizations, social movements and territorial initiatives that lack the data, methodologies and technical capacity available to major economic actors. It also reinforces a narrow understanding of climate impact centred almost exclusively on emission mitigation.

The metrics used as criteria for granting climate finance must therefore be reviewed. Climate funds should recognize integrated impact indicators capable of simultaneously considering effects on climate, biodiversity, health, food and nutrition security, social inclusion and income generation. This would enable resources to be directed more effectively towards sustainable agrifood systems, particularly where their benefits are expressed through adaptation, the reduction of loss and damage, and territorial transformation rather than solely through measurable emission reductions.

Regulate allocation criteria and safeguards

In addition to mobilizing financial instruments, the criteria governing their allocation must be regulated. This includes establishing eligibility rules, socioenvironmental safeguards, transparency mechanisms, integrated impact metrics and commitments to divest from production models that place pressure on sensitive biomes. Without these criteria, instruments such as green bonds, blended-finance mechanisms and rural credit may reproduce the same patterns of concentration, standardization and environmental degradation that they are intended to transform.

149 FAVARETO, A.; ABRAMOVAY, R. Os trinta anos do Pronaf e os desafios do Plano Safra 2026. **Poder 360**, 2026. Available at: https://www.poder360.com.br/opiniao/os-30-anos-do-pronaf-e-os-desafios-para-o-plano-safra-2026/. Accessed 18 jul. 2026.

Area 4 – Guarantee direct, simplified and democratic access to financing

This area addresses the questions: who gains access, how do they gain access, who decides and who implements?

Finance democratic participation in the just transition of agrifood systems

The transition of agrifood systems requires financing for the democratic participation of states, communities, Indigenous Peoples, family farmers and territorial organizations in defining their own pathways of transformation. This entails removing institutional, financial and political barriers that limit their autonomy and ensuring their effective presence in the governance of climate, food and territorial finance.

Financing more inclusive and participatory forms of democracy is necessary so that society can participate directly in defining priorities for the agrifood transition. Citizens' assemblies, citizens' juries, deliberative consultations and mini-publics can help establish financial and budgetary priorities, validate plans, monitor audits and assess the impacts of financing at different scales[150].

Ensure the participation of family-farming organizations in climate-finance governance

Family-farming organizations must not be understood merely as the final beneficiaries of climate finance, but as implementation partners and political subjects involved in defining its instruments. This means reducing dependence on third parties and intermediaries and ensuring that family farmers – women and men, adults and youth – can formulate, access and implement projects through their representative organizations. This recognition is strategic because many of these organizations already provide credit, training, technical assistance, emergency support and other essential services within their territories.

Their participation in financing governance is fundamental to ensuring that instruments respond to the concrete needs of family farmers and to the diversity of territorial contexts. Expanding their presence within climate-fund decision-making spaces is therefore a condition for a just, democratic and effective transition.

150 PIMBERT, **Financing agroecological transformations for territorial agri-food systems**...

Guarantee direct and simplified access to climate funds

Climate finance must directly reach the political subjects and territories advancing their own transition solutions. During the 2010s, it is estimated that only approximately 1% of climate finance reached Indigenous Peoples and local communities directly[151]. Indigenous Peoples, local communities and family-farming organizations must therefore be able to negotiate, access and directly manage resources supporting self-determined solutions[152].

This requires more accessible climate funds, less bureaucracy, simplified criteria and mechanisms compatible with the capacities of territorial organizations. Many family-farming organizations face complex technical requirements, high costs and difficulties in translating their adaptation needs into the indicators, projections and models required by climate funds. At the same time, simplified access must be accompanied by social-protection networks, insurance, fairly conditioned credit, subsidies and resilient infrastructure so that family-farming organizations do not bear alone the costs of climate-related loss and damage.

151 UN Permanent Forum on Indigenous Issues. 2024. **Financing the future:** The financial needs of Indigenous Peoples to support their actions for biodiversity, climate and the protection of Mother Earth....

152 IIPFCC. 2022. **Principles and guidelines for direct access funding for indigenous peoples' climate action, biodiversity conservation and fighting desertification for a sustainable planet**....

Reform international rules that limit the autonomy of transitions

International Investment Agreements (IIAs) that grant extraordinary rights to transnational corporations without establishing binding obligations must be dismantled, since they allow corporations to circumvent local and national laws and courts. These include bilateral investment treaties (BITs) and investment chapters in free-trade agreements (FTAs). They should be replaced with democratic frameworks for international investment capable of prioritizing the public interest, human rights and socioenvironmental sustainability over private profit[153].

Expand economic democracy

Material conditions must be created so that citizens and communities can participate in political life. This means expanding economic democracy through systemic changes such as an unconditional basic income, reduced working time, stronger care economies and the use of local currencies to retain wealth within territories. The objective is to increase material security, territorial autonomy and the concrete conditions required for participation in the transition of agrifood systems[154].

153 PIMBERT, **Financing agroecological transformations for territorial agri-food systems...**

154 PIMBERT, **Financing agroecological transformations for territorial agri-food systems**...

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Family Farming in the Just Transition of Agrifood Systems

Contributions to the COP30 Roadmaps

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