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Integrating food systems into the international climate law and policy framework

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Abstract

While responsible for nearly one-third of global greenhouse gas emissions, food systems long remained peripheral to the legal and political architecture of the United Nations Framework Convention on Climate Change (UNFCCC). This article outlines the policy shifts that have led food systems to become increasingly central to the UNFCCC and its Conference of the Parties (COP) framework. We first examine how, from COP28 in Dubai to COP30 in Belém, food systems have emerged as a testing ground for integrating ecological integrity, social justice and climate governance. We then explore how recent COP-related developments, including the UAE Declaration on Sustainable Agriculture, the FAO Global Roadmap for Achieving Sustainable Development Goal 2 (SDG2) without Breaching the 1.5°C Threshold and the Alliance of Champions, have started to reshape the contours of international climate law by bringing food, land and biodiversity into core negotiation tracks. Nevertheless, these developments remain tentative: binding commitments are scarce, climate finance flows remain inequitable, and most Nationally Determined Contributions have so far tended to address food-related emissions and vulnerabilities in a partial and uneven manner, rather than integrating them systematically. COP30 confirmed both the growing visibility and the persistent fragility of the food-systems agenda within the UNFCCC. While the Belém outcomes consolidated some procedural progress, particularly on adaptation and human-centred climate action, they stopped short of positioning food systems as a coherent and enforceable pillar of international climate governance.

1 | INTRODUCTION: FOOD SYSTEMS WITHIN THE UNFCCC

Global food systems have become both a defining feature and a major driver of human-induced global environmental change.[1] Built upon industrial and productivist logics, contemporary food systems have prioritised yields and export competitiveness over ecological integrity, social justice and human health. Recent work by the EAT–Lancet Commission links global food systems to the transgression of at least five planetary boundaries, namely, greenhouse gas emissions, land-system change, biosphere integrity, freshwater change and biogeochemical flows.[2] Despite unprecedented levels

[1]Klaus Bosselmann, *The Principle of Sustainability: Transforming Law and Governance* (Routledge 2016) 27–29.

[2]Walter Willett, Johan Rockström and others, 'Food in the Anthropocene: The EAT-Lancet Commission on Healthy Diets from Sustainable Food Systems' (2019) 393 Lancet 447, 1–10; IPES-Food, *From Uniformity to Diversity: A Paradigm Shift From Industrial Agriculture to Diversified Agroecological Systems* (IPES-Food 2016) 15–27; Francesco Burchi, Jessica Fanzo and Emile Frison, 'The Role of Food and Nutrition System Approaches in Tackling Hidden Hunger' (2011) 8 IJERPH 358, 12; Jessica Fanzo and others (eds), *Diversifying Food and Diets: Using Agricultural Biodiversity to Improve Nutrition and Health* (1st edn, Routledge 2013) 15–35.

of agricultural productivity, hunger and malnutrition persist, revealing that food insecurity stems less from insufficient production than from unequal access to food and food-producing resources.[3] Driven by trade liberalisation and technological intensification in the name of production efficiency, dominant food systems have generated a highly inefficient model based on ecologically fragile landscapes, characterised by monocultures, excessive dependence on chemical fertilisers and pesticides and widespread biodiversity loss.[4] The dominance of global agribusiness corporations within agricultural trade consolidates structural power asymmetries, while public subsidies continue to benefit the most affluent producers.[5] Smallholders, who are responsible for the majority of the world's food production, receive limited climate finance and face mounting pressures from land grabbing, intensive farming practices, biofuel expansion and speculative investment.[6] These dynamics, already defined as a polycrisis of the system, have also exacerbated rural inequality and undermined food sovereignty.[7] At the same time, the fragmentation of governance across agricultural, trade and environmental regimes reinforces a narrow, production-oriented discourse. That discourse treats food exclusively as a commodity without considering the public good embedded in our complex socio-ecological relations.[8] As a result, current food systems have evolved into a self-reinforcing feedback loop of uniformity and vulnerability, simultaneously driving and suffering from the interconnected crises of climate change, biodiversity loss and inequality.[9]

In 2022, the Intergovernmental Panel on Climate Change (IPCC) estimated that the global food system,[10] defined broadly as encompassing the food chain from production to processing, distribution, consumption and waste management, is responsible for approximately 23%–42% of global greenhouse gas (GHG) emissions.[11] The concept of food systems emerged from interdisciplinary research that brings together agriculture, the environment and the social sciences.[12] It has since evolved beyond the activities involved in a linear food supply chain. It now also encompasses the broader socio-economic and biophysical interactions that shape outcomes such as food security, environmental sustainability, health, nutrition and livelihoods.[13] Having a comprehensive perspective on the concept enables the analysis of both drivers and feedbacks between food systems and global environmental change, revealing how food-related activities both drive and are affected by ecological and climatic processes.[14]

Sustainable food systems can be understood as systems that reconcile three interrelated dimensions: food security, including the availability, access and utilisation of food[15]; environmental security or natural capital, understood as the condition of natural resources and the provision of ecosystem services; and social welfare, including income, employment and the accumulation of social and human capital.[16] When framed through a rights-based lens, such a system should also reflect the right to adequate food and the principles of food sovereignty, recognising the authority of peoples and communities to define and govern their own food systems, including land, seeds and markets.[17]

The IPCC has emphasised that reducing agri-food emissions is crucial for achieving climate targets, as well as for preserving the ecological foundations of food security.[18] Rising temperatures, water

[3]Jennifer Clapp, Peter Newell and Zoe W Brent, 'The Global Political Economy of Climate Change, Agriculture and Food Systems' (2018) 45 JPS 80–88; Jennifer Clapp, 'The Problem With Growing Corporate Concentration and Power in the Global Food System' (2021) 2 Nat Food 404, 1–13.

[4]See IPES (n 2); FAO, *The State of the World's Biodiversity for Food and Agriculture* (J Bélanger and D Pilling eds, FAO 2019) 47; Miguel A Altieri, *Agroecology: The Science of Sustainable Agriculture* (CRC Press 2018) 107.

[5]Derek Headey and Shenggen Fan, 'Anatomy of a Crisis: The Causes and Consequences of Surging Food Prices' (2008) 39 Agric Econ 375; Stuart Hendriks and others, *The True Cost and True Price of Food* (SC-FSS 2021).

[6]Harald von Witzke and Steffen Noleppa, *EU Agricultural Production and Trade: Can More Efficiency Prevent Increasing 'Land Grabbing' Outside of Europe?* (Agripol 2010); Laura Paoloni, 'Land Grabbing e beni comuni' in *Oltre il pubblico e il privato. Per un diritto dei beni comuni* (Ombre Corte 2012) 139; Peter M Rosset and María Elena Martínez-Torres, 'Rural Social Movements and Agroecology: Context, Theory, and Process' (2012) 17 Ecol Soc 17.

[7]Brian Fogel and others, *Seeds of Sovereignty: Contesting the Politics of Food* (Alameda Institute and Rosa-Luxemburg-Stiftung, June 2024); David Wallace, 'Food as You Know It Is About to Change' *New York Times* (28 July 2024).

[8]UN Human Rights Council 'Conflict and the Right to Food: Report of the Special Rapporteur on the Right to Food, Michael Fakhri' UN Doc A/HRC/52/40 (29 December 2022).

[9]See IPES (n 2).

[10]The IPCC's approach looks how food production and consumption affect emissions, resources, the environment and society. By considering the entire system, this perspective helps understand how climate change impacts each stage and identifies ways to adapt and reduce its effects. Fatima Denton and others, 'Food, Fibre and Other Ecosystem Products' in Hans-Otto Pörtner and others (eds), *Climate Change 2022: Impacts, Adaptation and Vulnerability* (Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change, CUP 2023) 713.

[11]Major sources include methane from livestock and nitrous oxide from the use of fertilisers, particularly in intensive farming systems such as large-scale monocultures and industrial livestock production; see Mustafa Babiker and others, 'Cross-sectoral Perspectives' in Priyadarshi R Shukla and others (eds), *Climate Change 2022: Mitigation of Climate Change* (Contribution of Working Group III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change, CUP 2022); Monica Crippa and others, 'Food Systems Are Responsible for a Third of Global Anthropogenic GHG Emissions' (2021) 2 Nat Food 198.

[12]Simon Maxwell and Rachel Slater, 'Food Policy Old and New' (2003) 21 Dev Policy Rev 531; Tim Lang and Michael Heasman, *Food Wars: The Global Battle for Mouths, Minds and Markets* (Earthscan 2004); GECAFS, *Science Plan and Implementation Strategy* (ESSP Report No 2, Wallingford 2005).

[13]A broader and more dynamic definition of food system can be found in the work of Polly J Ericksen, 'Conceptualizing Food Systems for Global Environmental Change Research' (2008) 18 Glob Environ Change 234; on the evolution of the concept, see the work of Ramya Ambikapathi and others, 'Global Food Systems Transitions Have Enabled Affordable Diets but Had Less Favourable Outcomes for Nutrition, Environmental Health, Inclusion and Equity' (2022) 3 Nat Food 764; FAO, *Sustainable Food Systems: Concept and Framework* (2018).

[14]Peter M Vitousek and others, 'Human Domination of Earth's Ecosystems' (1997) 277 Science 494; Will Steffen and others, *Global Change and the Earth System: A Planet Under Pressure* (Springer 2003).

[15]See the well-known definition of the World Food Summit, 'Rome Declaration on World Food Security and World Food Summit Plan of Action' (13–17 November 1996); see also Maxwell and Slater (n 12).

[16]On environmental security, see again Ericksen (n 13) 5–12; also Frank Ellis, *Rural Livelihoods and Diversity in Developing Countries* (OUP 2000) 1–10.

[17]The right to food is the human right of every individual to have regular, permanent and unrestricted access to adequate, safe and nutritious food that meets dietary needs and cultural preferences, ensuring a life in dignity and freedom from hunger. See Committee on Economic, Social and Cultural Rights 'General Comment No 12: The Right to Adequate Food (Art 11 of the Covenant)' UN Doc E/C.12/1999/5 (12 May 1999); HRC 'Report of the Special Rapporteur on the right to food, Olivier De Schutter' UN Doc A/HRC/25/57 (24 January 2014).

[18]Regions of the world in Africa, Asia and Small Island Developing States (SIDS) are particularly exposed and vulnerable due to their reliance on highly climate-sensitive agricultural systems and relatively limited adaptive capacity. The IPCC warns that warming beyond 2°C could severely impact their food security. See more in Intergovernmental Panel on Climate Change, *Climate Change 2022: Impacts, Adaptation and Vulnerability* (Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change, CUP 2022).

scarcity, soil degradation and extreme weather events are increasingly undermining biodiversity and the ecosystem processes on which nutrition and livelihoods depend.[19] In this context, the IPCC has called for a comprehensive integration of food systems into the climate agenda. This requires linking supply- and demand-side measures, redirecting climate finance towards adaptive and low-carbon practices and fostering the inclusion of local and Indigenous knowledge alongside scientific innovation.[20] Above all, the report stresses that both mitigation and adaptation must be accelerated, as further delays would amplify costs, risks and irreversible losses.

Despite the self-evident role of food systems in driving climate change, this was long overlooked in negotiations under the United Nations Framework Convention on Climate Change (UNFCCC).[21] This omission was not accidental but rather the result of structural, institutional and political factors.[22] Since its inception, the UNFCCC architecture has been primarily designed around the energy and industrial sectors, reflecting a mitigation-centric approach to climate governance. Agricultural activities were addressed only indirectly and, in most cases, marginally, framed through the lens of land use, land-use change and forestry (LULUCF), while food systems as a cross-sectoral domain encompassing production, processing, trade and consumption remained conceptually neglected in the Convention's agendas.[23] This also reflects political sensitivities: food production touches on sovereignty, trade competitiveness and livelihood security, areas that States have traditionally been reluctant to subject to international mitigation commitments.[24] Consequently, the few references to agriculture within the UNFCCC process, such as the Koronivia Joint Work on Agriculture (2017–2022),[25] remained narrow in scope, focusing on adaptation and technical cooperation, without addressing the broader systemic transformation of food systems.[26]

Despite concerns and scepticism regarding the credibility of COP28 and COP29, hosted and chaired by key oil- and gas-producing States, these meetings have produced notable outcomes. For the first time, a 'shift away' from fossil fuels was mentioned in the final agreement,[27] alongside progress on stocktake, climate finance, mitigation and adaptation measures and the carbon market (Article 6 of the Paris Agreement). Since COP28 in 2023, food systems have moved into the spotlight of international climate governance negotiations, opening promising avenues for meaningful engagement on the role and impact of food systems within international climate law and policy. This shift coincided with the first Global Stocktake (GST),[28] a 5-year temperature check mandated under Article 14 of the Paris Agreement,[29] through which Parties collectively assessed progress towards limiting global warming to well below 2°C and ideally 1.5°C. As discussed in this article, the Stocktake's outcome decision is the first to recognise food systems as a lever for climate action, calling for integrated approaches across agriculture, food security and land use. Food systems were integrated into the COP28 programme through more than 200 events and activities on agricultural soils and other food systems-related topics.[30] This is crucial because, during the GST, Parties reviewed their Nationally Determined Contributions (NDCs) and charted the direction for updating and strengthening their climate action thereafter.[31]

Notwithstanding these promising developments, significant structural challenges persist in translating political momentum around food systems into concrete normative progress and effective implementation. The governance of food systems remains hindered by institutional fragmentation, uneven accountability and inadequate integration between socio-economic and environmental dimensions. As a result, international climate law and policy still lack coherent and enforceable measures for the governance of food systems. Such measures would need to address the complexity of production, consumption and trade while also minimising climate impacts and safeguarding long-term food security. Indeed, on the eve of COP29, the FAO released a key study that mapped the most up-to-date versions of the NDCs and identified opportunities, gaps and risks associated with agri-food climate solutions.[32] The study highlights major gaps in the NDCs' mitigation efforts concerning food systems. According to the data gathered, about 40% of food-system-related emissions are addressed in current NDCs.[33] However, livestock emissions are either

[19]Intergovernmental Panel on Climate Change, 'Food Security' in *Climate Change and Land: An IPCC Special Report on Climate Change, Desertification, Land Degradation, Sustainable Land Management, Food Security, and Greenhouse Gas Fluxes in Terrestrial Ecosystems* (IPCC 2019) 460.

[20]See Priyadarshi R Shukla and others (n 11).

[21]United Nations Framework Convention on Climate Change (adopted 9 May 1992, entered into force 21 March 1994) 1771 UNTS 107.

[22]Daniela Hidalgo, Patrick D Nunn and Harriot Beazley, 'Challenges and Opportunities for Food Systems in a Changing Climate: A Systematic Review of Climate Policy Integration' (2021) 124 Environ Sci Policy 485.

[23]Hidalgo, Nunn and Beazley (n 22); Clapp, Newell and Brent (n 3) 80.

[24]Khandaker Kabir, S de Vries Robbé and Catarina Godinho, 'Climate Change Mitigation Policies in Agriculture: An Overview of Sociopolitical Barriers' (2024) 15 WIREs Clim Change e916.

[25]UNFCCC 'Decision 4/CP.23, Koronivia Joint Work on Agriculture' UN Doc FCCC/CP/2017/11/Add.1 (8 February 2018) para 1.

[26]This is a landmark decision of the UNFCCC that recognises the unique potential of agriculture in tackling climate change structuring a series of research workshops on six interrelated topics on soils, nutrient use, water, livestock, methods for assessing adaptation and the socio-economic and food security dimensions of climate change across the agricultural sector; FAO, 'Koronivia Joint Work on Agriculture' <https://www.fao.org/climate-change/what-we-do/climate-negotiations/sharm-el-sheikh-joint-work/koronivia-joint-work-on-agriculture/en> accessed 29 April 2026.

[27]ISD Earth Negotiations Bulletin, 'Summary of the 2023 Dubai Climate Change Conference' (18 December 2023) <https://enb.iisd.org/united-arab-emirates-climate-change-conference-cop28-summary> accessed 25 April 2026.

[28]UNFCCC 'Global Stocktake' UN Doc FCCC/PA/CMA/2023/L.17 (13 December 2023) 2–4.

[29]Paris Agreement (adopted 12 December 2015, entered into force 4 November 2016) [2016] ATS 24 ('Paris Agreement') arts 4(3), 14(1)–(3). Specifically, art 4(3) on the legal obligation of progressive ambition in NDCs while art 14 provides the basis for the Global Stocktake as a mechanism for reviewing and reinvigorating commitments.

[30]FAO, 'COP28: FAO Spotlights Agrifood Systems' Potential to Address Climate Impacts and Achieve 1.5°C Goal' (13 December 2023) <https://www.fao.org/newsroom/detail/cop28--fao-spotlights-agrifood-systems--potential-to-address-climate-impacts-and-achieve-1.5-c-goal/en> accessed 25 April 2026.

[31]Paris Agreement, art 14(1)–(3); COP29 Presidency, 'Letter to Parties' <https://cop29.az/en/presidency/letter-to-parties> accessed 25 April 2026. The COP29 Presidency's letter emphasised the importance of submitting NDCs as early as possible and 'well ahead' of COP30 (Belém, Brazil). While the phrase 'well ahead' is commonly used in various working documents, the deadline of the 10 February 2025 was not binding and had not been respected by all States.

[32]Krystal Crumpler and others, 'Agrifood Systems in Nationally Determined Contributions: Global Analysis—Key Findings' (FAO 2024).

[33]Crumpler and others (n 32) 22–23.

mostly overlooked (in 66% of NDCs) or almost entirely unaddressed in the case of emissions from pre- and post-agricultural production (82% gap).[34] Similarly, adaptation planning is often unclear or lacks robust implementation strategies, making it difficult to assess feasibility and effectiveness.[35] Without closing these gaps, global temperature targets, including the 2°C limit, will be unattainable.[36]

While COP28 placed food systems firmly on the climate agenda through the UAE Declaration,[37] the GST[38] and unprecedented cross-sectoral visibility, COP29 did not capitalise on this momentum. Despite the Presidency's Harmoniya initiative[39] and the inclusion of a Food, Agriculture and Water Day, as well as declarations (methane from organic waste and social dimensions of climate action), the overall atmosphere was characterised by negotiation fatigue and political divisions over finance, mitigation ambition and the Global Goal on Adaptation.[40] The agrifood agenda was maintained but lacked new commitments or tangible progress. COP29 may have kept the flame of the food–climate nexus alive but did not consolidate the transformative drive seen in Dubai.

COP30 was held in Brazil, a major agri-food actor,[41] and in the Amazon, often described as 'the epicenter of the climate crisis'.[42] COP30 unfolded at a moment of exceptional significance for the international governance of the interlinkages between climate change and food systems. The Brazilian Presidency has explicitly adopted food-system transformation as a core pillar of its Action Agenda and delivered the Declaration on Hunger, Poverty and Human-Centered Climate Actions, signalling a high-level political commitment.[43] Furthermore, the Agenda identified food systems as one of six thematic axes and invites stakeholder mobilisation to translate agenda-setting into implementation. However, COP30 ultimately produced a more ambivalent outcome than many observers had anticipated. On the one hand, the conference adopted the 'global mutirão' package, advanced the adaptation agenda through the adoption of the Belém Adaptation Indicators and strengthened the social dimension of climate governance through the Belém Declaration on Hunger, Poverty and Human-Centered Climate Action.[44] On the other hand, food systems remained absent from the core mutirão decision, the agriculture negotiations under the Sharm el-Sheikh Joint Work ended without a substantive outcome and the most politically sensitive issues, including implementation pathways and broader systemic integration, were largely deferred or displaced into voluntary initiatives and post-COP processes.

Building on these developments, this article asks: To what extent have recent UNFCCC COPs integrated food systems thinking into the climate agenda, and can this shift contribute to a more systemic and transformative approach to climate governance?

In addressing this question, the article examines the gradual movement of food systems from the margins of UNFCCC negotiations towards a more visible, though still fragile, position within the climate regime. It argues that recent COP developments have opened important procedural and political entry points for food systems but have not yet produced a coherent, enforceable or fully transformative legal framework. Our analysis situates food systems within the broader architecture of the Paris Agreement, specifically in reference to instruments such as the GST and the Global Goal on Adaptation (Section 2). We conclude by considering how emerging initiatives like the UAE and Belém Declaration or the Alliance of Champions for Food Systems Transformation are redefining the contours of climate responsibility vis-à-vis food systems (Section 3). We conclude that the inclusion of food systems represents both a necessary evolution as well as a test of the credibility of international climate law (Section 4). COP30 in Belém did not fully deliver the hoped-for normative breakthroughs, but it did clarify the political stakes of this agenda. Moving forward, it is clear that food systems are no longer peripheral to climate governance, but their integration remains uneven, procedurally mediated and vulnerable to broader divisions over finance, mitigation and implementation.

2 | ENTRENCHMENT OF FOOD SYSTEMS IN THE CLIMATE AGENDA

Beyond the recent political initiatives explicitly designed to integrate food systems into the UNFCCC agenda, several long-standing negotiation tracks within the Convention have progressively contributed,

[34]ibid 21.

[35]ibid 24–28.

[36]For recent commentary suggesting that the 1.5°C goal may already have been exceeded. Jonathan Watts, '"Change Course Now": Humanity Has Missed 1.5C Climate Target, Says UN Head' *The Guardian* (28 October 2025) <https://www.theguardian.com/environment/2025/oct/28/change-course-now-humanity-has-missed-15c-climate-target-says-un-head> accessed 29 April 2026.

[37]COP28 UAE Declaration on Sustainable Agriculture, Resilient Food Systems and Climate Action <https://sdg2advocacyhub.org/wp-content/uploads/2023/12/COP28-UAE-Declaration-on-Sustainable-Agriculture-Resilient-Food-Systems-and-Climate-Action.pdf> accessed 25 April 2026.

[38]UNFCCC 'First Global Stocktake, Draft Decision-/CMA.5, Agenda Item 4, Conference of the Parties Serving as the Meeting of the Parties to the Paris Agreement' UN Doc FCCC/PA/CMA/2023/L.17 (13 December 2023).

[39]FAO, 'FAO and COP29 Presidency Launch Baku Harmoniya Climate Initiative' (19 November 2024) <https://www.fao.org/newsroom/detail/fao-and-cop29-presidency-launch-baku-harmoniya-climate-initiative-19112024/en> accessed 25 April 2026.

[40]UNFCCC 'Glasgow–Sharm el-Sheikh Work Programme on the Global Goal on Adaptation Referred to in Decision 7/CMA.3' UN Doc FCCC/PA/CMA/2023/L.18 (13 December 2023).

[41]Government of Brazil, 'Brazilian Agribusiness Exports Hit Record High' (11 October 2024) <https://www.gov.br/agricultura/en/news/brazilian-agribusiness-exports-hit-record-high-reaching-usd-14-19-billion-in-september> accessed 25 April 2026.

[42]COP30 Presidency, 'COP30 Presidency Calls on Global Businesses to Lead the Climate Transition' (3 September 2025) <https://cop30.br/en/news-about-cop30/cop30-presidency-calls-on-global-businesses-to-lead-the-climate-transition> accessed 25 April 2026; Luciana Ometto and others, 'Cross-Chapter Paper 7: Tropical Forests' in Hans-Otto Pörtner and others (eds), *Climate Change 2022: Impacts, Adaptation and Vulnerability* (Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change, IPCC 2022).

[43]COP30 Presidency, 'Belém Declaration on Hunger, Poverty, and Human-Centered Climate Action' (7 November 2025) <https://www.wvi.org/sites/default/files/2025-11/COP30%20-%20Belem_Declaration_ENG%20FINAL.pdf> accessed 25 April 2026. To guide and structure this engagement, the COP30 Presidency is launching a strengthened Action Agenda, with 30 key objectives organised around six thematic axes, namely, energy transition, food systems, cities, biodiversity, social development and enablers like finance and digital infrastructure. See <https://cop30.br/en/news-about-cop30/cop30-presidency-calls-on-global-businesses-to-lead-the-climate-transition>.

[44]Mutirão is a Portuguese word originating in the Indigenous Tupi-Guarani language that refers to people working together towards a common aim with a community spirit. UNFCCC 'Global Mutirão: Uniting Humanity in a Global Mobilization Against Climate Change' UN Doc FCCC/PA/CMA/2025/L.24 (22 November 2025); UNFCCC 'Global Goal on Adaptation' UN Doc FCCC/PA/CMA/2025/L.25 (22 November 2025).

directly or indirectly, to this emerging process. These include the GST, the Global Goal on Adaptation, the Sharm El-Sheikh Joint Work on Agriculture and Food Security, the New Collective Quantified Goal on Climate Finance (NCQG) and the operationalisation of Article 6 of the Paris Agreement.

The way food systems are being referenced across these processes reflects a gradual but discernible shift: from their historical marginalisation to a growing recognition of their centrality to both mitigation and adaptation objectives. Each of these negotiation tracks represents an institutional juncture through which food systems can be more systematically embedded in the architecture of international climate governance.

While this evolution creates important procedural avenues for mainstreaming food systems within the core mechanisms of the Paris Agreement, it also exposes the process to competing narratives and interests, including those of powerful agri-food corporations, that risk perpetuating fragmented, technocratic, or insufficiently transformative climate responses.

This section, therefore, analyses how these existing negotiation frameworks have positioned food systems within the UNFCCC regime, highlighting their potential to catalyse more integrated governance as well as the inherent tensions that continue to shape their inclusion.

2.1 | The first Global Stocktake

As food systems gain increasing relevance in the international climate agenda, the GST represents a turning point with both political and legal significance. Conceived under the Paris Agreement,[45] the GST is not a mere technical exercise but a core component of the treaty's implementation architecture. It plays a central role in ensuring that Parties fulfil their binding obligation to progressively raise the ambition of their NDCs.[46] In this sense, the GST provides a crucial legal framework for integrating key UNFCCC negotiations into national climate action, transforming political declarations into actionable commitments and solidifying them within the legal framework of the Paris Agreement.

The first GST was at the heart of the COP28 negotiations. Parties reviewed global emissions levels, developed strategies for mitigation and adaptation and discussed means of implementation, finance and forms of cooperation to achieve the goal of limiting global temperature. The review confirmed the existence of a considerable gap between required and committed GHG emissions reduction in light of the Paris Agreement and its long-term goals.[47] The NDCs reviewed so far would reduce emissions on average by 2% compared with the 2019 level,[48] placing the world on a path to an increase in temperature of about 2.4°–2.6° by the end of this century.[49] Despite the concerning scenario, it is essential to recognise that without the current commitments initiated by the Paris Agreement, business as usual would result in an increase of 3.7°C–4.8°C.[50]

COP28 negotiations aimed to set the stage for deep, rapid and sustained reductions in GHG emissions through more ambitious NDCs. The final text of the GST agreement calls on Parties to contribute to global efforts through a series of pathways and approaches, including tripling renewable energy capacity, phasing down of unabated coal power and substantially reducing non-carbon-dioxide emissions like methane emissions by 2030.[51] These measures, aimed at an eventual 'phase out' of fossil fuels, were hard fought. The final wording of paragraph 28, namely, 'transitioning away from fossil fuels in energy systems, in a just, orderly and equitable manner, accelerating action in this critical decade, to achieve net zero by 2050 in keeping with the science',[52] shows a compromise between parties advocating for effective and clear language on the end of fossil fuel use and developing countries' concern that the energy transition may be equivalent to 'economic suicide'.[53] The language in paragraph 28 obliges parties to reflect on, and reshape, their NDCs to incorporate this transition by mid-2025. The resulting updates will be very relevant for developed and fossil fuel-producing countries, most of which have included only limited information about fossil fuel production or have marked a continuation or even an increase in fossil fuel production in their NDCs.[54] This phase-out pledge should be considered together with the Paris Agreement's 'ratchet mechanism', according to which each party's successive NDC must 'represent a progression beyond the Party's then current NDC and reflect its highest possible ambition, reflecting its common but differentiated responsibilities and respective capabilities'.[55]

This framework compels parties to create a country-specific breakdown of the collective pathways to transitioning away from fossil fuels while simultaneously investing resources and efforts in renewable energy and the protection of nature, oceans and biodiversity. Moreover, the achievement of these obligations necessitates a stronger focus on agriculture and food systems. When strategically designed, climate actions in agri-food systems could generate far-reaching benefits, reinforcing multiple Sustainable Development Goals

[45]Hidalgo, Nunn and Beazley (n 22).

[46]Lavanya Rajamani, 'Interpreting the Paris Agreement in Its Normative Environment' (2024) 77 CLP 167; Christina Voigt, 'The First Global Stocktake Under the Paris Agreement: Role, Functioning and Legal Implications' (2024) 8 CJEL 258; Jutta Brunnée, 'Climate Change and Compliance and Enforcement Processes' in Rosemary Rayfuse and Shirley Scott (eds), *International Law in the Era of Climate Change* (Edward Elgar 2012) 303, 305; Annalisa Savaresi and Corina Heri, 'Human Rights and the Paris Agreement: A Two-Way Street?' (5 December 2025) <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=6026654> accessed 25 April 2026.

[47]UNFCCC 'Technical Dialogue of the First Global Stocktake' UN Doc FCCC/SB/2023/9 (8 Septemver 2023) paras 77–78.

[48]ibid para 21.

[49]United Nations Environment Programme, *Emissions Gap Report 2022: The Closing Window—Climate Crisis Calls for Rapid Transformation of Societies* (UNEP 2022); UNFCCC 'Technical Dialogue of the First Global Stocktake' (n 47) para 77; James Henderson, *Ten Key Conclusions from COP28: A Farewell to Fossil Fuels* (Oxford Institute for Energy Studies 2024) 143.

[50]UNFCCC 'Technical Dialogue of the First Global Stocktake' (n 47) paras 77–78.

[51]UNFCCC 'Global Stocktake' (n 28) para 28.

[52]ibid para 28(d).

[53]'COP28: How Negotiators Reached Deal to Transition Away From Fossil Fuels' *Bloomberg* (15 December 2023) <https://www.bloomberg.com/news/features/2023-12-15/cop28-how-negotiators-reached-deal-to-transition-away-from-fossil-fuels> accessed 25 April 2026.

[54]Neil Jones and Pau A Y Parra, 'How the Transition Away from Fossil Fuel Production Can Be Included in New Climate Commitments and Plans' (IISD, June 2024) <https://www.iisd.org/system/files/2024-06/fossil-fuel-transition-new-climate-commitments.pdf> accessed 25 April 2026.

[55]Paris Agreement, art 4(3).

from poverty reduction (SDG 1) and ending hunger (SDG 2) to biodiversity conservation (SDG 15).[56] Although one-third of current NDCs already include explicit links between agri-food strategies and broader development objectives, agriculture and food systems remained underrepresented in climate commitments.[57] The sector, which accounts for an estimated 21%–27% of GHG emissions, was not explicitly referenced in the mitigation section of the GST. Paragraphs 33–36,[58] which address natural ecosystems, oceans, sustainable lifestyles and sustainable patterns of consumption and production, do indirectly refer to food and land use, which creates a basis for the inclusion of agri-food processes into the new generation of NDCs. The explicit inclusion of agriculture and food systems is far from negligible: It constitutes a first formal acknowledgment within the first UNFCCC turning point that food systems are integral to climate resilience and adaptation.[59] However, the omission of food systems from the mitigation section remains a critical gap and, at this stage, amounts to a procedural rather than a substantive legal development. The mention in the text establishes an important normative precedent by situating food systems within the UNFCCC GHG emission stocktake. However, it does not yet generate binding commitments, operational mechanisms or accountability structures. Nor does it ensure their integration into national mitigation strategies or the next generation of NDCs. The challenge ahead lies precisely in translating this procedural foothold into substantive governance outcomes, capable of bridging the food–climate nexus across both adaptation and mitigation dimensions.

In Baku, parties failed to reach an agreement on how to implement the outcomes of COP28's GST, including the key pledge to transition away from fossil fuels, which was deferred to COP30. Postponing the decision on the GST output implementation weakens the momentum generated at COP28 and risks further political fragmentation. COP30 in Belém confirmed those tensions rather than resolving them. Although the conference reiterated the centrality of the Paris temperature goal and acknowledged the relevance of the new NDC cycle, it did not produce a negotiated roadmap for implementing the fossil-fuel transition within the formal COP outcome. As a result, the commitment to transition away from fossil fuels remains politically significant but still insufficiently translated into a concrete and programmatic implementation pathway, with continuing implications for the credibility of the Paris Agreement.[60]

2.2 | Global Goal on Adaptation

At COP28, the GST called for a doubling of annual adaptation finance (up to $40 billion) as agreed in 2019.[61] No decision was adopted on adaptation finance, but food systems and agriculture appeared at the negotiation table.[62] Food and ecosystems linked to agri-food production are featured several times in the 'Global Goal on Adaptation' (GGA),[63] the goal for strengthening resilience and adaptive capacity against climate change outlined in Article 7 of the Paris Agreement.[64] The GGA text in Dubai also highlighted the urgency needed to enhance adaptation action and support to achieve several goals, including a climate-resilient agri-food supply chain with a focus on sustainable and regenerative production and equitable access to adequate food and nutrition for all.[65] By linking climate-resilient agri-food systems with equitable access to adequate food and nutrition, the GGA moves beyond a purely sectoral understanding of agriculture as an object of adaptation policy. It instead begins to frame adaptation in food systems as a condition for the protection of substantive human interests already recognised in international law, including the right to adequate food, the right to health and the protection of livelihoods. The legal significance of this shift lies in the fact that adaptation is no longer conceived only as the technical adjustment of agricultural production to climate impacts, but also as a means to reduce vulnerability, protect access to food and prevent climate policy from reproducing existing inequalities.[66]

The 'UAE Framework for Global Climate Resilience' was also agreed at COP28.[67] The Framework is a guide to countries in their adaptation efforts with a range of thematic and dimensional targets for climate adaptation and resilience,[68] and a 2-year 'UAE – Belém work program', on the development of indicators for measuring progress achieved towards the targets outlined in the framework. There is now a significant potential to include in the next negotiation

[56]Jones and Parra (n 54) 7.
[57]FAO, 'COP28: FAO Spotlights Agrifood Systems' Potential to Address Climate Impacts and Achieve 1.5°C Goal' (n 30); Paris Agreement, arts 4(3), 14(1)–(3).
[58]UNFCCC 'Global Stocktake' (n 28) paras 33, 36.
[59]ibid paras 55, 63(b): 'Encourages the implementation of integrated, multi-sectoral solutions, such as landuse management, sustainable agriculture, resilient food systems […]'; and B.63.b: 'Urges Parties and invites non-Party stakeholders to increase ambition and enhance adaptation action and support […] Attaining climate-resilient food and agricultural production and supply and distribution of food, as well as increasing sustainable and regenerative production and equitable access to adequate food and nutrition for all'.
[60]Carbon Brief, 'COP30: Key Outcomes Agreed at the UN Climate Talks in Belém' (23 November 2025) <https://www.carbonbrief.org> accessed 25 April 2026; IISD Earth Negotiations Bulletin, 'Belém Climate Change Conference—Summary Report, 10–21 November 2025' (25 November 2025) <https://enb.iisd.org/sites/default/files/2025-11/enb12888e.pdf> accessed 25 April 2026.
[61]The Glasgow Climate Pact urged developed country Parties to at least double their collective provision of climate finance for adaptation to developing countries from 2019 levels by 2025. UNFCCC 'Decision 1/CP.26, Glasgow Climate Pact' UN Doc FCCC/CP/2021/12/Add.1 (8 March 2022) para 18; United Nations Environment Programme, 'Adaptation Gap Report 2024' (2024) <https://www.unep.org/resources/adaptation-gap-report-2024> accessed 25 April 2026.
[62]UNFCCC 'Global Stocktake' (n 28) paras 55, 63(b). This is calling for 'implementation of integrated, multi-sectoral solutions, such as land use management, sustainable agriculture, resilient food systems' and for 'climate-resilient food and agricultural production and supply and distribution of food, as well as increasing sustainable and regenerative production and equitable access to adequate food and nutrition for all'.
[63]Established by the Paris Agreement, the GGA received little notice at UNFCCC negotiations until COP26 in Glasgow. There, it was given a 2-year mandate to start the goal in UNFCCC 'Glasgow–Sharm el-Sheikh Work Programme on the Global Goal on Adaptation Referred to in Decision 7/CMA.3' (n 40).
[64]Paris Agreement, art 7.
[65]UNFCCC 'Glasgow–Sharm el-Sheikh Work Programme on the Global Goal on Adaptation Referred to in Decision 7/CMA.3' (n 40) para 9(b): 'attaining climate-resilient food and agricultural production and supply and distribution of food, as well as increasing sustainable and regenerative production and equitable access to adequate food and nutrition for all'.
[66]Paris Agreement, art 7(1)–(2) and preamble; UN Committee on Economic, Social and Cultural Rights 'General Comment No 12: The Right to Adequate Food (Art 11)' UN Doc E/C.12/1999/5 (12 May 1999) paras 8–13.
[67]UNFCCC 'Glasgow–Sharm el-Sheikh Work Programme on the Global Goal on Adaptation Referred to in Decision 7/CMA.3' (n 40) paras 39–41.
[68]UNFCCC 'Report of the Conference of the Parties Serving as the Meeting of the Parties to the Paris Agreement on Its Fifth Session, Held in the United Arab Emirates From 30 November to 13 December 2023' UN Doc FCCC/PA/CMA/2023/16 (15 March 2024) paras 63–64.

important quantified, measurable targets and indicators on food systems. The work program, developed in May 2025, includes a refined shortlist of 490 adaptation indicators across the key domains of food, water, health and poverty. For the food sector alone, 13 headlines and 51 sub-indicators have been proposed.[69] The current indicators cover dimensions such as climate-resilient agricultural production, sustainable and regenerative practices, equitable access to food and nutrition, resilience of food supply chains and integration of adaptation into food-related policies. Cross-cutting indicators also link food systems with water efficiency, malnutrition and poverty. These indicators are not binding. Even so, they are expected to guide Parties' monitoring efforts. The FAO in the meantime published metrics for the assessment of progress on 'agricultural adaptation for the GGA',[70] and other initiatives are already collecting further inputs.[71]

In Baku, negotiations focused on developing globally accepted indicators to implement these targets, with progress made in defining relevant indicators for marine, mountain and inland water ecosystems.[72] At COP30, Parties eventually adopted 59 Belém Adaptation Indicators.[73] For food systems, the final set includes indicators on the share of agricultural area under adaptation-relevant practices, institutional support for knowledge transfer and extension services, degraded agricultural areas under management, agricultural yields and equitable access to adequate food and nutrition.

The inclusion of equitable access to adequate food and nutrition among the adaptation indicators is especially important because it creates a bridge between climate metrics and rights-relevant outcomes. Even if the indicators remain voluntary and non-punitive, they may help Parties move beyond a narrow conception of agricultural adaptation centred on productivity, yields and supply-chain resilience. By capturing dimensions such as access to food, nutrition, vulnerability and differentiated exposure to climate risks, these metrics may contribute to a more systemic form of food-systems thinking within climate governance. Their value therefore depends not only on their technical robustness but also on whether they can make visible the differentiated impacts of climate change and climate policies on vulnerable groups, including women, Indigenous Peoples, small-scale food producers and low-income consumers.[74]

However, newspaper coverage largely focused on the COP30 headline commitment to 'at least triple' adaptation finance. Yet a closer reading suggests a more cautious assessment. The new commitment is less ambitious than it initially appears: The target was postponed to 2035 rather than 2030, framed in looser terms than the earlier Glasgow doubling commitment, and remains far below the adaptation needs identified by developing countries.

2.3 | Sharm El-Sheik Joint Work on implementation of climate action on agriculture and food security

Building on the legacy of the Koronivia Joint Work on Agriculture (KJWA),[75] the Sharm El-Sheik Joint Work on implementation of climate action on agriculture and food security (SJWA) was established at COP27.[76] This 4-year joint work builds on the outcomes of the KJWA, and it is the track of the UNFCCC negotiations that discusses the nexus of climate change, agriculture and food security. After the failed negotiation of COP28,[77] during the 2024 mid-year Bonn negotiation, there have been some new developments in this program.[78] A series of workshops have been established on some selected topics and a report at the end of each one. The first workshop, held in June 2025, focused on 'systemic and holistic approaches to implementation of climate action on agriculture, food systems, and food security, understanding, cooperation, and integration into plans'. A second workshop is scheduled for June 2026 and will address means of implementation for climate action in agriculture and food security, including the sharing of best practices. An online portal will also be established to support the work of the workshops to share information on best practices and implementation methods. At COP29, discussions on the SJWA primarily focused on the portal's functionality for the workshop.[79] Negotiators approved a clean, four-page text template for submission and requested that the UNFCCC secretariat enhance the portal.[80] It remains unclear how the UNFCCC can provide concrete solutions to implement the considerations made at these workshops at the national and even local levels.[81] COP30 did not produce substantive conclusions under the Sharm el-Sheikh Joint Work. Discussions on the workshop outcomes concerning systemic

[69]UNFCCC, 'Technical Report: Indicator Recommendation for Assessing Adaptation Progress in Food and Agriculture (Target 9(b)) of the UAE Framework for Global Climate Resilience' (8 May 2025) <https://unfccc.int/sites/default/files/resource/9%28b%29_Food_and_agricultural_production.pdf> accessed 25 April 2026.

[70]Edoardo Distefano, Namita Rai and Joost Wolf, 'Using Metrics to Assess Progress towards the Paris Agreement's Global Goal on Adaptation—Transparency in Adaptation in the Agriculture Sectors' (FAO 2023).

[71]Climate Focus and WWF, 'Advancing on the Global Goal on Adaptation through Agriculture and Food System Transformation: Policy Guidance for Addressing Adaptation Needs in Agriculture and Food Systems' (Climate Focus, 2025) <https://climatefocus.com/adaptation-through-food-transformation/> accessed 29 April 2026.

[72]UNFCCC 'Matters Relating to Adaptation: Proposal by the President, Draft Decision-/CMA.6, Global Goal on Adaptation' UN Doc FCCC/PA/CMA/2024/L.20 (23 November 2024).

[73]UNFCCC 'Global Goal on Adaptation' (n 44) paras 4 and 7; UNFCCC, 'Compilation of Existing Indicators, UAE-Belém Work Programme on Indicators' (25 September 2024) <https://unfccc.int/documents/640965> accessed 25 April 2026.

[74]Paris Agreement, preamble and CESCR General Comment (n 66) paras 6, 8 and 13.

[75]UNFCCC 'Decision 4/CP.23, Koronivia Joint Work on Agriculture' (n 25).

[76]UNFCCC, 'Sharm el-Sheikh Joint Work on Implementation of Climate Action on Agriculture and Food Security' <https://unfccc.int/sites/default/files/resource/cop27_auv_3ab_Koronivia.pdf> accessed 25 April 2026.

[77]Carbon Brief, 'Bonn Climate Talks: Key Outcomes from the June 2024 UN Climate Conference' (14 June 2024) <https://www.carbonbrief.org/bonn-climate-talks-key-outcomes-from-the-june-2024-un-climate-conference/> accessed 25 April 2026.

[78]UNFCCC 'Sharm el-Sheikh Joint Work on Implementation of Climate Action on Agriculture and Food Security' UN Doc FCCC/SB/2024/L.2 (11 June 2024).

[79]The G77, led by the Dominican Republic and Kenya, asked for better accessibility and functionality to facilitate collaboration and financing. See Carbon Brief, 'COP29: Key Outcomes for Food, Forests, Land and Nature at the UN Climate Talks in Baku' (27 November 2024) <https://www.carbonbrief.org/cop29-key-outcomes-for-food-forests-land-and-nature-at-the-un-climate-talks-in-baku/> accessed 25 April 2026.

[80]UNFCCC, 'SJWA 4: Sharm El-Sheikh Joint Work on Agriculture' (15 November 2024) <https://unfccc.int/sites/default/files/resource/SJWA_4.pdf> accessed 25 April 2026.

[81]WWF, 'Submission on the Sharm El-Sheikh Joint Work on Agriculture' (March 2023) <https://wwfint.awsassets.panda.org/downloads/wwf_submission___sharm_el_sheikh_joint_work_on_agriculture_march_2023.pdf> accessed 25 April 2025.

and holistic approaches to agriculture, food systems and food security were ultimately deferred to the June 2026 sessions in Bonn.[82]

2.4 | New collective quantified goal on climate finance

An analysis from Climate Focus reported that less than 3% of all public climate finance is allocated to food systems, of which 14% of global public climate finance for agriculture and land between 2021 and 22 went to small-scale farmers, even though they produce as much as 80% of all the food in Africa and Asia.[83] The topic of climate finance pervades every discussion and negotiation at every COP and consistently proves to be the most difficult knot to untie.[84] On most of the topics at stake, developing countries emphasised that each step they must take requires monetary support from developed countries and recognition of their historical responsibilities. On the other hand, there are constant calls for everyone to do their part, especially with reference to emerging economies. From this deadlock, new pledges follow, as well as new unfulfilled commitments. At COP28, the climate finance negotiations yielded some outcomes (including on Loss & Damage)[85] but continued to generate frustration and mistrust between the Global South and the Global North blocs. The GST decision expressed with 'deep regret' that the developed country Parties' collective goal of mobilising USD 100 billion per year by 2020 was not met.[86] This shortfall illustrates the broader inadequacy of climate finance commitments, especially when set against the estimated needs of developing countries, which will amount to USD 5.8–5.9 trillion by 2030.[87]

Climate finance was also at the top of the agenda in the intersessional climate negotiation following the COP28, which was held in Bonn. Parties have disagreed on basically every aspect of the new finance goals started in Dubai,[88] postponing the decision to COP29. Indeed, in Baku, climate finance dominated discussions. The adopted New Collective Quantified Goal on Climate Finance (NCQG) replaces the previous USD 100 billion annual finance goal and calls for climate finance for developing countries to be scaled up to at least USD 1.3 trillion per year by 2035. The pledge from developed countries would provide at least $300 billion a year in climate finance to developing countries by 2035.[89] Despite this representing a threefold increase compared to the previous pledge, it is far below the target of 1.3 trillion asked for by developing countries.[90] In the final text, the latter remained an aspirational target for 2035,[91] far from sufficient to meet the total needs of developing nations[92] in a just transition to low-carbon economies.[93]

Even though the majority of the parties left the conference with a sense of frustration, there were certainly steps forward.[94] Besides the increased finance pledge, there was a recognition of multilateral development banks (MDBs) as contributors to the finance goal, allowing countries to count all climate finance flowing through MDBs.[95] However, the effectiveness of this arrangement in mobilising accessible and adequate climate finance for developing countries depends on reforms to lending policies, increased capital availability, reduced costs and improved access to finance for developing nations.[96]

The NCQG is a crucial component of the transition to sustainable food systems. Its relevance lies in the fact that transforming agriculture and food systems requires additional financing that is also more predictable, accessible and targeted towards adaptation, resilience mitigation and the protection of vulnerable food-producing communities. With the input of instruments like the UAE Declaration, the Sharm El Sheik work program, the FAO Global Roadmap for Achieving Sustainable Development Goal 2 (SDG2) without Breaching the 1.5°C Threshold and the global goal on adaptation, the finance debate at COP30 confirmed both the centrality and the fragility of the means-of-implementation agenda.[97]

In Belém, Parties endorsed the Baku to Belém Roadmap to 1.3 trillion per year pledge and called for efforts to at least triple adaptation finance by 2035, but they did not resolve the deeper structural constraints affecting climate finance, including debt burdens,

[82]UNFCCC 'Sharm el-Sheikh Joint Work on Implementation of Climate Action on Agriculture and Food Security: Draft Conclusions Proposed by the Chairs' UN Doc FCCC/SB/2025/L.5 (14 November 2025) paras 1–2.

[83]Global Alliance for the Future of Food, 'Public Climate Finance for Food Systems Transformation' (2024 update, 2024) <https://climatefocus.com/wp-content/uploads/2024/11/ga_climatefinancereport_2024.pdf> accessed 25 April 2026.

[84]Salma Munira and others, *Climate Finance in the UNFCCC Negotiations: Bridging Gaps With Lessons Learnt* (Springer 2021).

[85]This is a new funding arrangements for assisting developing countries that are particularly vulnerable to the adverse effects of climate change, in responding to loss and damage. See <https://unfccc.int/topics/resilience/resources/documents-on-loss-and-damage>.

[86]UNFCCC 'First Global Stocktake' (n 38) 11, para 80.

[87]ibid para 67. That means $6 trillion is needed over 6 years with a yearly need about 10 times higher than the current commitment from the developed countries, highlighting the huge challenges ahead considering the historic moment.

[88]Disagreements were on the total amount to be provided, who should provide a certain amount and who should receive what, what type of funds should be included among public, private investments (or both), loans or grants. UNFCCC, 'Simon Stiell Opening Speech: We Can't Afford Rest Stops, Detours or Stumbles at This Halfway Point in the Climate Fight' (3 June 2024) <https://unfccc.int/news/simon-stiell-opening-speech-we-can-t-afford-rest-stops-detours-or-stumbles-at-this-halfway-point-in> accessed 25 April 2026.

[89]UNFCCC 'New Collective Quantified Goal on Climate Finance (NCQG), Draft Decision-/CMA.6' UN Doc FCCC/PA/CMA/2024/L.22 (24 November 2024).

[90]Developing countries, led by the G77 and China, LMDCs, African Group, LDC's AOSIS, and Arab Group, called for the need of $1.3 trillion per year specifically for developing countries, developed nations hesitated to commit to targets, advocating for flexibility and broader investment inclusion. See Melanie Robinson, 'NCQG Climate Finance Negotiations at COP29' (World Resources Institute, 19 November 2024) <https://www.wri.org/insights/ncqg-climate-finance-negotiations-cop29> accessed 25 April 2026.

[91]UNFCCC 'New Collective Quantified Goal on Climate Finance (NCQG)' (n 89) para 7.

[92]According to the Independent High Level Expert Group on Climate Finance, developing countries' needs for climate finance are estimated to be around $1 trillion a year by 2030 and $1.3 trillion by 2035. Independent High-Level Expert Group on Climate Finance, 'Raising Ambition and Accelerating Delivery of Climate Finance' (Grantham Research Institute, 14 November 2024) <https://www.lse.ac.uk/granthaminstitute/publication/raising-ambition-and-accelerating-delivery-of-climate-finance/> accessed 25 April 2026.

[93]Madeleine Cuff, 'Anger Over COP29 Finance Deal Threatens Progress on Carbon Cuts' *New Scientist* (25 November 2024) <https://www.newscientist.com/article/2457711-anger-over-cop29-finance-deal-threatens-progress-on-carbon-cuts/> accessed 29 April 2026.

[94]LDC Group, 'COP29: A Staggering Betrayal of the World's Most Vulnerable' (24 November 2024) <https://www.ldc-climate.org/press_release/cop29-a-staggering-betrayal-of-the-worlds-most-vulnerable/> accessed 25 April 2026.

[95]UNFCCC 'New Collective Quantified Goal on Climate Finance (NCQG)' (n 89) para 8(c).

[96]ibid para 6 reiterates the importance of reforming the multilateral financial architecture […] including high costs of capital, limited fiscal space, unsustainable debt levels, high transaction costs and conditionalities for accessing climate finance.

[97]UNFCCC, 'Report on the Baku to Belém Roadmap to 1.3T' <https://unfccc.int/topics/climate-finance/workstreams/baku-to-belem-roadmap-to-13t> accessed 25 April 2026.

inflationary pressures, access barriers and the persistent gap between political pledges and actual delivery. As a result, the challenge is no longer merely to identify and scale financial flows, but to ensure that they are reoriented in a manner consistent with Article 2.1(c) of the Paris Agreement and made genuinely accessible to those actors and sectors most exposed to climate vulnerability, including food systems.[98]

The accessibility of climate finance is not a secondary implementation concern, but a central condition for equitable food-systems transformation. If finance is channelled predominantly through instruments that increase indebtedness, favour large-scale actors or impose high transaction and verification costs, it may reinforce the very inequalities that make small-scale producers, rural workers, Indigenous Peoples and food-insecure communities particularly vulnerable to climate disruption. Rights-based food-systems governance therefore requires climate finance to be assessed not only by volume but also by its distributive effects, accessibility and capacity to support locally grounded adaptation, social protection and livelihood resilience.[99] Even in the absence of full geopolitical consensus, developments under the Convention on Biological Diversity have shown that multilateral cooperation on biodiversity and climate-related finance remains possible: At the resumed COP16.2, Parties agreed on a strategy for mobilising at least USD 200 billion per year by 2030 for biodiversity from all sources, including increased international flows to developing countries.[100]

2.5 | Article 6: food systems in the carbon market

As the volume of bilateral carbon trade in the Agriculture, Forestry and Other Land Uses (AFOLU) sector already demonstrates, given the impact of food systems on GHG emissions, carbon trading is likely to play an increasingly important role in financing food-system-related mitigation activities. This includes, in particular, land-use measures, soil carbon sequestration, emission reductions in agricultural production and agro-forestry offsetting schemes.[101] This market also has gained traction in both public policy circles and the private sector, including through the recent development of the EU carbon farming framework and the EU nature credit roadmap.[102] However, comprehensive regulation of CO_2 removals in agricultural activities has yet to be developed. At present, the operationalisation of Article 6 of the Paris Agreement, which addresses the international trading of carbon credit, provides only a procedural opening for integrating food systems into carbon market mechanisms, rather than a substantive legal framework.[103] After almost a decade, COP29 finalised the long-debated terms of Article 6.[104] The new regulatory framework established non-mandatory country-to-country guidelines for carbon credit trading,[105] a Paris Agreement Credit Mechanism (PACM)[106] and an agreement on Article 6(8), on the cooperation that does not involve markets.[107] The PACM will be a system safeguarded by the United Nations that provides standards and methodologies[108] for certifying credits and is responsible for evaluating the quality of activities that generate them. The international voluntary carbon market has been widely criticised for its lack of transparency, irregularities, misplaced optimism[109] and inadequate legal accountability.[110] Indeed, in recent years, the market shrank from $2 billion in 2021–2022[111] to $723

[98]UNFCCC 'Global Mutirão' (n 44); European Commission, 'What Did COP30 Achieve?' (1 December 2025) <https://climate.ec.europa.eu/news-other-reads/news/what-did-cop30-achieve-2025-12-01_en> accessed 25 April 2026.

[99]'United Nations Declaration on the Rights of Peasants and Other People Working in Rural Areas' UNGA Res 73/165, UN Doc A/RES/73/165 (17 December 2018) arts 2, 5, 15, 17 and 19.

[100]Convention on Biological Diversity, 'COP 16 Has Fulfilled Its Promise to the World' (27 February 2025) <https://www.cbd.int/article/cop16-resumed-session-closing-2025> accessed 25 April 2026; Convention on Biological Diversity, '2030 Targets (with Guidance Notes)—Target 19' <https://www.cbd.int/gbf/targets/19/> accessed 25 April 2026.

[101]Several projects listed in the Article 6 Pipeline are linked to the AFOLU sector, including agriculture and food systems: UNEP Copenhagen Climate Centre, 'Article 6 Pipeline' (UNEP Copenhagen Climate Centre) <https://unepccc.org/article-6-pipeline/> accessed 29 April 2026. The irregularities found are linked also to agriculture cases.The irregularities found are linked also to agriculture cases in Matteo Civillini, 'How Shell Greenwashed Gas with Sham Chinese Carbon Credits' *Climate Home News* (19 December 2024) <https://www.climatechangenews.com/2024/12/19/shell-greenwashed-gas-junk-chinese-carbon-credits-offsets-phantom/> accessed 29 April 2026.

[102]Fertiliser and pesticide companies like Yara and Bayer have already rolled out their own certification programs, while major agriculture producers such as Canada and Australia have integrated these credits into their markets: Rod Nickel and Karl Plume, 'Dollars in the Dirt: Big Ag Pays Farmers for Control of Their Soil-Bound Carbon' Reuters (25 October 2021) <https://www.reuters.com/business/cop/dollars-dirt-big-ag-pays-farmers-control-their-soil-bound-carbon-2021-10-25/> accessed 29 April 2026. See also Regulation (EU) 2024/3012 of the European Parliament and of the Council of 27 November 2024 establishing a Union certification framework for permanent carbon removals, carbon farming and carbon storage in products [2024] OJ L2024/1.

[103]UNFCCC 'Decision 4/CMA.6, Matters Relating to Cooperative Approaches Referred to in Article 6, Paragraph 2, of the Paris Agreement' UN Doc FCCC/PA/CMA/2024/17/Add.1 (27 March 2025); UNFCCC 'Decision 6/CMA.6, Further Guidance on the Mechanism Established by Article 6, Paragraph 4, of the Paris Agreement' UN Doc FCCC/PA/CMA/2024/17/Add.1 (27 March 2025); UNFCCC 'Decision 7/CMA.6, Work Programme Under the Framework for Non-Market Approaches Referred to in Article 6, Paragraph 8, of the Paris Agreement and in decision 4/CMA.3' UN Doc FCCC/PA/CMA/2024/17/Add.1 (27 March 2025).

[104]UNFCCC 'Decision 4/CMA.6, Matters Relating to Cooperative Approaches Referred to in Article 6, Paragraph 2, of the Paris Agreement' UN Doc FCCC/PA/CMA/2024/17/Add.1 (27 March 2025); UNFCCC 'Decision 6/CMA.6, Further Guidance on the Mechanism Established by Article 6, Paragraph 4, of the Paris Agreement' UN Doc FCCC/PA/CMA/2024/17/Add.1 (27 March 2025); UNFCCC 'Decision 7/CMA.6, Work Programme Under the Framework for Non-Market Approaches Referred to in Article 6, Paragraph 8, of the Paris Agreement and in Decision 4/CMA.3' UN Doc FCCC/PA/CMA/2024/17/Add.1 (27 March 2025).

[105]Paris Agreement, art 6(2); UNFCCC 'Decision 4/CMA.6' (n 104).

[106]Paris Agreement, art 6(4).

[107]UNFCCC 'Decision 7/CMA.6' (n 104).

[108]These include requirements to align baselines with the ambition of the Paris Agreement; verification of 'additionality', so as to avoid financing activities that would have reduced emissions in any event; and the integration of pre-Paris Agreement CDM (Clean Development Mechanism) projects into the new market without additional controls, which has raised concerns about the validity of the claimed CO_2 reductions. See UNFCCC 'Decision 4/CMA.6' (n 104); UNFCCC 'Decision 6/CMA.6'(n 104); UNFCCC 'Decision 7/CMA.6' (n 104).

[109]The IPCC warns that relying on carbon offsets instead of emissions cuts endangers climate targets, CO_2 from fossil fuels lasts centuries in the atmosphere, while trees may only store carbon for decades. Also double counting and overstatement of benefits are systemic problems. Myles Allen and others, 'The Oxford Principles for Net Zero Aligned Carbon Offsetting' (University of Oxford 2020) <https://www.ox.ac.uk/sites/files/oxford/Oxford-Offsetting-Principles-2020.pdf> accessed 25 April 2026.

[110]Briana P Kerr, 'Mitigating the Risk of Failure: Legal Accountability for International Carbon Markets' (2022) 18 ULR 145, 1–17.

[111]Ecosystem Marketplace, 'The Art of Integrity: State of the Voluntary Carbon Markets Q3 2022' (1 December 2022) <https://www.ecosystemmarketplace.com/articles/the-art-of-integrity-state-of-the-voluntary-carbon-markets-q3-2022/> accessed 29 April 2026.

million in 2023.[112] This decline followed a series of scientific and media reports revealing that many offsetting schemes had failed to reduce emissions, despite being certified[113] as 'non-additional offsets'.[114] Investigations into companies like Shell[115] or agencies working on the market like South Pole[116] exposed the fragility and its risks to greenwashing.[117] Besides securing real emission reductions, in Baku, several organisations like CLARA (Climate Land Ambition and Rights Alliance) and ActionAid sought to shed light on the history of human rights violations of carbon offsetting projects.[118] While some believe that credits should be eliminated altogether given their uncertain scientific foundations and the risk of misleading or greenwashing practices. Others contend that, if governed by robust regulatory standards and transparency safeguards, such mechanisms could still play a constructive role in reducing emissions.[119] Under appropriate oversight, carbon credits could engage the private sector as a positive driver of climate action while mobilising finance for mitigation and adaptation initiatives that would otherwise remain underresourced.[120] Without clear safeguards, such integration risks entrenching existing inequalities within agri-food systems by favouring large agro-industrial actors, intensifying monocultural practices and marginalising small-scale producers who lack access to finance and verification infrastructure.

3 | ACCELERATORS FOR FOOD SYSTEMS CLIMATE GOVERNANCE WITHIN THE UNFCCC

Alongside the historical negotiation tracks of the UNFCCC, the climate negotiation process also contains several new entry points for agriculture and other food-system-related issues. These entry points may be procedural or substantive, and they create opportunities to introduce specific topics or broaden the scope of existing frameworks. These entry points can arise through side events, multilateral declarations, official UNFCCC negotiations or emerging initiatives that, even if not binding per se, could create the foundation for future legal obligations, discussions and other outcomes at forthcoming COPs. They represent opportunities for shaping not only the agenda but also the scope of negotiations, potentially leading to the codification of principles, policies or practices concerning food systems and agriculture in the legal texts of future climate agreements. The mix of hard, soft and non-obligations in the UNFCCC negotiations, as well as the dynamic interplay between them, has always played a critical role in delivering an agreement acceptable to all.[121] The identification and analysis of these entry points are crucial to the incorporation of certain topics into legally binding commitments within the UNFCCC negotiations.

3.1 | UAE Declaration on Sustainable Agriculture, Resilient Food Systems and Climate Action

The 159 Parties who signed the UAE Declaration pledged to invest in well-known GHG-intensive aspects of the food systems: adaptation and resilience for farmers, fishers and food producers; to promote food security and nutrition through social protection systems; to support workers along the food supply chain and ensure inclusive and decent work.[122] Signatories committed to strengthen the integrated management of water, emphasising the need to optimise the beneficial impacts of agriculture on the climate and the environment while limiting negative effects. There is a general and yet crucial commitment to protect, conserve and restore land and natural ecosystems,

[112]Patrick Greenfield, 'Market Value of Carbon Offsets Drops 61%, Report Finds' *The Guardian* (31 May 2024) <https://www.theguardian.com/environment/article/2024/may/31/market-value-of-carbon-offsets-drops-61-aoe> accessed 29 April 2026.

[113]These scandals include not only the bilateral carbon trade but also regional systems like the EU ETS systems: Clemens Kaupa, 'The Problem of Carbon Credits and Offsetting in Corporate Climate Disclosure' (2025) 36 EBLR 573, 3–29.

[114]According to the Clean Development Mechanism of the Kyoto Protocol, these markets to be effective, offsets must be 'additional'—ie representing emissions reductions that would not have occurred otherwise. See Michael Wara, 'Measuring the Clean Development Mechanism's Performance and Potential' (2008) 55 UCLA Law Rev, 1760–790; Joëlle de Sepibus, 'The CDM: A Critique of Its Environmental Integrity' in Marc Melling, Anne Merrill and Kim Upston-Hooper (eds), *Improving the Clean Development Mechanism: Options and Challenges Post-2012* (Brill 2011) 10.

[115]Matteo Civillini, 'Revealed: How Shell Cashed In on Dubious Carbon Offsets from Chinese Rice Paddies' *Climate Home News* (28 March 2023) <https://www.climatechangenews.com/2023/03/28/revealed-how-shell-cashed-in-on-dubious-carbon-offsets-from-chinese-rice-paddies/> accessed 29 April 2026.

[116]South Pole, the largest creditor company, was involved in a scandal concerning reforestation projects in Zimbabwe with credits largely unrelated to declared activities. The case was reported by a famous article of the New Yorker: Heidi Blake, 'The Great Cash-for-Carbon Hustle' *The New Yorker* (23 October 2023) <https://www.newyorker.com/magazine/2023/10/23/the-great-cash-for-carbon-hustle> accessed 29 April 2026.

[117]In 2023, the investigation of *The Guardian*, *Die Zeit* and the organisation SourceMaterial disclosed the investigation on carbon credits created by Verra-certified rainforest protection projects in South America, Africa and Asia (almost a third of all carbon credits come from projects of this type). Ninety-four per cent of these credits is considered not valid because they are linked to projects that make no difference in terms of GHG emissions or that have a lower contribution than declared. See Patrick Greenfield and Phoebe Weston, 'Revealed: More than 90% of Rainforest Carbon Offsets by Biggest Provider are Worthless, Analysis Shows' *The Guardian* (18 January 2023) <https://www.theguardian.com/environment/2023/jan/18/revealed-forest-carbon-offsets-biggest-provider-worthless-verra-aoe> accessed 29 April 2026; Tin Fischer and Hannah Knuth, 'CO_2-Zertifikate: Grün Getarnt' *Die Zeit* (18 January 2023) <https://www.zeit.de/2023/04/co2-zertifikate-betrug-emissionshandel-klimaschutz> accessed 29 April 2026; SourceMaterial, 'The Carbon Con: How Offsetting Claims Are Vastly Inflated' (18 January 2023) <https://www.source-material.org/vercompanies-carbon-offsetting-claims-inflated-methodologies-flawed/> accessed 29 April 2026; Benjamin Probst and others, 'Systematic Assessment of the Achieved Emission Reductions of Carbon Crediting Projects' (2024) 15 Nat Commun 9562.

[118]Carbon Brief, 'Mapped: The Impacts of Carbon-Offset Projects Around the World' (2023) <https://interactive.carbonbrief.org/carbon-offsets-2023/mapped.html> accessed 29 April 2026; see also Environmental Justice Atlas, Institute of Environmental Science and Technology and Autonomous University of Barcelona, 'EJAtlas' (Environmental Justice Atlas) <https://ejatlas.org/> accessed 29 April 2026.

[119]Benjamin Probst and others, 'Systematic Assessment of the Achieved Emission Reductions of Carbon Crediting Projects' (2024) 15 Nat Commun 9562.

[120]EU's commissioner for climate action Wopke Hoekstra's intervention welcomed the agreement on art 6 as a step forward that will drive investment, raise ambition and bring transparency as reported by Carbon Brief, 'COP29: Key Outcomes for Food, Forests, Land and Nature' (n 79).

[121]Lavanya Rajamani, 'The 2015 Paris Agreement: Interplay Between Hard, Soft and Non-Obligations' (2016) 28 JEL 337; Fariborz Zelli and Harro van Asselt, 'Introduction: The Institutional Fragmentation of Global Environmental Governance: Causes, Consequences, and Responses' (2013) 13 GEP 1.

[122]UAE Declaration (n 37) 3–5. The objectives are: 'To integrate agriculture and food into national climate action and other relevant policies and plans; Take policy actions to promote sustainable agriculture; Scale up finance and/or access to finance for sustainable food systems; Accelerate science and evidence-based solutions; and Strengthen open, fair and inclusive trade systems'.

enhancing soil health and biodiversity.[123] Finally, it identifies the reduction of food loss and waste as a further priority area for action.

The Declaration contains a rather open-ended call to sustainably boost productivity without referring to the well-known serious issues of food access and distribution.[124] This is also where the Declaration reveals the limits of its rights-based potential. By emphasising productivity, resilience and sustainability without sufficiently addressing access to food, control over productive resources, land tenure, labour conditions and the position of small-scale producers, the text risks reproducing a technocratic understanding of food-systems transformation. A coherent rights-based framing would require the Declaration to move beyond the optimisation of production systems and to address who benefits from transformation, who bears its costs and how climate measures affect existing inequalities within food systems.[125] There is also a general and unspecific call to shift from higher GHG-emitting practices[126] to more 'sustainable production' and 'consumption' without mentioning one of the most polluting and controversial productions like intensive livestock farming or the halting of crop monocultures. This is linked to a key omission of the Declaration: the recognition of the crucial role that food systems play in climate change mitigation. In fact, while references to sustainability and emissions are present, there is no clear acknowledgment of how transforming food systems can actively contribute to reducing GHG emissions and achieving climate goals. Eventually, Parties committed to revisiting and, where appropriate, realigning their national support measures and subsidies in light of the targets set out in the Declaration.[127] According to the World Bank, this support is estimated to cost around $700 billion every year.[128] This is also a highly relevant issue for the EU, whose Common Agricultural Policy has supported its agricultural production despite numerous contradictions and challenges over the past 60 years while generating persistent tensions with environmental, climate, biodiversity-related goals and equity objectives.[129]

The Declaration is not binding, and many of its commitments remain vague in order to attract wide support. However, a crucial commitment of the signatory parties that needs to be underlined is the pledge to integrate agriculture and food systems measures into the NDCs and other forms of national plans on climate and biodiversity.[130] According to the Technical Cooperation Collaborative, approximately 40 countries are actively working on national policy initiatives aligned with the UAE Declaration.[131] Brazil, the UAE and the UK submitted their new NDCs at COP29, while the (non-mandatory) deadline of February 2025 was respected by just 15 countries (7.7% of the total). The concrete impact of the Declaration will become clearer through the implementation of the new NDC cycle and the extent to which Parties translate food-systems pledges into operational mitigation and adaptation measures.[132] Early indications can already be observed in some of the updated NDCs, including the stronger integration of agriculture in Brazil and Uruguay,[133] progress on climate-smart technologies in the UAE[134] and greater attention to sustainable land-use practices in Ecuador.[135]

3.2 | The Alliance of Champions for Food Systems Transformation

During COP28, the Alliance of Champions for Food Systems Transformation (ACF) was launched. Led by Norway, Brazil, Sierra Leone, Rwanda and Cambodia, this high-aspiration coalition of countries aims to accelerate the transformation of the global food system, focusing on 10 priority intervention areas including food and nutrition security, adaptation and resilience, equity and livelihoods, nature and biodiversity and climate mitigation.[136] At COP30, the Alliance also expanded its membership with the accession of Colombia, Italy and Vietnam, signalling a modest but politically relevant broadening of the coalition around food systems transformation. The ACF also released a 'progress snapshot'[137] outlining the policies and actions adopted by each member of the Alliance according to the priority areas. The report highlights several

[123]ibid s 1 para 5: 'Maximize the climate and environmental benefits-while containing and reducing harmful impacts-associated with agriculture and food systems by conserving, protecting and restoring land and natural ecosystems, enhancing soil health, and biodiversity, and shifting from higher greenhouse gas-emitting practices to more sustainable production and consumption approaches, including by reducing food loss and waste and promoting sustainable aquatic blue foods'.

[124]ibid s 2 para 4, on the 'sustainable productivity'.

[125]CESCR General Comment (n 66) paras 8, 13 and 26; UNDROP (n 99) arts 2, 15, 17 and 19.

[126]ibid s 1 para 5.

[127]ibid s 2 para 2.

[128]Rashmin Damania and others, *Detox Development: Repurposing Environmentally Harmful Subsidies* (World Bank 2023).

[129]Franco Sotte and Danilo Vergamini, 'The Green Deal and the CAP 2023–2027' in Franco Sotte and Gianluca Brunori (eds), *European Agricultural Policy* (Springer 2025); Alan Matthews, 'An Ambitious CAP is Needed to Underpin the Green Transition' (2023) 75 RdL 290; Enrico Mezzacapo, 'Mind the Gap: Assessing Member States' Implementation of Farm to Fork Targets Within the 2023–2027 Common Agricultural Policy' (2024) 15 EJRR 265.

[130]UAE Declaration (n 37) s 1 para 1. See also Ciniro Negra and others, *Increasing Ambition in Nationally Determined Contributions Through Agriculture and Food Systems Innovation: Evidence, Foundational Analysis, and Recommendations for NDCs* (Climate Focus 2024).

[131]COP28 Presidency, 'COP28 Presidency Launches Technical Group to Support Implementation of the COP28 UAE Declaration on Sustainable Agriculture, Resilient Food Systems, and Climate Action' (3 June 2024) <https://www.cop28.com/en/news/2024/06/COP28-Presidency-launches-technical-group> accessed 29 April 2026.

[132]UNFCCC, 'NDC Registry' <https://unfccc.int/NDCREG> accessed 29 April 2026.

[133]Particularly interesting in the Brazilian NDC is the work on mitigation in the livestock sectors, the conversion of degraded pastures into productive lands and the integrated approach with deforestation linked to agriculture. UNFCCC, 'NDC Registry' (n 132). Brazil, 'Brazil Second Nationally Determined Contribution (NDC)' (UNFCCC, 13 November 2024) <https://unfccc.int/documents/643337> accessed 29 April 2026; Uruguay's NDC is detailed in its food system approach, dedicating important actions on Agroecology and sustainable livestock management. Uruguay, 'Uruguay Third Nationally Determined Contribution (NDC)' (UNFCCC, 30 December 2024) <https://unfccc.int/node/645369> accessed 29 April 2026.

[134]The UAE pledged to cut 39% agriculture sector emissions by 2035. As for the Fossil fuel abatement, this NDC has a considerable focus on technological innovation as solutions for mitigation and adaptation: GMOs and climate resilient crop investment. United Arab Emirates, 'The United Arab Emirates Third Nationally Determined Contribution (NDC 3.0)' (UNFCCC, 6 November 2024) <https://unfccc.int/documents/613857> accessed 29 April 2026.

[135]Ecuador's mitigation and adaptation strategies deals with a comprehensive approach on sustainable livestock management, soil health and sustainable resource management but also for protection of crops with high nutritional values and notions of food sovereignty. Ecuador, 'Ecuador Second NDC' (UNFCCC, 6 February 2025) <https://unfccc.int/node/645603> accessed 29 April 2026.

[136]Alliance of Champions for Food Systems Transformation, 'Priority Areas of Intervention' <https://allianceofchampions.org/#intervention> accessed 29 April 2026.

[137]Alliance of Champions for Food Systems Transformation, 'Progress Snapshots' (November 2024) <https://allianceofchampions.org/wp-content/uploads/2024/11/ACF_Progress-Snapshots.pdf> accessed 29 April 2026.

noteworthy initiatives including large-scale national agroforestry plans with social co-benefits such as job creation for local communities,[138] support measures for the competitiveness of small producers,[139] plans for reducing dependencies from agri-food imports,[140] democratic spaces to listen to the needs of farmers[141] and plans to restore degraded agricultural ecosystems.[142] This update serves as a showcase of emerging successes, outlines future priorities for the transformation of national food systems and offers examples that may inform the scaling-up of food systems solutions. In this regard, a range of complementary initiatives is currently being developed to strengthen data, monitoring, financing and policy coherence across food systems.[143]

3.3 | FAO Global Roadmap for Achieving Sustainable Development Goal 2 (SDG2) without Breaching the 1.5°C Threshold

During COP28, the FAO presented a Global Roadmap that aims to provide a practical framework for a sustainable transition of agrifood systems.[144] This roadmap, which involves processes that span 3 years (from COP28 to COP30),[145] aims to transform food systems to achieve Sustainable Development Goal number 2, Zero Hunger, while limiting global temperature rise to 1.5°C. The vision presented 10 specific 'domains of action', linked to 20 milestones.[146] The domains of action focus on livestock, fisheries and aquaculture, crops, enabling healthy diets for all, forests and wetlands, food loss and waste, clean energy, inclusive policies and data collection and sharing. The interventions are divided per domain of action with specific objectives and deadlines.

Some of the targets appear quite ambitious, such as achieving carbon-neutral food systems by 2035; others are vague and of difficult interpretation such as 'Everyone consumes healthy diets by 2050'. Others are ambiguous and sometimes contradictory in respect of other objectives, leaving significant room for improvement.[147] On the latter, for example, it is hard to imagine, without further explanations, the realisation of the 1.7% annual growth in livestock productivity and the 1.5% in crop productivity while pursuing the reduction of 25% of methane emissions (compared to 2020) from livestock and the cut of 25% of gross GHG emissions by 2030.

Unlike the UAE Declaration, the Roadmap acknowledges the nexus between food systems and fossil fuels. However, the Roadmap notably omits any clear objective to reduce the production and consumption of animal-sourced foods. Indeed, the lack of connection between the impact of meat consumption and production on the health of human beings, animals and the environment dealt with in the One Health approach is not reflected in the objectives.[148] Moreover, a transparent analysis of how the foreseen outputs will lead us to the main objective of ending hunger without breaching the 1.5°C threshold was missing. The lack of consensus on some objectives,[149] such as the meaning of 'shifting towards a healthy diet', foreshadows several challenges in the next phases of implementation.[150]

COP29 also saw the launch of the Baku Harmoniya Climate Initiative for Farmers.[151] The initiative is also hosted by the FAO as part of its 'Food and Agriculture for Sustainable Transformation' (FAST Partnership)[152] with the aim of streamlining information on climate for farmers. The initiative aims to help farmers navigate the landscape of climate-resilient agri-food programs by aggregating and aligning over 90 global and regional initiatives. It serves as a platform for collaboration, knowledge-sharing and investment mobilisation to enhance climate action in food, agriculture and water systems. Moreover, by

[138]ibid 1–3; Food and Land Use Coalition, 'Empowering Family Farmers to Produce and Protect: 4 Productive Forests Cases in Brazil' (October 2024) <https://www.foodandlandusecoalition.org/wp-content/uploads/2024/10/FOLU-Brazil-Productive-Forests-Case-compressed.pdf> accessed 29 April 2026. Brazil's National Program for Productive Forests is described as supporting sustainable agroforestry, contributing to the national goal of restoring 12 million hectares by 2030 and helping create up to 2.5 million jobs.

[139]Alliance of Champions, Progress Snapshots (n 137) 5–6; Cambodia is deploying 1600 agriculture officers across communes with the aim to develop modern agricultural cooperatives, improving access to agricultural markets, finance and resources while enhancing smallholder efficiency.

[140]ibid 13–15; Sierra Leone is implementing a strategy that aims to boost local food production, reduce food imports and attract agricultural investment, with a focus on supporting smallholder farmers, women and youth.

[141]ibid 7–9; Norway has established a goal to halve food waste by 2030 and structured a policy dialogue forums with farming unions on a yearly basis, ensuring a bottom-up, participatory approach that aligns agricultural policies, national and international committments to farmers' needs.

[142]ibid 10–13; Rwanda has committed to a series of agri-ecosystems restoration initiatives and to an ambitious plan to halve food waste and loss along the food chain including post-harvest losses.

[143]A growing ecosystem of implementation-oriented tools is supporting more evidence-based food systems governance, including the Food Systems Dashboard, the Food Systems Countdown Initiative, the Financial Flows to Food Systems framework, the GAIN–AKADEMIYA2063 Policy Coherence Tool and the Initiative on Climate Action and Nutrition (I-CAN). See Food Systems Dashboard, 'Country Dashboards' <https://www.foodsystemsdashboard.org/subnational-dashboards> accessed 29 April 2026; Food Systems Countdown Initiative, 'FSCI' <https://www.foodcountdown.org/> accessed 29 April 2026; Food Systems Dashboard, 'Food Systems Countdown Initiative Data' <https://www.foodsystemsdashboard.org/fsci-indicators> accessed 29 April 2026; UN Food Systems Coordination Hub, 'IFAD, World Bank and GAIN Scale up Efforts to Bolster Transparency in Food Systems Financing' (21 November 2024) <https://www.unfoodsystemshub.org/latest-updates/news/detail/ifad--world-bank-and-gain-scale-up-efforts-to-bolster-transparency-in-food-systems-financing/en> accessed 29 April 2026; GAIN, 'Diagnosing Food Systems Policy Coherence: A Toolkit' <https://www.gainhealth.org/policy-coherence-toolkit> accessed 29 April 2026; GAIN, 'Initiative on Climate Action and Nutrition (I-CAN)' <https://www.gainhealth.org/impact/programmes/enhancing-nutrition-data-evidence/initiative-climate-action-and-nutrition-i-can> accessed 29 April 2026.

[144]FAO, 'Achieving SDG 2 Without Breaching the 1.5°C Threshold: A Global Roadmap, Part 1—How Agrifood Systems Transformation through Accelerated Climate Actions Will Help Achieving Food Security and Nutrition, Today and Tomorrow' (2023) <https://doi.org/10.4060/cc9113en>.

[145]ibid 2; starting with a global vision to regional adaptation, exploring financial options and culminating in concrete investment and policy packages by COP 30.

[146]ibid 11.

[147]Cleo Verkuijl and others, 'FAO's 1.5°C Roadmap for Food Systems Falls Short' (2024) 5 Nat Food 264.

[148]Francesca Coli and Hanna Schebesta, 'One Health in the EU: The Next Future?' (2023) 8 Eur Pap 301, 2–16.

[149]Carbon Brief, 'Bonn Climate Talks' (n 77).

[150]See the analysis of Edward Davey, 'Food System Breakthroughs at COP28—And What Comes Next' (World Resources Institute, 15 December 2023) <https://www.wri.org/insights/food-system-breakthroughs-cop28-whats-next> accessed 25 April 2026.

[151]FAO, 'FAO and COP29 Presidency Launch Baku Harmoniya Climate Initiative' (19 November 2024) <https://www.fao.org/newsroom/detail/fao-and-cop29-presidency-launch-baku-harmoniya-climate-initiative-19112024/en> accessed 29 April 2026.

[152]The FAST Partnership was launched at COP27 as a multi-stakeholder partnership aiming to accelerate the transformation of agrifood systems globally. For further information, see FAO, 'FAST Partnership: Food and Agriculture for Sustainable Transformation' <https://www.fao.org/food-agriculture-sustainable-transformation-partnership/en> accessed 29 April 2026.

streamlining access to relevant data, the initiative seeks to enhance the effectiveness of climate action within agricultural systems.

Since COP28, the FAO Global Roadmap has slowly started to transition from a conceptual framework to an actionable initiative.[153] In the run-up to COP30, this process involved modelling work, engagement with governments, academia, civil society and private actors and efforts to translate strategic objectives into more country-oriented implementation pathways. COP30 did not transform the Roadmap into any binding instrument, nor did it consolidate its role as a reference framework for aligning food systems transformation with climate action, SDG 2 and the 1.5°C objective. However, the work that has been carried out includes the engagement of private sector actors, NGOs, non-State stakeholders and academia to structure and run modelling exercises in several pilot countries to quantify the impacts and costs of the transformation of food systems.[154]

3.4 | Belém Declaration on Hunger, Poverty and Human-Centered Climate Action

The Belém Declaration on Hunger, Poverty and Human-Centered Climate Action emerged at COP30 as one of the most politically significant soft-law developments for sustainable food systems.[155] The Declaration is the clearest example thus far of an attempt to articulate food-systems transformation through an explicitly rights-sensitive vocabulary, which is politically significant for at least three reasons. First, it signals a deliberate effort by the COP30 Presidency to institutionalise food systems as a central pillar of the next international climate negotiations, moving beyond the narrow agricultural focus.[156] The text places the right to adequate food, social protection and small-scale producers' resilience at the heart of a human-centred climate agenda.[157] This matters because the Declaration reframes food systems as a site where climate vulnerability, poverty, hunger and unequal access to resources intersect. In doing so, it gives institutional expression to the idea that effective climate action must be assessed by reference to its consequences for human dignity, food access, social protection and livelihood security. This marks a discursive shift towards a more integrated understanding of climate action, in which hunger eradication, poverty reduction and livelihood protection are considered preconditions for effective adaptation and mitigation.[158]

Second, the Declaration places social-justice and human-rights vocabulary into the UNFCCC process dealing with food and agriculture that could, over time, influence the normative interpretation of the Paris Agreement's preambular reference to 'safeguarding food security and ending hunger' by clarifying that food security cannot be reduced to the stability of food production systems.[159] Rather, it must be understood as encompassing access to adequate food, poverty eradication, social protection and the protection of those whose livelihoods depend on land, water, forests, fisheries and other ecological foundations of food systems. Indeed, while strengthening the conceptual bridge between climate governance and international human rights law, especially the right to food and the right to social security, the initiative could move beyond the limited interpretation of the protection of 'vulnerabilities of food production systems to the adverse impacts of climate change'[160] towards food systems as a locus of rights and equity, calling for proactive measures to secure access to food, social protection and livelihood security as integral components of climate action.

Like the UAE Declaration, the Belém Declaration is non-binding in nature. Even so, declarations of this kind may provide a soft law framework capable of generating normative effects over time. Adopted by 43 countries and the EU, the Declaration could serve as a soft law instrument shaping future negotiations and informing the revision of NDCs. In this sense, the Belém Declaration symbolises both a continuation and a qualitative integration of food systems in the UNFCCC agenda.[161] While the GST incorporated food systems in a limited procedural capacity, primarily within the adaptation pillar, the Brazilian initiative seeks to translate that recognition into a socially embedded, rights-based and potentially substantive framework for action. Whether this potential will materialise into binding commitments remains uncertain. However, the initiative represents an important political accelerator for embedding food systems and other dimensions of human rights, equity and food sovereignty, climate justice, into the normative architecture of climate governance.

4 | CONCLUSIONS: FROM COP30 TO THE NEW NDCS

The growing visibility of food systems within the UNFCCC architecture signals a crucial turning point in international climate law. Several initiatives promoted at COP28 and COP29 have laid the groundwork to create momentum and ensure continued efforts to mobilise and allocate financial resources towards the transformation of food systems. From the procedural recognition achieved through important UNFCCC negotiations (GST, GGA) to the emerging soft-law initiatives (the ACF and the UAE and Belém declarations), the foundations for a

[153]FAO, 'Update on FAO Roadmap: Achieving SDG 2 Without Breaching the 1.5 °C Threshold' FAO Doc PC 140/7 (10–14 March 2025).

[154]ibid 4 s 8; the pilot countries Brazil, Denmark, Ethiopia, Guatemala, Indonesia and Kenya. The selection was based on existing analytical infrastructure, technical capacity and national interest.

[155]COP30 Presidency, 'Leaders Sign Declaration on Hunger, Poverty, and People-Centered Climate Action' (7 November 2025) <https://cop30.br/en/news-about-cop30/leaders-sign-declaration-on-hunger-poverty-and-people-centered-climate-action> accessed 29 April 2026.

[156]As discussed, the previous frameworks had a narrow focus on agriculture under the Koronivia Joint Work on Agriculture.

[157]COP30 Presidency, 'Leaders Sign Declaration on Hunger, Poverty, and People-Centered Climate Action' (n 155) ss 1–2.

[158]ibid s 1.

[159]Paris Agreement, preamble: 'Recognizing the fundamental priority of safeguarding food security and ending hunger, and the particular vulnerabilities of food production systems to the adverse impacts of climate change, […]'.

[160]ibid preamble; regarding the right to food and the right to social security the references are respectively International Covenant on Economic, Social and Cultural Rights (adopted 16 December 1966, entered into force 3 January 1976) 993 UNTS 3, arts 11, 9.

[161]Food and Land Use Coalition, 'Could COP30 Be a Game-Changer for Food Systems? Brazil's Moment to Lead' <https://www.foodandlandusecoalition.org/could-cop30-be-a-game-changer-for-food-systems-brazils-moment-to-lead/> accessed 29 April 2026.

systemic integration of food systems have been laid out. Yet, the legal content of this recognition remains embryonic. The references scattered across adaptation, finance and cooperation mechanisms still fall short of constituting enforceable obligations or a coherent normative framework.

The analysis developed in this article suggests that the incorporation of food systems into the UNFCCC regime stands at a threshold: Food systems have become part of the political agenda, but not (yet) of the legal framework. Moving past this threshold requires action on two dimensions. On the one hand, it would require the transition from procedural recognition through political declarations, indicators and coordination platforms to substantive integration capable of generating binding obligations, institutional mechanisms and accountability frameworks. The GST embodies this transition. By assessing collective progress under the Paris Agreement and its ratchet mechanism for updating Nationally Determined Contributions, it provides an institutional channel through which the procedural recognition of food systems could evolve into measurable national commitments. Declarations such as the UAE Declaration on Sustainable Agriculture and the Belém Declaration further reinforce this dynamic. Though formally non-binding, these declarations articulate political expectations and normative guidance that are likely to influence the revision of NDCs. This would encourage Parties to embed agri-food transitions, social protection and rights-based objectives within their national climate strategies. A core element of the agenda surrounding COP30 was the need to explicitly link food systems to the broader commitment to transition away from fossil fuels, acknowledge their mitigation potential, foster dialogue on sustainable dietary patterns and adopt a systemic approach reflecting the complexity of global agri-food value chains. COP30, however, only partially advanced this agenda.

The second dimension concerns the recognition of the systemic social and ecological dysfunctions inherent in global food systems and their implications for human rights, particularly the rights to food, health and social protection, as well as the livelihoods and territorial rights of Indigenous Peoples and small-scale producers. While awareness of these injustices has increased within the UNFCCC process, they are yet to be translated into enforceable safeguards or equitable governance mechanisms. Whether initiatives like the GST and the emerging declarations can catalyse this translation remains the decisive test for moving from procedural acknowledgment to substantive legal transformation.

The relative loss of momentum at COP29 illustrates the fragility of progress across these two dimensions. Despite rhetorical continuity, negotiations in Baku fell short of sustaining the ambition and cohesion achieved at COP28, with limited new commitments and persistent divides on finance, mitigation, and follow-up to the GST. COP30 in Belém has tried to regain momentum by consolidating a number of procedural and political gains, especially in relation to adaptation indicators, human-centred climate action and food-related coalition-building. However, it did not robustly embed food systems within the core negotiated architecture of the COP, nor did it generate substantive outcomes under the formal agriculture track. The central challenge now shifts to implementation, to the next round of NDCs and to whether these scattered openings can be translated into a more coherent and accountable framework for food-systems governance under the Paris Agreement. The updated NDC cycle also suggests a gradual increase in the visibility of food systems, although current national commitments remain far from sufficient to align with the Paris temperature goals.

More generally, the COP negotiation impasses, which, despite incremental advancements, remain fundamentally unresolved reflect a persistent climate of scepticism, frustration and political discontinuity with respect to climate action.[162] The integration of food systems constitutes a crucial test for the international climate regime's capacity to evolve into a more ecologically and socially coherent regime. A rights-based framing, linking climate action to food security, social equity, participation and livelihood resilience, offers the most promising pathway to operationalise the Paris Agreement's preambular commitment to 'safeguarding food security and ending hunger'. Its added value is that it prevents food-systems integration from being reduced to a technocratic agenda of emissions accounting, productivity gains or carbon-market expansion. Instead, it requires climate governance to ask whether food-systems measures protect access to adequate food, reduce vulnerability, support small-scale producers, respect Indigenous Peoples and local communities and distribute the costs and benefits of transition equitably. This is precisely where the transformative potential of recent COP developments must be tested. Whether this transformation materialises will determine not only the credibility of the Paris framework but also its ability to deliver a just, inclusive and sustainable transition in the decades ahead. A paradigmatic example of such a deadlock is the protracted dispute surrounding the inclusion and specific wording of the term 'phase-out' to fossil fuels. Nonetheless, the Parties agreed to assess their progress towards meeting the Paris goals in the five-yearly GST and then increase their efforts accordingly. This produced results, and the GST served as a critical reminder that, in the absence of the legal architecture established by the Paris Agreement, the world would be on a trajectory towards a temperature increase of 3.7°C–4.8°C.

The answer to this article's research question is therefore nuanced. Recent COPs have integrated food-systems thinking into the climate agenda to a degree that would have been difficult to imagine only a decade ago. Yet this integration remains only partially transformative. It will become genuinely systemic only if the procedural recognition of food systems is translated into rights-sensitive obligations, accessible finance, participatory governance and accountability mechanisms capable of protecting those most exposed to both climate impacts and food-system inequalities.

[162]Often it is assumed that national governments have temporal continuity and that a commitment made in 1 year will be maintained in the years to come. But the reality is that, increasingly, governments—especially democratic ones—oscillate between opposing political orientations, between progressive environmental commitments and reactionary and climate regulation denialist rejections (see the case of the US and the Trump's Administration). See Gaëlle Graddy-Lovelace, Suzanne Brock and Bina Jain, 'Agrarianizing Climate Accords & Discord: Food, Agriculture & Agrarian Movements at UNFCCC Conference of the Parties' (2024) 16 Clim Dev 892.

The renewed momentum around food systems therefore represents both an opportunity and a challenge: an opportunity to address, through a systemic approach, one of the major drivers of climate change and biodiversity loss; and a challenge, given the increasing presence of large agribusiness representatives whose interests tend to diverge from those of an equitable ecological transition.[163] The latter also risks marginalising the voices of peasant movements, food sovereignty advocates and Indigenous Peoples, whose contributions are essential to a just and inclusive transformation. It is vitally important that the debate goes beyond the environmental externalities of agri-food systems. It should encompass social, economic and political dimensions of such systems, including the right to food, equitable access to resources, the distribution of power within food system governance and the broader struggle against systemic inequality.

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DATA AVAILABILITY STATEMENT

Data sharing is not applicable to this article as no datasets were generated or analysed during the current study.

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[163] At COP28, 2456 fossil fuel lobbyists were registered, making them more numerous than nearly all national delegations, except those of the UAE and Brazil. See Kick Big Polluters Out, 'Release: Record Number of Fossil Fuel Lobbyists Attend COP28' (5 December 2023) <https://kickbigpollutersout.org/articles/release-record-number-fossil-fuel-lobbyists-attend-cop28> accessed 29 April 2026.