

# Rebooting Food Systems and Accelerating Climate Action Must Go Hand-in-Hand



by Thin Lei Win



Climate and agriculture are in “an unhappy marriage” because while they are intertwined, they are also “antagonistic” towards each other, agricultural scientist Andy Jarvis once said.<sup>1</sup> Recently, Rachel Bezner Kerr, a professor at Cornell University, expanded on the theme, calling the relationship “an unhappy marriage [with] an addiction problem” – the addiction being to fossil fuels.<sup>2</sup>

Farming is highly vulnerable to the vagaries of weather. A small shift in

temperature or rainfall pattern could have an outside impact on crop and animal productivity, so the succession of extreme weather events over the past two years has battered agriculture in many parts of the world.

Last year’s floods in Pakistan wiped out vast swathes of farmland in the most productive Indus plains.<sup>3</sup> Unseasonal rains in May caused northern Italy’s worst floods in a century, inundating tens of thousands of hectares of fruits and vineyards.<sup>4</sup> This was a reversal from

<sup>1</sup> Thin Lei Win, “Can Agriculture and the Climate Fix Their ‘Unhappy Marriage’ in 2018?”, in *Reuters*, 28 December 2017, <https://www.reuters.com/article/us-global-agriculture-climatechange-anal-idUSKBN1EM0UA>.

<sup>2</sup> Agriculture, Nutrition & Health Academy (@ANH\_Academy), “#ClimateChange & #agriculture is more than an unhappy marriage”, *Twitter*, 28 June 2023, [https://twitter.com/ANH\\_Academy/status/1674073111858216966](https://twitter.com/ANH_Academy/status/1674073111858216966).

<sup>3</sup> Faisal Mueen Qamer et al., “A Framework for Multi-Sensor Satellite Data to Evaluate Crop Production Losses: The Case Study of 2022 Pakistan Floods”, in *Nature Scientific Reports*, Vol. 13 (2023), Article 4240, <https://doi.org/10.1038/s41598-023-30347-y>.

<sup>4</sup> Coldiretti, *Maltempo: sott’acqua 5mila aziende agricole*, 18 May 2023, <https://www.coldiretti.it/?p=148030>.

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last year, when the country, especially its fertile Po Valley, was in the grip of its worst drought in 70 years. Recent wildfires in Canada and ongoing droughts in the US, France and Spain have also devastated farmers.

At the very extreme end is the Horn of Africa, a region encompassing Ethiopia, Somalia, and Kenya, which has been suffering five failed rainy seasons in a row. This has left 31.9 million people in urgent need of assistance.<sup>5</sup> The drought, which, according to World Weather Attribution, an international research collaboration, was “about 100 times more likely” due to human-induced climate change,<sup>6</sup> has also affected neighbouring countries like South Sudan. The world’s youngest nation is currently battling both an ongoing drought and a devastating flood.<sup>7</sup> Such calamities have heightened existing tensions between pastoralists and farmers, and left 63 per cent of the population on the verge of hunger.<sup>8</sup>

On the other side of the coin are the effects of food production and distribution on climate change. First of all, modern food production is energy-intensive. This includes direct energy

use from machinery such as tractors and irrigation pumps to heating livestock stables and greenhouses, indirect use from fertiliser and pesticide production, and post-farm activities such as processing, transportation and storage. At the moment, much of this energy comes from fossil resources, thus causing emissions of greenhouse gases (GHGs).<sup>9</sup>

Farming practices release GHGs as well. Much has been made of cow burps, which release methane, a gas that is multiple times more potent than carbon dioxide, but flooded rice fields are also a key source of the same gas.<sup>10</sup> The growing use of nitrogen-based fertilisers is also increasing the emissions of nitrous oxide, a GHG known as laughing gas and the main man-made substance damaging the planet’s protective ozone layer.<sup>11</sup>

In other words, almost every step of the food value chain is associated with GHG emissions. In fact, the way food is currently produced, processed, transported, consumed and discarded amounts to a third of global man-made

<sup>5</sup> UN OCHA, *Horn of Africa Drought. Regional Humanitarian Overview & Call to Action*, 26 May 2023, <https://reliefweb.int/node/3965824>.

<sup>6</sup> World Weather Attribution, *Human-induced Climate Change Increased Drought Severity in Horn of Africa*, 27 April 2023, <https://www.worldweatherattribution.org/?p=1833>.

<sup>7</sup> Thin Lei Win, “Drowning on Scorched Earth - South Sudan”, in *Thin Ink*, 23 June 2023, <https://news.thin-ink.net/p/drowning-on-scorched-earth-south>.

<sup>8</sup> Food Security Information Network (FSIN) and Global Network Against Food Crises, *Global Report on Food Crises 2023*, 2023, p. 134, <https://www.fsinplatform.org/node/716>.

<sup>9</sup> UN Environment Programme (UNEP), *How Do Greenhouse Gases Actually Warm the Planet?*, 5 January 2022, <https://www.unep.org/node/30852>.

<sup>10</sup> Intergovernmental Panel on Climate Change (IPCC), “Methane Emissions from Rice Cultivation: Flooded Rice Fields”, in *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories. Vol. 3: Reference Manual*, 1996, p. 53-71, <https://www.ipcc-nggip.iges.or.jp/public/gl/guidelin/ch4ref5.pdf>.

<sup>11</sup> Thin Lei Win, “Nitrogen Emissions from Rising Fertiliser Use Threaten Climate Goals”, in *Reuters*, 7 October 2020, <https://www.reuters.com/article/us-global-climatechange-agriculture-idUSKBN26S2HV>.



emissions.<sup>12</sup> Thus, for making progress on climate goals, food systems must be included into the equation. As a study led by University of Oxford scientists has warned, the links are clear: even if fossil fuel emissions were eliminated immediately, emissions from food systems would make it impossible to limit global warming to manageable levels.<sup>13</sup>

### *Learning the wrong lessons*

Yet it has taken decades for food and agriculture issues to become part of the United Nations' climate negotiations. The discussions were stymied by a lack of understanding, pressure from vested interests and fears that efforts to feed people could be compromised by climate action.<sup>14</sup> It was only during the COP23 in Bonn in 2017 that nations finally agreed to move forward on issues related to agriculture and climate change.<sup>15</sup> Four years later, as recognition grew that food systems play a fundamental role in achieving

sustainable development goals, the UN hosted its first-ever Food Systems Summit to discuss how to transform global food systems.

Food systems, an all-encompassing term that takes a holistic view of activities, outcomes, and actors involved in the food value chain, are both a driver and a victim of climate change. They are also intricately linked to key global challenges such as poverty, conflict and biodiversity loss. One cannot be tackled without the other.

The summit, held in September 2021, could not have come at a more critical time. Food production nearly quadrupled between 1961 and 2020<sup>16</sup> but global hunger levels were on the rise again after years of decline.<sup>17</sup> Worse, food prices were already so high that two out of five people globally could not afford a healthy diet, according to the UN.<sup>18</sup> Paradoxically, the number of overweight children and obese adults was also rising.

The causes for these trends are multifold and date back decades. These include a narrow focus on crop productivity at the expense of human and environmental health, a preoccupation with efficiency that led

<sup>12</sup> Giulia Conchedda and Francesco N. Tubiello, "Greenhouse Gas Emissions from Agrifood Systems: Global, Regional and Country Trends, 2000-2020", in *FAOSTAT Analytical Briefs*, No. 50 (2022), <https://www.fao.org/3/cc2672en/cc2672en.pdf>.

<sup>13</sup> Michael A. Clark et al., "Global Food System Emissions Could Preclude Achieving the 1.5° and 2°C Climate Change Targets", in *Science*, Vol. 370, No. 6517 (6 November 2020), <https://doi.org/10.1126/science.aba7357>.

<sup>14</sup> Megan Rowling, "Can the Paris Agreement Protect Poor Farmers from Climate Change?", in *Reuters*, 14 December 2015, <https://www.reuters.com/article/climatechange-summit-agriculture-idINL8N14329H20151214>.

<sup>15</sup> CIRAD, *Koronivia... and Now What? What Does the Future Hold for Agriculture in Climate Talks?*, 5 October 2022, <https://www.cirad.fr/en/cirad-news/news/2022/agriculture-and-climate-koronivia-and-now-what>.

<sup>16</sup> Juergen Voegelé, "Transforming Our Food Systems for Healthy People, Environment, and Economies", in *Voices Blog*, 17 January 2023, <https://blogs.worldbank.org/node/76636>.

<sup>17</sup> FAO et al., "Food Security and Nutrition Around the World", in *The State of Food Security and Nutrition in the World 2022*, July 2022, <https://doi.org/10.4060/cc0639en>.

<sup>18</sup> FAO et al., *The State of Food Security and Nutrition in the World 2023*, July 2023, <https://doi.org/10.4060/cc3017en>.



to a reliance on a handful of crops for most of the caloric intake,<sup>19</sup> trillions in “wasteful subsidies” going to the wrong places,<sup>20</sup> and a misconception that hunger and malnutrition are the sole worries of the poor.

The summit, held virtually, was controversial<sup>21</sup> and many grassroots groups boycotted it over the perceived favouring of corporate interests.<sup>22</sup> Nevertheless, it sparked wider discussions on food systems and how to make them greener, fairer and healthier.

In late July, the Rome-based UN Food Systems Coordination Hub will hold the first global follow-up to the summit to review commitments and assess progress on food systems transformation. But the world, of course, has changed again.

Russia’s invasion of Ukraine 18 months ago has unleashed a food price crisis, the third in 15 years. War between two major agricultural exporters caused the prices of food, fuel and fertilisers that were already on the way up to skyrocket. It also further crippled

supply chain problems triggered by the Covid-19 pandemic.

Almost overnight, food security became a hot topic. The interest was much-needed and overdue, but sensational and misleading headlines about food shortages,<sup>23</sup> conflating food availability with affordability, are causing unfortunate and lasting effects.

Countries have reverted to a productivist mindset, despite the latest UN forecasts of a record-high cereal production and a comfortable level of stocks.<sup>24</sup> In Europe, opponents of efforts to make agriculture greener cited looming hunger as a reason to push back on reforms, causing frustrated experts such as Olivier De Schutter, UN special rapporteur on extreme poverty and human rights, and co-chair of the International Panel of Experts on Sustainable Food Systems (IPES-Food) to point out that “[t]he biggest risk to food production of all is climate change and the current industrial model that is decimating nature and making it harder to sustain necessary levels of production in the long term”.<sup>25</sup>

<sup>19</sup> Grace Brewer, “Back to the Future: The Green Revolution”, in *Kew Gardens Read & Watch*, 18 August 2022, <https://www.kew.org/node/17816>.

<sup>20</sup> World Bank, *Trillions Wasted on Subsidies Could Help Address Climate Change*, 15 June 2023, <https://www.worldbank.org/en/news/press-release/2023/06/15/trillions-wasted-on-subsidies-could-help-address-climate-change>.

<sup>21</sup> Thin Lei Win, “Rival Visions Compete as UN Gears up for Summit to Defeat Hunger”, in *The New Humanitarian*, 26 July 2021, <https://www.thenewhumanitarian.org/node/262100>.

<sup>22</sup> Thin Lei Win, “Billions Pledged and Awareness Raised, but UN Food Summit Fails to Heal Divisions”, in *The New Humanitarian*, 28 September 2021, <https://www.thenewhumanitarian.org/node/262159>.

<sup>23</sup> Thin Lei Win, “Scary Headlines about Food Shortages Are Misleading. Here’s Why”, in *Fortune*, 17 June 2022, <https://fortune.com/2022/06/17/scary-headlines-food-shortage-prices-misleading-ukraine-wheat-commodities-supply-chain-thin-lei-win>.

<sup>24</sup> FAO, *Crop Prospects and Food Situation*, No. 2 (July 2023), p. 8, <https://doi.org/10.4060/cc6806en>.

<sup>25</sup> Olivier De Schutter and Emile Frison, “The EPP Group Is Wrong. The EU’s Nature Restoration Law Won’t Lead to a ‘Global Famine’”, in *Euronews*, 9 June 2023, <https://www.euronews.com/2023/06/09/the-epp-group-is-wrong-the-eus-nature-restoration-law-wont-lead-to-a-global-famine>.



### *Tackling the climate-food nexus with a systems approach*

This is why structural transformation of food systems is critical, particularly for the vast majority of the world's poor, who spend more than 50 per cent of their incomes on food,<sup>26</sup> and for farmers whose livelihoods are threatened.

The interaction between conflict, climate, biodiversity, international trade, migration and food systems is vividly illustrated in the "Emerging Hunger Hotspots" series of articles by the award-winning news outlet *The New Humanitarian*.<sup>27</sup>

The countries so far covered – Sri Lanka, Peru, Egypt, Georgia, Argentina and Ghana – are scattered all across the world, but their commonalities are striking. In all these contexts, soaring inflation and stagnant incomes have put healthy food out of reach for the consumers, reliance on global markets has made them hostages to spiking import bills, and wild weather patterns are either already reducing crop yields or threatening to do so.

They also show why adopting siloed approaches is inadequate if not nefarious.

The exact medicine for these challenges will differ according to each country's

<sup>26</sup> UN Global Crisis Response Group on Food, Energy and Finance (GCRG), "Global Impact of the War in Ukraine: Billions of People Face the Greatest Cost-of-living Crisis in a Generation", in *GCRG Briefs*, No. 2 (8 June 2022), p. 8, <https://bit.ly/GCRG-Brief-02>.

<sup>27</sup> See Emerging Hunger Hotspots: <https://www.thenewhumanitarian.org/tags/emerging-hunger-hotspots>.

contextual specificities, but the remedies, again, are strikingly common, whether they are for middle-income countries like those listed above; for conflict-affected nations like Myanmar where a May cyclone devastated a population already suffering from multiple crises; or for wealthy states confronting empty supermarket shelves for the first time in years.

The key tasks therefore include keeping supply chains short whenever possible, encouraging trade flows when that is not possible (since few countries in the world can be purely self-sufficient), moving away from diets that are heavy in starch, carbs and ultra-processed foods to more diversified ones, repurposing subsidies to boost production of healthy and sustainably-farmed foods, helping farmers and fishers mitigate from and adapt to climate change, and supporting vulnerable households with safety nets.

All these require looking at food through a systemic lens and placing it in the wider context that takes into account its footprint on society and the environment.

At the same time, if the world does not change course soon enough, the effects of climate change on both the quantity and quality of food are poised to intensify in the future.<sup>28</sup> And that future is becoming worryingly near.

<sup>28</sup> Robert H. Beach et al., "Combining the Effects of Increased Atmospheric Carbon Dioxide on Protein, Iron, and Zinc Availability and Projected Climate Change on Global Diets: A Modelling Study", in *The Lancet Planetary Health*, Vol. 3, No. 7 (July 2019), p. e307-e317, [https://doi.org/10.1016/s2542-5196\(19\)30094-4](https://doi.org/10.1016/s2542-5196(19)30094-4).



In early July, the world record for the hottest day ever was broken three times in a single week.<sup>29</sup> World Weather Attribution has said extreme heat this April was “largely driven by climate change” in South Asia<sup>30</sup> and “almost impossible without climate change” in Spain, Portugal, Morocco and Algeria.<sup>31</sup>

A new study led by Columbia University’s Lamont-Doherty Earth Observatory<sup>32</sup> has added to the chorus of concerns. The world is underestimating the risk of harvest failures in multiple global breadbaskets, which in turn could lead to price spikes, hunger and even civil unrest, they said.

This is precisely why government representatives, UN officials, international organisations, and civil society actors gathering in Rome for the Food Systems Summit follow-up must acknowledge the need to integrate rebooting food systems with accelerating climate action.

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<sup>29</sup> Georgina Rannard, “World Records Hottest Day for Third Time in a Week”, in *BBC News*, 7 July 2023, <https://www.bbc.com/news/science-environment-66120297>.

<sup>30</sup> World Weather Attribution, *Extreme Humid Heat in South Asia in April 2023, Largely Driven by Climate Change, Detrimental to Vulnerable and Disadvantaged Communities*, 17 May 2023, <https://www.worldweatherattribution.org/?p=1870>.

<sup>31</sup> World Weather Attribution, *Extreme April Heat In Spain, Portugal, Morocco & Algeria Almost Impossible Without Climate Change*, 5 May 2023, <https://www.worldweatherattribution.org/?p=1849>.

<sup>32</sup> Kai Kornhuber et al., “Risks of Synchronized Low Yields Are Underestimated in Climate and Crop Model Projections”, in *Nature Communications*, Vol. 14 (2023), Article 3528, <https://doi.org/10.1038/s41467-023-38906-7>.

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