

A Long Food Movement: *Transforming Food Systems by 2045*



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Executive Summary

In 2021, those working to build food systems that are just, equitable, and operate within planetary boundaries have our work cut out for us. Climate change, biodiversity loss, and rapidly declining soil fertility are critically damaging the health of people and the planet, dislocating societies, and threatening food systems around the world. Five years into a global commitment to eliminate hunger by 2030, we have lost significant ground. In 2019, an estimated 690 million people were hungry and upwards of 2 billion lacked regular access to safe, nutritious, and sufficient food. This was before COVID-19 added approximately 130 million people to the world's hungry, pushed uncounted millions more to the brink of hunger, and put one third of food and farming livelihoods at risk.

At the same time, the locus of power in food systems and the broader global economy is shifting at dizzying speed. In 2008, the world's most powerful corporations drilled oil wells and traded stocks. Twelve years later, the world's five corporate titans all deal in intangible data and have a market valuation that exceeds the GDP of entire continents. The new biodigital giants are now primed for the next step: unleashing big data and digital DNA into the world's pharmacies, food markets, and financial systems. 'Multi-stakeholderism' is everywhere as corporations – sensing the social and environmental tipping points ahead – seek to draw governments, scientists and a handful of civil society organizations into an artificial new multilateralism.

Against this backdrop, we consider what food systems could look like by 2045 if (agri)business-as-usual is allowed to run its course. We also imagine what could happen if, instead, the initiative is reclaimed by civil society and social movements – from grassroots organizations to international NGOs, from farmers' and fishers' groups, to cooperatives and unions. We consider what this 'Long Food Movement' could achieve if it succeeds in thinking decades ahead, collaborating across sectors, scales, and strategic differences, working with governments and pressuring them to act, and transforming financial flows, governance structures, and food systems from the ground up.

Looking ahead to 2045: Agribusiness-as-Usual (Scenario 1)

Firstly, we imagine a 'business-as-usual' food system and how it might evolve over the next quarter century, as corporations and governments respond to environmental breakdown, social dislocation, geopolitical reconfigurations, and a vast pipeline of technological possibilities. Power relations remain largely unchanged in this scenario, and civil society – also stuck in 'business-as-usual' mode – is able to challenge the agenda and prevent the worst excesses, but not fundamentally change the course.

Over the 2020s, advances in digitalization, automation, synthetic biology, and molecular technologies promise to take the risks – and the people – out of food systems. New players argue that producing protein in petri-dishes, letting artificial intelligence manage the farm or invisibly nudge consumer behaviour, inventing novel ultra-processed foods, or backing geoengineering, are the route to resilience (as well as being highly profitable). With climate change, environmental breakdown, and pandemics wreaking havoc on food systems over the coming years, these 'silver bullet' solutions prove irresistible to panicking policymakers. The keys of the food system are handed over to the biodigital mega-corporations, data platforms, and private equity firms who – thanks to proliferating merger deals – become tomorrow's agri-food giants.

Algorithms are used to pinpoint the growing conditions of every fertile square metre on earth; crops and livestock are tailor-made (and modified) for those conditions; and ecosystems are engineered through data for optimal performance. Robotic tractors and drones for spraying and surveillance – an 'internet of farming things' – are rolled out as fast as physical and digital infrastructures allow (Trend #1).

Putting food security at the mercy of digital networks and potential data glitches worries governments and food movements alike. So does the plight of farmers (who are forced off the land into 'smart cities' and e-commerce villages, or reduced to digital outgrowers). But the 'climate-smart' and 'risk-free' future on offer convinces many low and middle-income countries to put land, resources, and data in the hands of those supplying the technologies and offering to pre-purchase their harvests. As a result, powerful governments and their flag-bearer corporations are able to use internets of logistics to control resources and food supplies across vast economic corridors. Unlike previous Free Trade Agreements (FTAs) which opened up new markets, the FTAs of the 2020s and 2030s serve primarily to secure access to resources, protect rights to corporate data exploitation, and put unfavourable regulations into the deep freeze.

With food seen as a strategic asset, a new wave of land, ocean, and resource grabs gets underway, and trade chokepoints are increasingly militarized (Trend #2).

Downstream, at the consumer end, data harvested from online activities is being combined with metadata generated from the use of digital wallets, automated food services, and other everyday activities. Connecting these data sources opens up new opportunities to track, micro-target, and invisibly nudge people's eating habits, and to reshape food cultures. The food industry shifts ever-more resources into new veneers of sustainable and ethical consumerism, leaving citizens to make sense of increasingly opaque supply chains and a dizzying array of claims (Trend #3).

Looking ahead to 2045: Civil society as Unusual (Scenario 2)

Environmental breakdown, food security threats, and the push for new data-driven technologies are part of any realistic scenario for the next 25 years. But there is nothing inevitable about the agribusiness-led trajectories described above. In reality, divisions will grow among corporations and between companies, workers and consumers, as ecosystems refuse to be tamed, people refuse to be nudged, technologies malfunction, and environmental and social tipping points loom. Much will depend on the extent to which the most powerful corporations – under the guise of ‘multistakeholderism’ – succeed in taking control of food system governance.

In this second scenario, civil society seizes the initiative, developing deeper, wider, and more effective collaborations than ever before. A Long Food Movement is in fact long in the making. From ongoing Indigenous struggles against colonization to the anti-globalization protests that gave rise to the concept of food sovereignty, it is clear that civil society – in its diversity of forms and scales of action – can be a powerful change-maker. Looking back at those experiences, it is possible to identify four basic ingredients that food movements will need in order to drive forward transformation over the next quarter century: 1) collaborating across multiple scales; 2) broadening alliances and restructuring relationships; 3) connecting long-range commitment to wide range ‘horizon scanning’; and 4) being ready for change and disruption.

These ingredients are abundant in today's food movements, although they will need to be deployed more systematically than ever before. In particular, civil society will need to enhance its readiness for the many crises of the coming quarter century: the ‘Grey Swan’ events that food movements cannot predict in date or detail, but can prepare for. This scenario is imagined in four interrelated pathways of food systems reform and transformation:

PATHWAY I. *Rooting food systems in diversity, agroecology, and human rights*

Over the 2020s, food systems based on diversity show their resilience in the face of shocks. Territorial markets continue to spread, and diets edge towards ethical and healthy choices. With a clear consensus in place around food sovereignty and agroecology, the Long Food Movement succeeds in defending the rights of the marginalised and amplifying their voices through inclusive processes, promoting diversified, agroecological systems, and accelerating alternative markets and dietary shifts.

Opportunity #1.

Building resilience through diversity and agroecology. Over the 2020s, a growing premium is placed on healthy soils, diverse crop varieties and livestock breeds, and vibrant aquatic- and agro-ecosystems. The impacts of different production systems become easier to measure, and by 2030, agroecological systems are in place and outperforming industrial agriculture at multiple scales. Indigenous peoples and peasants continue to safeguard landscapes and nurture neglected and underutilized species and crop wild relatives via expanding community gene banks and living collections, fisher and farmer-to-farmer exchanges across neighbouring ecosystems, and agroecological field schools. Traditional foods – including minor crops with high climate/disease tolerance and nutritional value – are revived thanks to the combined efforts of social movements, chefs, public procurement officers, and policymakers. But peasant strategies for protecting diversity remain under attack, threatening their ability to ensure food security to 2045. Footholds of political support for agroecology are also consolidated. Building on the FAO Plant Treaty, civil society secures a negotiated protocol on genetic diversity, while establishing protections for peasant research and exchange of seeds and breeds, including across borders.

Opportunity #2.

Defending human rights, nature rights, and renegotiating the contract between state and society. The non-stop crises and growing precarity of the next quarter century make human rights more important than ever as the compass guiding food movements. New modes of social protection proliferate over the 2020s, with civil society fighting for entitlements to be both comprehensive and delinked from big data surveillance. With newfound appreciation for ‘essential workers’ in food systems, labour rights are secured via a cascade of national laws and strengthened international regulations. But this is not enough: by the 2030s, food movements are calling on the state to defend universal basic access to rights and resources (land, seeds, water, culture) and people-led production, in the face of expanding agro-industrial complexes and mass automation.

With rights at centre stage, governments are forced to link the next set of development goals – ‘Agenda 2045’ – to a new financial settlement between the global North and South. In parallel, food movements explore a range of legal pathways: they ramp up support to civil rights defenders and launch powerful cross-scale campaigns to establish rights for rivers, watersheds, ecosystems, and the planet – while ensuring that these rights are not used to drive communities off their land. By the 2040s, famine, hunger, malnutrition, poor health, and environmental degradation are criminal violations that can be brought before the Human Rights Council (or a restructured International Criminal Court).

Opportunity #3.

Accelerating shifts towards territorial supply chains and ethical consumerism. Territorial markets – already the norm for many small-scale producers and consumers in the global South – continue to grow in the wake of COVID-19. Over the 2020s and 2030s – with a new premium on resilience and increasing support from municipalities and regions – short supply chain initiatives blossom, community and household food production grows, and producer and consumer cooperatives boom. These trends converge with an explosion of ethical, organic, and ‘local’ purchasing and a sustained shift to vegetarian and flexitarian diets – adopted by as many as 80% of people in previously high-meat consuming (wealthier) population groups. By 2045, some 25% of the world’s small livestock and fruit and vegetable consumption is supplied by urban farms and households, another 25% is supplied from within regional foodsheds, and up to half of the food industry’s offering is fairly traded, as judged by peasant producers. Farmers and social movements find common cause in their opposition to novel meat and dairy mimics and succeed in preventing mass rollout of these products onto global markets. By 2045, armed with sophisticated public data tools, as well as fact-checking, true cost accounting, and transparency apps, consumers are able to rapidly distinguish business-as-usual corporations (‘A-corps’) from firms with a sustained commitment to corporate responsibility (‘B-corps’) and sustainable, cooperative enterprises (‘C-corps’).

PATHWAY 2. Transforming governance structures

Over the years, the Long Food Movement fights back against corporate takeover of the multilateral system and forces a fundamental governance reconfiguration of its own. And in the face of semi-permanent crises, civil society successfully makes the case for emergency food security provisions that supersede trade rules and land-grab contracts, and a crackdown on agribusiness concentration and techno-fixes. These steps are underpinned by the ongoing spread of food policy councils, deliberative dialogues, and other mechanisms to strengthen the participation of social movements, Indigenous peoples, and NGOs in food system governance.

Opportunity #4.

Reviewing, reforming and reconfiguring the UN's agri-food agencies. For all of the shortcomings of the multilateral institutions, food movements are unified in their resolve to avoid corporate capture of the UN and its Rome-based agencies (RBAs) – starting with mobilizations around the contentious 2021 UN Food Systems Summit. Taking advantage of the inevitable post-Summit vacuum, civil society pushes simultaneously to re-unify the fragmented work of the RBAs, while simultaneously strengthening regional processes. By the 2030s, civil society has built the case for reform via independent reviews of the RBAs that reveal inefficiencies and distortions. It has also built support among sympathetic governments and UN secretariats, and used its growing forward planning capacities to influence the election of agency heads. The resulting reforms re-unify the three existing RBAs, under a rejuvenated and highly-inclusive Committee on World Food Security (CFS) as the de facto governing body, and realign the CGIAR with the other agencies (making it effectively the fourth RBA). More importantly, policy formulation is decentralized and democratized through new CFS regional fora that facilitate 'grassroutes to Rome' dialogue; cross-agency, non-hierarchical working groups are revived; and deliberative dialogues are mainstreamed. These reforms help to bring global-level deliberations (e.g., on agroecology, territorial markets, and land) into the national sphere, to build global and national dialogues around local realities and lessons learned, and to bridge the gap between CSOs working locally and globally.

Opportunity #5.

Cracking down on corporate impunity and techno-fixes. Over the coming years and decades, food movements push for national laws and a UN treaty to monitor, regulate, or recall technologies that are dangerous or failing – not least the big data systems at the heart of agribusiness strategies. Corporate impunity comes under assault on additional fronts: pressure is ratcheted up for a treaty countering corporate power; initiatives around antitrust and competition policy gather steam; investor protections are eliminated from trade agreements; and multi-country class-action lawsuits are pursued against agribusinesses.

To accelerate progress, food movements partner with select governments and friendly UN secretariats. International discussions soon create space for antitrust and taxation agreements that spill over from the digital giants to all sectors. By the 2030s, negotiations have resulted in a series of treaties/protocols to constrain corporate impunity. While these agreements are only ratified by a few dozen countries, and while lawsuits may be settled out of court, their combined effect (and market clout) is enough to shift the practices of global corporations.

Opportunity #6.

Adopting an international agreement on food emergencies. As food emergencies become more common over the 2020s, governments take disaster prevention seriously, and civil society task forces dust off existing frameworks and develop new blueprints that place food security above trade agreements, egregious land contracts, and other commercial or policy considerations. By the 2030s, the model laws are being applied by many governments, and when a protracted food crisis hits, there is strong momentum to accelerate international negotiations. Memories of the struggle for access to COVID-19 vaccines, and the barriers created by intellectual property rules, help the process to gain support. With the WTO divided, and major trading countries refocused on strategic self-sufficiency, the treaty passes, and several countries and regions opt to attach protocols that supersede any remaining constraints. Agribusiness tries to reverse the agreements, but over the 2030s, CSOs convince governments that the crisis is indefinite and emergency arrangements must stay in place.

Opportunity #7.

Building food policies, food policy councils, and new forms of citizen participation. As food movements invest energy at the international level, they also strengthen and spread the democratic food policies, deliberative dialogues, and multi-sectoral governance models that started in cities and municipalities and, by the early 2020s, were gaining traction at national level. Food movements chalk up a steady stream of victories over the decade, drawing on the experience of municipal authorities and civil society groups, well-established networks of pioneering actors, and the growing visibility of cities and regions in international climate talks. By the 2030s, the new CFS deliberative processes (see Opportunity #4) are linked into other global governance spaces, allowing local experiences to inform international guidelines for developing inclusive food governance processes and bodies.

PATHWAY 3. *Shifting financial flows*

The combination of climate emergencies, food-related epidemics, and technological risks and failures spark unprecedented calls for existing financial flows to be redirected. The Long Food Movement focuses on three areas: i) soft targets (or ‘low-hanging-fruit’) like administrative and research budget lines; ii) the hard target of major commodity subsidies; and iii) the untaxed ‘externalities’ and revenues of corporations.

Opportunity #8.

Redirecting R&D and technical budget lines to sustainable food systems. Over the coming years, civil society targets funding pots that can be potentially reallocated without major political debate. They start with FAO and IFAD, where an estimated one third of expenditures can be shifted within departments or budget lines by willing agency heads and sympathetic civil servants. Emboldened by its Nobel win, the WFP also agrees to ramp up its local sustainable sourcing (targeting 90% by no later than 2030) with relatively little pushback. In parallel, civil society targets the dubious aid flows that subsidize trade missions, facilitate extractive foreign investment, or advance donors’ geopolitical goals (i.e. residual forms of ‘tied aid’). Even bigger sums are clawed back as food movements step up the pressure on bilateral donors to reorient research projects in the global South towards agroecology, to realign the mission of global research centres (the ‘CGIAR’), and to reform their own agricultural research programmes.

Opportunity #9.

Reforming major commodity subsidies. Civil society sets its sights on shifting as much as possible of the annual USD 720 billion of producer subsidies from agribusiness commodity supports to sustainable food production. Like the cross-sectoral collaborations that challenged the WTO some years ago, the next quarter century sees food, trade, and climate movements come together with farmers’, fishers’ and food workers’ groups. They demand subsidy reform, fair pricing, and living wages. With environmental tipping points in sight, obesity surging, and labour abuses on plantations, fishing vessels, and factory farms more visible, these efforts bear fruit by the end of the 2020s. Trawler fuel subsidies are first in line, and payouts to cocoa, sugar, palm oil, and industrial animal feedlots are subsequently slashed. Opportunities for reform also emerge at the global level, as food price spikes and trade volatility become a regular fixture. Pulling on the same strings they used in 2009 to revive the CFS, CSOs are ready to seize the next global food price crisis to recapitalize the UN Common Fund for Commodities and refocus it on supporting diversification. By the 2030s, a handful of bilateral donors and global funds lead on diverting investments away from ‘new green revolution’ approaches and toward agroecology.

Opportunity #10.

Levying junk food and taxing corporations fairly. The case for taxing the agri-food industry, its unhealthiest offerings, and its most polluting impacts grows stronger over the next quarter century. Buoyed by successful crackdowns on junk food in Mexico and Chile, food movements deploy battle-ready campaign strategies through the 2020s and chalk up victories in all world regions. In doing so, they unearth new tax revenues, put a dent in agribusiness' profits (and thus its ability to set the agenda), and deliver massive healthcare savings. By the 2030s, new connections have been made with environmental taxation movements, while consumers are able to see the 'true costs' of industrial agriculture on their apps. The taxes that follow – on CO2, toxins, plastic packaging, and food waste – are sometimes negligible. But just like with subsidies, the first movers enforce similar changes on their trading partners, sparking a cascade of reforms and a new global norm. Emboldened by these successes, the Long Food Movement and its allies in other sectors turn their attention to corporate tax avoidance and evasion, facing up to novel forms of malpractice from the biodigital giants now dominating the agri-food sector, and find many governments reaching a tipping point on this issue and ready to take action.

PATHWAY 4. *Rethinking the modalities of civil society collaboration*

In order to advance Pathways 1-3, civil society has to operate more collaboratively than ever before. This means navigating long-standing rivalries, diverging priorities, and competition for funding. Yet many successful collaborative processes are already showing the way, and new opportunities are exposed by the compounding social and environmental crises.

Opportunity #11.

Making cross-sectoral collaboration the norm. Food movements work hard to overcome the various barriers to collaboration and to make cross-sectoral strategizing the norm. With the future of global governance at stake (and risks of a corporate takeover), the 2021 Food Systems Summit accelerates civil society convergences. As food systems digitize, food activists learn quickly from the struggles of digital justice activists and vice versa, as well as redoubling collaboration with climate and environmental justice movements. By the 2030s, a sense of shared purpose has encouraged CSOs, foundations, and networks to sync their calendars (from annual board meetings to conference timetables) in order to facilitate cross-sectoral dialogues, strategic planning, and co-fundraising opportunities. Tensions persist between emergency survival measures (in the face of multiplying crises) and longer-term strategizing. By 2045 significant strides have been made, but the quest for closer collaboration remains a work in progress, and the subject of constant negotiation.

Opportunity #12.

Developing new tools to block corporate commodity chains and hack closed-door negotiations. From the early 2020s onwards, food movements expand and share their corporate monitoring activities, working firstly with close allies and then reaching out to progressive CSOs in virtually every sector. Where livestock expansion leads to deforestation and land appropriation, Indigenous communities, for example, connect with food and agricultural workers who have flagged concerns about the same companies, and work with local consumer and health organizations to 'block chains' and safeguard livelihoods. By the 2030s, food movements are also bringing digital tools to bear in the quest for enhanced collaboration. An 'Agripedia' platform helps to facilitate information flows on commodities, companies or commitments; document algorithms and media apps allow civil society organizers to decode negotiating texts and identify who is leading and dominating negotiations; and tools are developed to connect concerned communities and organizations to conference rooms and negotiating texts – from town halls to UN assemblies.

Opportunity #13.

Building new partnerships to finance a quarter century of food system transformation. With agribusinesses rapidly rolling out AI and data-powered food systems, and with planetary boundaries being crossed, it becomes clear that the gains food movements are making may be too little too late. Resisting the entrapment of philanthro-capitalists on one side and klepto-philanthropists on the other, food movements challenge bilateral donors and progressive foundations to consider new forms of collaboration and accountability. As a consequence, by the 2030s, allied funders move from short-term project grants to five-year funding cycles, double their funding at least every 10 years, and open up to experimental, speculative, intersectional, and readiness-building initiatives. Most importantly, they are prepared to use their money and influence to catalyze bigger financial shifts and policy changes.

Conclusions

It is clear that an agribusiness-led future will be incapable of bringing the planet and its food systems back within a safe operating space, and will in fact continue to generate rampant inequalities, deepen livelihood stresses and food insecurity, and create harmful environmental impacts of its own. In contrast, four pathways of civil society-led food system transformation could shift USD 4 trillion from the industrial chain to food sovereignty and agroecology, cut 75% of food systems' GHG emissions, and deliver incalculable benefits to the lives and livelihoods of billions of people over the next 25 years.

Nonetheless, a 'Long Food Movement' comes with a number of risks, challenges, and unknowns for civil society groups. Firstly, it entails uncertain opportunities and unquantifiable transaction costs (i.e. the loss of time and resources for everyday campaigns). Secondly, the combination of relentless lobbying and opaque governmental and intergovernmental processes means that victories may always be temporary. Thirdly, every strategy, including those described here, risks co-option. Finally, while improving greatly on the outcomes of agribusiness-as-usual, even these strategies may not be enough to bring humanity back to a safe operating space. In this context, it is understandable that CSOs may shift resources towards frontline struggles for survival and crisis response.

But the case for a Long Food Movement remains compelling. It does not require short-term strategies to defend against land grabs to be traded off against campaigns for a new international treaty. Instead, a Long Food Movement challenges civil society groups to place multiple objectives and actions on a 25-year roadmap, and to keep this bigger picture in mind as they navigate wide-ranging campaigns, potentially rapid environmental and social breakdown, and the tidal wave of the corporate agenda. At this moment of unparalleled threats and tipping points, to not take risks is to ensure failure.

Civil society can and must transform itself. History shows that when confronted by necessity or opportunity, people can adapt almost overnight. Wars, embargoes, coups, and natural calamities can transform production and consumption patterns, and give rise to new networks of communication and cooperation. And the vast changes experienced as society has adapted to COVID-19, changes that would have seemed wildly optimistic only a year ago, show that, tomorrow, anything is possible.

Preface

In 2021 food systems are at a tipping point and civil society has the fulcrum

This report sees food movements at a potentially critical juncture. History sporadically churns up transformative moments. Pandemics combined with climate shifts in the Ottoman empire, the Han and Tang dynasties, and in Europe's Middle Ages suddenly fomented massive social upheavals. In the early decades of the 20th century, one privileged corner of the planet spawned a world war, a pandemic, and a global depression. The impacts were so egregious that corporate monopolies were dismantled, social welfare systems were legislated, the gap between the richest and the poorest – at least along the shores of the North Atlantic – narrowed significantly for a few decades, and dozens of countries won independence (at least on paper) from their colonial oppressors.

We may be at such a tipping point again today: one that started with the financial and food price crisis of 2008 and accelerated through the COVID-19 pandemic, against a backdrop of non-stop environmental emergencies and historic levels of inequality. The mutual dependence of the planet's health and our own is becoming startlingly clear. Climate chaos, collapsing biodiversity, and ruinous strategies of economic enrichment have created a pandemic that is straining our health and food systems, increasing the ranks of the hungry, and destroying lives and livelihoods. Plastics and pollution are in the ocean, in the fish, and astonishingly, in our cells. In 2020, the meteorologists naming Atlantic hurricanes ran out of alphabet. So may have we. Generation Z has half the sperm count of Generation Y, and a 2020 study warned that if the trajectory is sustained, our sperm count will be at zero by – of all years – 2045. We suspect that half our planetary boundaries are already exceeded. We are more than halfway to +2°C. We have lost or are losing half our languages and cultures, as well as close to half our soils and forests, and the billionaires are halfway to doubling their pre-pandemic wealth.

But tipping points can tip in any direction, and many actors are fighting for control over the fulcrum. Corporations sense the danger and are scrambling to construct a new corporate-state duopoly under the guise of 'multi-stakeholderism' and 'stakeholder capitalism'. The 2021 Food Systems Summit, convened with the express intention of restructuring the regulatory environment for food and farming, may be a sign of the battles to come. Asserting a contested success on COVID vaccines, corporations are looking for a green light to unleash a 4th industrial revolution into our pharmacies, food markets, and financial systems.

Applied to agribusiness, this revolution is all about digital data and DNA, artificial intelligence and machine learning, sensors and hyperspectral imaging attached to robots, drones, and satellites all backed up in clouds by gamers 'gene sequencing' supply chains - Fortnite turned Food Fight.

Translated into the real world, this could mean the mass abandonment of 300 million farms, the forced migration of well over 1 billion people, the dismantling of diversified food webs that sustain 70% of the world's population, and surrendering the food security of billions of people to untested technologies managed by for-profit companies with no serious skin in the game.

But civil society is changing too, and preparing for the battles ahead. The climate movement that compromised in Paris in 2015 is not the movement that is surging from the streets and schools to surround parliaments and banks today. Food sovereignty campaigners confronting the 2021 Food Systems Summit are much stronger than the scattered allies at the first summit 25 years ago. Today's civil society and today's food movements – from local to global levels – are knowledgeable, collaborative, connected, critical-thinking, and capable of using fulcrums to tip the world to a safer place. They recognize that the role of governments is essential, and that where possible they need to work together to build sustainable food systems (and not be dragged into a tawdry new 'multistakeholderism').

Are food movements changing fast enough? We began this project in mid-2019 with the sense that civil society – although working hard and well – mostly organizes defensively and plans only for the coming two to three years. We were also concerned that readers – while agreeing that thinking ahead is prudent – would consider planning 25 years ahead to be fantastical. Consider the dozen years that have lapsed between the food and financial crisis of 2008 and the current cacophony of threats. Contrast policymakers' miserable promises in Paris to the fires, typhoons, and heat waves we saw in 2020. Remember the shocking ascendancy of xenophobic pseudo-dictatorships and the sudden fragility of presumably democratic states. In 2008, the world's most powerful corporations drilled wells and traded stocks. Twelve years later, the world's five corporate titans all deal in intangible data and – along with a couple of asset managers – have more disposable wealth than entire continents. How dare we plan ahead?

Plan ahead we must – or be crushed by seismic shifts. We understand now that the shocks of the past dozen years were in fact predictable – not so much in date and detail, but in parameters and probability. Immediate events are exposing the absolute necessity of diverse, decentralized (and therefore resilient) initiatives, and the value of cooperation between them – from local to global and back again.

If that's the case, aren't we preaching to the choir? There is no choir. We have jazz quartets and folk ensembles, we have soloists and marching bands and full-blown orchestras – and they should remain so. We are only proposing that they sometimes make music at the same festival, unite to play the same benefits, and unionize for human rights.

Over the last 20 months of conversations and research, we have learned that a range of political and legal steps could strengthen food sovereignty in this century of crisis. That there are new opportunities to protect peasant systems, artisanal fishing communities, Indigenous lands, and curtail corporate power. That the deliberative dialogues developed so effectively at local and national levels may be globalized. And that the UN architecture for food and agriculture can be restructured and revitalized. We conclude that, by 2045 or sooner, civil society is capable of reducing the industrial food chain's horrendous health and environmental damages, *and* shifting unproductive or counter-productive funding flows towards territorial markets and agroecology. The combined annual impact would be not less than USD 4.1 trillion, and an estimated 75% reduction in the GHG emissions of the industrial food chain. We have also learned that pathways can be mapped but the milestones might shift. Twenty months ago, the SDGs were central to our planning (hence building towards 2030 and 2045) but now we know that ecological emergencies, pandemics, and historic injustices can overwhelm the global agenda and sweep aside other plans.

The challenges ahead are vast, and we are more concerned now than we were when we began. The house is indeed on fire and the foundations are crumbling. This report will have failed if it doesn't make all of us uncomfortable, unsatisfied, and anxious to venture greater risks. But we are also encouraged. These 20 months have uncovered forgotten histories: unstudied failures and uncelebrated victories which, when the reckoning is done, show that civil society is capable of getting us to sustainable and equitable food systems. But only if food movements can learn those lessons, and fundamentally rethink the scope, scales, and structure of their work. In other words, only by becoming – more than ever before – a *Long Food Movement*.

A handwritten signature in black ink, appearing to read 'Pat Mooney', with a long horizontal stroke extending to the right.

Pat Mooney
Project Lead, IPES-Food (panel member),
ETC Group (co-founder)

Table of Contents

Executive Summary	4
Preface	
In 2021 food systems are at a tipping point and civil society has the fulcrum	15
SECTION 1.	
A new ab-normal: Pandemics, planetary boundaries, and food systems under unprecedented threats	21
SECTION 2.	
Civil society as food system changemakers: the four basic ingredients of a 'Long Food Movement'	32
Ingredient #1. Collaborating across multiple scales	37
Ingredient #2. Broadening alliances and restructuring relationships	40
Ingredient #3. Connecting long-range commitment to wide-range horizon scanning	43
Ingredient #4. Being ready for change and disruption	46
SECTION 3.	
Looking ahead to 2045: Agribusiness as usual? (Scenario 1)	51
Setting the scene: technological trajectories, corporate consolidation, and the arrival of new biodigital agri-food giants	53
TREND #1: Precision-engineered ecosystems and the internet of farming things	63
TREND #2: Logistics corridors, resource conflicts, and the new data geopolitics	67
TREND #3: Hyper-nudging, personalized diets, and new frontiers in shaping the eating experience	74
Conclusions: cracks and contradictions in an agribusiness-led future	81
SECTION 4.	
Looking Ahead to 2045: Civil Society As Unusual (Scenario 2)	84
Pathway 1. Rooting food systems in diversity, agroecology and human rights	87
Opportunity #1. Building resilience through diversity and agroecology	88
Opportunity #2. Defending human rights, nature rights, and renewing the contract between state and society	93

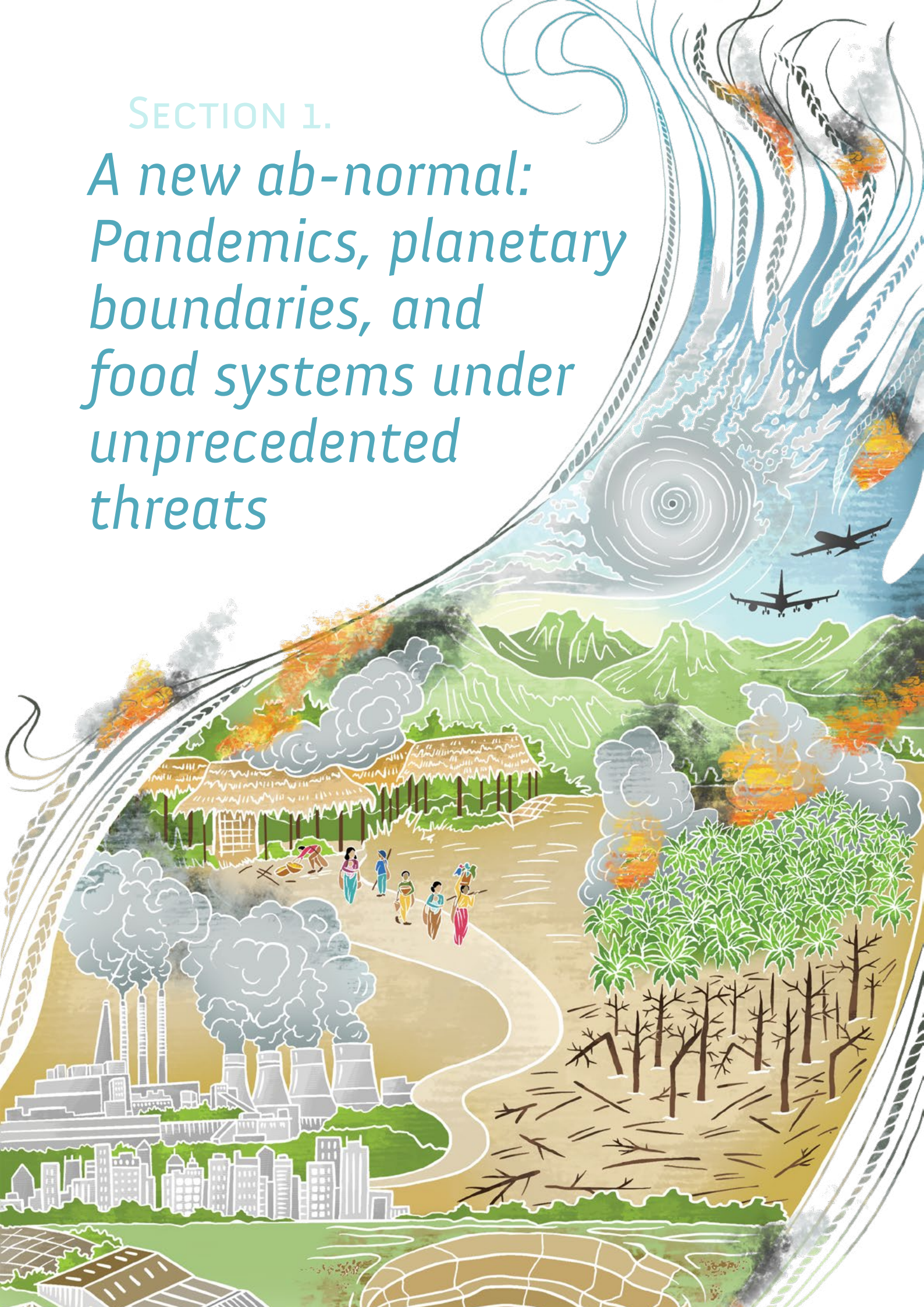
Opportunity #3. Accelerating shifts towards territorial supply chains and ethical consumerism	96
Pathway 2. Transforming governance structures	102
Opportunity # 4. Reviewing, reforming, and reconfiguring the UN's agri-food agencies	103
Opportunity #5. Cracking down on corporate impunity and techno-fixes	108
Opportunity #6. Toward an international undertaking on food emergencies	111
Opportunity #7. Building food policies, food policy councils, and new forms of citizen participation	114
Pathway 3. Shifting financial flows	118
Opportunity #8. Redirecting R&D and technical budget lines to sustainable food systems	119
Opportunity #9. Reforming major commodity subsidies	122
Opportunity #10. Levying junk food and taxing corporations fairly	125
Pathway 4. Rethinking the modalities of CSO collaboration	132
Opportunity #11. Making cross-sectoral collaboration the norm	133
Opportunity #12. Developing new tools to block corporate commodity chains and hack closed-door negotiations	135
Opportunity #13: Building new partnerships to finance a quarter century of food system transformation	137
5. Conclusions: short steps to a Long Food Movement?	139
Endnotes	143
Annex 1. Tech trends glossary: new tech terms for food movements to watch	148
Annex 2. Routes to reforming the UN's Rome-based agencies – From Circo Massimo to Fora Romani?	153
Annex 3. The Long Food Movement Advisory Committee	156
Bibliography	159

A Long Food Movement: Transforming food systems by 2045

This report argues that a ‘Long Food Movement’ is urgently needed. Civil society must develop multi-year transformational strategies that pull deliberately on the lever of long-term change, projecting through to the conclusion of the Sustainable Development Goals (SDGs) in 2030 and onto a presumed third round of development goals (2030–2045?). To do so effectively, civil society must think deeper (linking struggles across different scales), bigger (scanning vast horizons and planning for the disruptions ahead), and wider (collaborating with new actors). In this report, we explore: the unprecedented threats facing food systems (Section 1); the basic ingredients for civil society-led transformation of food systems (Section 2); what the next quarter century has in store if (agri) business-as-usual is allowed to run its disastrous course (Section 3); and what food systems could look like by 2045 if, instead, civil society succeeds in planning ahead and collaborating more effectively than ever before (Section 4).

SECTION 1.

A new ab-normal: Pandemics, planetary boundaries, and food systems under unprecedented threats





In 2021, those working to build food systems that are just, equitable, and operate within planetary boundaries have our work cut out for us. Climate change, biodiversity loss, and rapidly declining soil fertility are critically damaging the health of people and the planet, dislocating societies, and threatening food systems around the world. Five years into a global commitment to eliminate hunger by 2030, we have lost significant ground. Food insecurity is on the rise, with an estimated 690 million people hungry and upwards of 2 billion lacking regular access to safe, nutritious and sufficient food in 2019 (FAO et al. 2020). This was before COVID-19 erupted on a global scale in 2020, adding approximately 130 million people to the world's hungry (HLPE, 2020), pushing uncounted millions more to the brink of hunger, and putting an estimated one third of food and farming livelihoods at risk (HLPE, 2020), despite agribusiness profits continuing to rise.

The pandemic, continuing to unfold as this paper was published, has thrust into light society's failure to take the long view on food. First, it has highlighted the extreme inequalities pervasive across borders and throughout the food system. Marginalized black and Indigenous communities in both the global North and South are more likely to die from COVID-19 due to poor health care access, difficulties accessing healthy diets, and high rates of diet-related diseases (Global Network on the Right to Food and Nutrition, 2020). In the global North, many food chain workers have been deemed 'essential' enough to put their lives on the line to feed us, with corporate meatpacking plants and farmworker communities among the hotbeds of the virus. Yet these same workers are often invisible under the law or are criminalized for their migration status,¹ and are among the 4 billion people worldwide lacking social protection (OHCHR, 2020). Workers in the global South are facing particularly grave threats: in India alone, an estimated 139 million internal migrants were displaced when a sudden lockdown cut them off from their livelihoods (Bello, 2020b).

Street vendors and other informal workers throughout the food system have been among the hardest hit. Furthermore, the impacts of COVID have been deeply gendered, highlighting the disproportionate – and often invisible – load of domestic food provisioning and care work borne by women (Agarwal, 2021). This has come on top of multiple intersectional injustices facing women, including the unequal distribution of food within households.

The pandemic has also underscored the extreme vulnerabilities of the globalized industrial food system. Port closures, export bans, and devastating food losses resulting from the inability to get food to markets (in some cases remedied by farmers' creative solutions) have demonstrated how globalized supply chains once deemed 'efficient' and 'rational' are anything but. Not only has the system shown itself to be highly susceptible to disruptions, but it is also creating the conditions for future pandemic outbreaks (e.g., via habitat loss, novel gene technologies, and other biosafety risks) and, through globalized supply chains, helping to spread them (Bello 2020a; IPES-Food, 2020a).

In response, some governments have prioritized cash and food transfers to lower-income citizens in recognition of rising poverty and food insecurity. Others have enacted housing, job, or income-support programmes that may amount to little more than corporate bailouts. Simultaneously, authorities in some parts of the world are imposing severe restrictions upon peasant farmers, artisanal fishers, and the territorial markets they supply, while granting additional privileges to corporations (Global Network on the Right to Food and Nutrition, 2020).

Many of those on the frontlines of the crisis now see an opening to 'leap forward' rather than to 'build back better'. Communities and social movements around the world are jumping in to fill gaps and address the vulnerabilities left by mainstream systems – from mutual aid networks to relocalized food provisioning and emergency food distribution schemes bridging the urban-rural divide (FIAN, 2020). Some of these efforts are being taken up by governments and local authorities, as in the case of the C-19 People's Coalition in South Africa (Monjane, 2020). Critically, new connections are being forged,

as more recent and mostly urban mass movements like Black Lives Matter (BLM), #MeToo, Fridays for Future, and Extinction Rebellion intersect with longstanding agrarian, environmental, labour, and feminist movements (Tramel, 2020). By early 2021, these powerful new convergences were forcing a reckoning with the legacies of slavery, colonization, and structural racism in food systems, as BLM protests intersected with food justice, Indigenous rights and agroecology movements around the world (Belay, 2020). They were also garnering global support for farmer protests in India, and bringing social movements together across Brazil to decry rising hunger during the pandemic and reclaim the right to food.²

These responses build, necessarily, on previous momentum. In the quarter century since the 1996 World Food Summit, food movements have racked up important achievements. These successes (recapped and unpacked in Section 2) range from anti-GMO campaigns to the embedding of the Right to Food in intergovernmental negotiations; from rising trendlines for organic, fair trade, and vegetarian diets to the adoption of the UN Declaration on the Rights of Peasants (UNDROP),³ and the reform and revival of the UN Committee on World Food Security (CFS).

In a world of boundless time and resources, there would be much to celebrate. However, as food movements know all too well, this is not the world we live in. No trendline projections – in any sector – get humanity to a safe haven 25 years from now. Civil society is well aware that the climate emergency, compounded by biodiversity loss, and water and soil degradation, is threatening human survival. Over the next quarter century, it stands to undermine the food security of half the world's population, or maybe even more.

Just over ten years ago, the Stockholm Resilience Centre identified nine Planetary Boundaries that the world dare not cross (see Box 1). By the 2015 Paris climate conference, at least four of the nine had been crossed, and the status of two more were in doubt. According to scientific literature, eight of the nine boundaries have become much more vulnerable over the last decade, and even the ninth (stratospheric ozone depletion) may be in jeopardy. Reflecting on boundaries was a priority from the outset of this report: CREPPA, a research group at

*No trendline
projections
– in any sector –
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to a safe haven
25 years from now*

the Université de Québec à Montréal, produced a background paper⁴ on the planetary boundaries framework, identifying global food systems as a key driver of boundary crossing, and how they will in turn be greatly affected by those breaches, as will societies, and life on Earth (Bacon & Vandelac, 2020).

With exceptions, food movements know the boundaries closest to them, but have neither come to grips with how fast they are changing, nor with how the nine boundaries interact.

The devastating consequences of interconnected boundary breaches are, however, becoming difficult to ignore. In 2020, the first global report on soils warned that one third of agricultural soils are so eroded as to risk sterility – that after 12,000 years of harvests only 100 more may remain.⁵



1/3
*of agricultural
soils are so
eroded as to
risk sterility*

BOX 1:

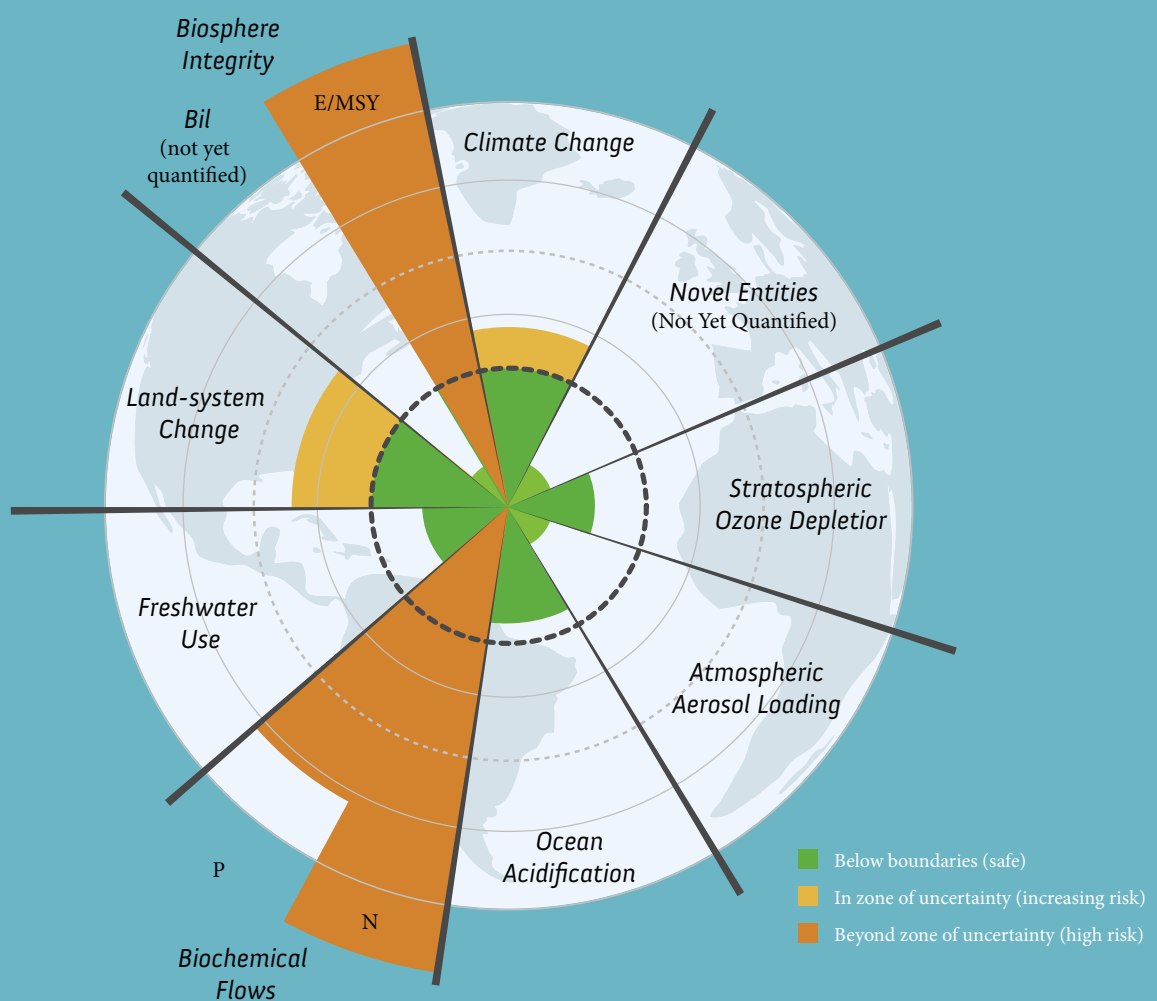
What are the Planetary Boundaries and which side are we on?



To help policymakers find a 'safe operating space' for 'global societal development', in 2009 a team of scientists led by Johan Rockstrom of the Stockholm Resilience Center developed the Planetary Boundaries framework (Stockholm Resilience Centre, n.d.). The framework aims to provide a guide to decision-makers with regards to current global challenges, by conducting science-based analysis of the impact of human activities on Earth's systems. This includes identifying impact levels at which systems become destabilized and where boundaries are in danger of being breached. Nine boundaries were identified: (1) climate change; (2) biosphere integrity (genetic and functional diversity); (3) ocean acidification; (4) freshwater use; (5) land-system change (including deforestation); (6) biogeochemical flows (phosphorus, nitrogen); (7) stratospheric ozone depletion; (8) atmospheric aerosol loading; (9) novel entities (e.g., pesticides, GMOs, nanomaterials, plastics, etc.). As of 2015, four of the nine boundaries had been transgressed (climate change, biosphere integrity, land system change, and biogeochemical flows). Trends for the others (where global control variables have been defined) are extremely concerning – aside from ozone layer depletion which is wobbling awkwardly towards improvement. The interrelations between these planetary boundaries point to a cascade of tipping points in the very near future, with irreversible consequences for societies and the planet (Bacon & Vandelac, 2020).

It has been conservatively estimated that today's food supply chain emits roughly the equivalent of 13.7 billion metric tons of carbon dioxide equivalents (CO₂eq) or 26% of anthropogenic GHG emissions. Another 2.8 billion metric tons of CO₂eq (an additional 5%) can be attributed to non-food crops and other drivers of deforestation. GRAIN and many civil society organizations (CSOs) believe that a full calculation of all of the links in the industrial chain could raise food systems' share of global GHG emissions above 50%. It is important to emphasise that the overwhelming majority of these emissions come from industrial and commercial food systems.

As its originators are well aware, the Planetary Boundaries approach can only offer an imperfect overview of a moving, multi-dimensional, and complex global puzzle. It is necessarily incomplete and has its critics. Kate Raworth's 'doughnut economics' tries to marry this strictly geophysical approach with a more societal approach in which social boundaries (such as food, health, and social equity) are also tracked (Raworth, 2018).



Source: J. Lokrantz/Azote based on Steffen et al. 2015.



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These same soils, we learned, are as essential to CO₂ sequestration as the plant life above them (Carrington, 2020a), and fertile soils are the planet's 'living skin' that the industrial age is quite literally skinning alive. Another study told us that our soils are being rampantly privatized and homogenized, with just 1% of the world's 300 million farms accounting for 70% of cropland, pastures, and orchards (Watts, 2020).

In 2020, the world also learned about *pyrocumulonimbus* events – previously unimaginable conflagrations – most famously terrifying southern Australia, the west coast of North America, the Iberian Peninsula, and the Arctic tundra. Intentional clearing also devastated Amazonian forests and Cerrado soils (to make way for cattle and soybean exports in Latin America), the Congo basin (for meat and mineral exports), West Africa (for cocoa production), and South Asia (for palm oil plantations). These fires are not only destroying the world's great lungs: their ferocity is pouring ash into the stratosphere for months at a time, affecting the weather, and destroying the lungs of those below. 80% of the world's remaining forests are protected by 370 million Indigenous people (Maffi, 1999),⁶ whose sovereign lands are threatened by miners, ranchers, plantation owners, and their allies in government. As Indigenous peoples are forced out, so is their

80% of the world's remaining forests are protected by 370 million Indigenous people, whose sovereign lands are threatened

intimate ecological understanding. One third of Latin America's lands no longer have speakers of the Indigenous languages that once described them, and one third of the world's remaining languages are spoken by fewer than 1000 people (Maffi, 1999).

Scientists now worry that instead of absorbing carbon dioxide, the Amazon will soon become a net emitter (Vaughan, 2019); that the Arctic tundra may already be emitting carbon dioxide and other greenhouse gases; and that the capacity of the world's oceans to absorb CO2 is coming close to saturation, while its ability to release oxygen is declining (Mooney & Denis, 2019). Since the 1992 Earth Summit, the number of oxygen-deprived 'dead zones' in the ocean – almost entirely due to agrochemical runoff – has risen from 45 to over 700 (IPBES, 2019). Although the data is unclear, some researchers insist that oceans are on course to have, by weight, more plastic than fish by mid-century. This undermines the livelihoods of the world's 30 million artisanal fishers and workers, who provide nearly half of the fish we eat (IPBES, 2019), and jeopardises one fifth of our protein. Furthermore, in late 2020, the UN granted hundreds of seabed mining licenses that, for the first time, exposed the ocean floor (and the waters above it) to unfathomable destruction. Another water disaster is looming: if the current draw on underground aquifers continues, 5.7 billion people will regularly experience water shortages by 2050 (United Nations, 2018).⁷

The implications for global justice are profound. Movements and scientists point out that threats to the food supply, like COVID-19, will hit poor people and communities the hardest. Especially at risk are small and marginal farmers, forest dwellers, livestock keepers, coastal communities, Indigenous peoples, women, and all of those whose lives and livelihoods rely on vulnerable ecosystems. Indigenous peoples, in particular, face devastating impacts as climatic shifts and other multi-stressors affect hotspots of biological and cultural diversity, undermining their ability to rebuild resilience through diversity.

The number of oxygen-deprived 'dead zones' in the ocean has risen from 45 to over 700



5.7 billion people may experience water shortages by 2050

The crises of the future will be increasingly interconnected and mutually reinforcing. The climate crisis is already driving migration flows, new economic disparities, and disease spillovers.

The global wave of authoritarianism also feeds on these crises, with the COVID-19 pandemic being used as a pretext to further constrain people's rights, close off democratic spaces, crack down on rights defenders,⁸ and weaponize food (United Nations, 2019b).

The overall picture leaves no question as to the grave threats hanging over food systems. As the following sections of this report will argue, neither 'business-as-usual' nor 'civil society-as-usual' can prevent further boundaries from being crossed, or restore those already breached. This is the stark backdrop for human society, however it tries to navigate change in the coming decades.



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The Long Food Movement project: Why, how, and what next?

As its title suggests, this project is premised on civil society, and specifically food movements, being an essential focal point and driver of food system transformation. ‘Civil society’ is used throughout this report to refer to formally or informally organized networks of non-state actors, including social movements, non-governmental organizations (a.k.a. NGOs), small-scale producers, trade unions, community-based organizations, and allies working toward food systems serving the public good, grounded in human rights and trying to operate within planetary boundaries. We also interchangeably use the term ‘food movements’. Indigenous peoples who either have – or are reclaiming – self-government have a distinct legal identity and voice, even where they choose to align their advocacy with civil society. However, it is important to note that civil society is a broader term than the way it is used in this report, with some groups working in direct opposition to food systems transformation.⁹

The second key premise was the importance of a long-range approach to food systems change. The project’s title was a friendly, if irreverent, play on the well-known Slow Food movement, with no academic aspirations but some civil society cognizance. ‘Long’ was also meant to convey the importance of a quarter-century strategic collaboration – short in historic and movement terms, but long in the sense that, as we argue, civil society has become accustomed to planning only two or three years ahead. Nevertheless, as some of our reviewers have pointed out, plotting ahead makes for a rickety scaffolding if we’re not also understanding where we’ve been. Arguably, our projections backwards and forwards have not been ‘long’ enough to capture the epochal nature of change processes. The notion of a long-range perspective on food movements’ work and strategies has been incubating since a global meeting of civil society organizations, hosted by the Agroecology Fund, in Uganda in 2016. The idea became reality in May 2019 when it was taken up by IPES-Food and ETC Group, with the financial support of the 11th hour Project. The two partner organizations turned to scientists at CREPPA, a research group from the Université de Québec à Montréal, who agreed to examine the famous Planetary Boundaries in the light of the social boundaries they have been considering. Together, the three organizations formed a management committee.

From the outset, it was understood that this report should be a provocation not a prescription, and that it should be concluded within a short timeframe, so as not to claim comprehensiveness. As the work progressed, and we became aware of the remarkable changes impacting food systems, the report has taken on an increased sense of urgency. Not only has the pandemic brought the climate and biodiversity emergencies much closer, but agribusiness responses to the compounding crises – especially through the upcoming Food Systems Summit – require both immediate and long-range considerations.

The perspectives and strategic orientations of wide-ranging civil society groups were built into the analysis through three channels: i) review of CSO websites and literature; ii) interviews and dialogues with civil society groups working in global governance spaces, and; iii) the insights of an advisory group that spans multiple sectors, constituencies, and continents (see Annex 3).

There are numerous limitations to a report of this scope, and while these are discussed throughout, some bear noting here:

- We have grappled with the challenge of presenting a report that is relevant at the global scale while reflecting the widely-diverging conditions and realities around the world (notably between global South and North). Though sensitivity to these issues has improved in successive edits, this continues to be a limitation, and more fine-grained and regionally-specific analysis will need to come later;
- While the importance of multi-scale coordination and organizing is strongly emphasized throughout the report, it was not possible to give equal attention to the local, national, regional, and global levels, and the report remains skewed to the global scale;
- Although we have sought to hear from and review the work of the broadest possible range of civil society groups, this survey could never be complete. Notably, research and time limitations did not allow for sufficient exploration of civil society initiatives and proposals beyond the realms of food and agriculture, even though the importance of cross-cutting collaborations is highlighted throughout.

It is customary (even obligatory) these days for reports to aspire to “begin a conversation”. Yet, we are aware that the conversation is already well underway. In the months ahead, we hope to share this report both online and in person with friends and allies in a range of regional and global fora. If this work has any value, it may have changed beyond recognition over the next year or two – revised, adapted, and rejected as food movements and wider allies give it short shrift or deep consideration from their own context. Let’s see what’s next!



SECTION 2.

Civil society as food system change-makers: the four basic ingredients of a 'Long Food Movement'

Can civil society rise to the challenge? Our conclusion is that civil society-led change is not only our best gamble for a failing planet but – more importantly – that world-changing progress is possible. History reveals both surprising CSO successes and persistent shortcomings. Drawing on these insights, we identify four basic ingredients that have underpinned past successes, and that civil society will need in order to drive forward unprecedented food system transformation over the next quarter century: 1) collaborating across multiple scales; 2) broadening alliances and restructuring relationships; 3) connecting long-range commitment to wide-range 'horizon scanning'; and 4) being ready for change and disruption.



We do not know exactly what needs to be done, and by whom, to overcome the unprecedented combination of mega-threats facing humanity.

Nor do we know to what extent the threats to food security can be addressed by reforming food systems alone, given the interconnectedness of earth systems. But without civil society in the ascendant (and applying constant pressure on governments to act in the public interest), and without renewed commitment to long-term collaboration among food movements, we find it hard to envisage anything like the scale of food system change that is required. Many of the changes described below have entirely originated within civil society, although at every level, they reached out to other actors – governments and political parties, scientists, businesses, foundations, and a wide array of other communities and individuals. While each piece of the puzzle merits its own analysis, we focus here on the potential of civil society-led transformation.

Critically, a **Long Food Movement is already long in the making**, and it is important to look back and take stock of what civil society has accomplished so far. From ongoing Indigenous struggles against colonization, to the anti-globalization protests that gave rise to the food sovereignty movement, there is a vibrant history of collective struggle, resistance, and manifestation of alternative ways forward that has paved the way for present-day movement building and organizing.

Over recent decades, food movements have scored a series of **high-profile international victories**. Civil society has stalled the spread of GMOs, and mobilized governments in the UN Biodiversity Convention to adopt protocols to regulate trade in GMOs and benefit-sharing from biodiversity.

Food movements also successfully advocated for the adoption of UNDROP, and forced negotiations on Corporate Impunity at the Human Rights Council, agricultural debate in climate negotiations, agribusiness concentration in UNCTAD, and three UN moratoria on agriculture-related technologies in the Convention on Biological Diversity and protocols to the Law of the Sea. Peasant movements and trade unions – supported by other CSOs and backed by academic allies – upended the WTO in Seattle, did it again in Cancún, and once more in Hong Kong.

Other equally important successes have been won at national and local scales (and sometimes even off the radar). They include the tireless struggles of peasant movements, unions, community organizers, municipalities, non-profits, and academics who came together to forge local organic markets and feeding programs in Brazil; to build state-wide uptake of agroecology in southern India; to institutionalize local and national food policies (and councils) in Canada; to impose junk food taxes in Mexico and Chile; and to hold GMOs and land grabs to account via deliberative dialogues and citizen juries in Senegal and Mali. Like discarded politicians and retired UN officials who speak romantically of the wars that diplomacy prevented, CSOs also have their own unrecorded triumphs, embellished by the remoteness of hardly known villages, watersheds and warlords.



© Li An Lim

These are the experiences lived and communicated not by articulate spokespersons in UN fora but by ‘undocumented militants’ in local communities, and by Indigenous leaders and peasant organizers – from Central America to South Asia – whose struggles and whose deaths have shaken societies and governments.

The successes have often come against the odds. It has astonished both states and corporations that half a million peasants and protesters in New Delhi joined with thousands of peasant marchers in Curitiba, thousands of texters in Canada, and hundreds of parliamentarians in Brussels, to defend the Terminator moratorium. It was equally shocking that CSOs, working with agricultural scientists and policymakers, took on and overwhelmed agribusiness and major governments in a multi-year debate over appropriate agricultural technologies (IAASTD).

But it has never been smooth sailing, and like the successes, **many of the failures and missed opportunities go unrecorded.** Over those same decades, malnutrition has multiplied, and peasants have been driven off their land at historic rates. Inshore fisheries have been devastated, the livelihoods of food and agricultural workers (including migrant workers) have stagnated or declined, and slave labour is persistent and rising.¹⁰

The blame cannot be laid wholly at civil society’s door, but CSOs have often been **slow to report and slower to react.** Civil society did nothing to protest (much less prevent) the dismantling of the UN Centre on Transnational Corporations, the UN Centre on Science and Technology for Development, or UNCTAD’s pioneering work to challenge Intellectual Property Rights, restrictive business practices, and commodity cartels. Is it a success that CSOs are coordinating to fight corporate impunity in the Human Rights Council today – or a failure that they did almost nothing to oppose the agribusiness concentration that they have been documenting since the 1970s? Is revival of the Committee on World Food Security (CFS) a cause for celebration, or should we be asking why it took so long to act on an idea first proposed in 1974? Does it require a pandemic for food movements to really work with health, climate, and environmental movements?

The challenge for civil society, therefore, is not just to emulate the high water marks of the Seattle protests, the anti-GMO campaigns, or the social movement-led creation of the World Social Forum.¹¹ If successes are to be sustained and woven together – to be turned from disparate threads into a tapestry – then civil society will need to fundamentally re-evaluate its plans, priorities, and horizons (and even its conception of success).

Below, based on interviews with food movement participants, consultations with CSOs, and literature review, we identify and explore the **four basic ingredients of a Long Food Movement**, i.e. what it has taken for civil society to be an effective change-maker in the past, and what it will take for CSOs to drive forward the unprecedented food system transformation (and broader societal transformation) that is required over the next quarter century.

If successes are to be sustained and woven together – to be turned from disparate threads into a tapestry – then civil society will need to fundamentally re-evaluate its plans, priorities, and horizons

Four basic ingredients of a Long Food Movement



INGREDIENT #1

Collaborating across multiple scales

A multi-scale approach to organizing has been recognized by many as the key to effective change-making by civil society (Gaventa & Tandon, 2010). **The challenges facing food systems increasingly transgress national borders**, making global engagement both strategic and necessary. Most of the recent victories chalked up by food movements have come on the back of intense ‘vertical conversation’, i.e. flows of information and ideas from local to global and vice versa.

Many victories have been fought and won at local or national levels – with global outreach coming later. For example, sustained civil society campaigns have led to a crackdown on junk food in countries like Chile, Mexico and the UK; municipalities around the world have introduced local/sustainable procurement schemes; and local and national governments (most recently Canada) have established food councils and food policies. Deliberative dialogues, GM crop uprootings, and opposition to life patenting also got their start locally or nationally, before migrating into regional and global campaigns (or coming *back* to the global level in the case of GMOs and other threats first flagged by global-level ‘horizon scanning’).

Often, local initiatives can spread their benefits via replication (‘scaling out’). But **some form of multi-scale action appears to be essential** for “effective linking of rights and claims, upwards and downwards, from local to global” (Gaventa & Tandon, 2010), or to overcome localized barriers (e.g. a repressive regime) by forming broader alliances, securing media visibility, and establishing international legitimacy to magnify power back home – so-called ‘boomerang strategies’ (Keck & Sikkink, 1999).

Conversely, **technology and trade alliances have usually travelled from global to local**. From trade deals to big data and biopiracy, communities find themselves fighting rearguard battles on frontlines they didn’t see. Vertical conversations with intense two-way flows can also help to prevent (local) progress being rolled back.

For example, commercial lobbies have overturned local laws with national regulation or international trade rules, such as the soft drink industry backing state-level 'pre-emption laws' in the US to make local soft drink bans illegal. There have been similar efforts by the agrochemical industry to overturn local pesticide bans (Fang, 2020; White, 2019).

Nonetheless, **multi-scale collaboration is riven with tensions**. Local-to-global and global-to-local cooperation is generally stronger within social movements and weaker among NGOs. Although the overwhelming majority of civil society actors are embedded in communities and frontline struggles, resources and visibility tend to accrue to global-level actors – sometimes distorting and disempowering communities. Moreover, communities would generally prefer that global CSOs use scarce resources to support immediate struggles rather than sound the alarm over seemingly distant threats, or expend energies on obscure UN negotiations.

The politics of representation becomes central, especially when a breadth of civil society groups and spheres of action are involved. Many observers have underlined the importance of **effective mediating mechanisms to link scales and arenas of engagement**, build a sense of accountability, and avoid disconnection from the grassroots (Gaventa & Tandon, 2010). Ultimately, food movements must continue to embrace distinct and diverse actions (including inside and outside strategies), even if they involve short-term tensions.

Food movements have shown themselves capable of navigating these waters and forging effective multi-scale collaboration. The IPC for Food Sovereignty and the Civil Society Mechanism (both in Rome, and focused on supporting the participation of communities working at different scales) have worked hard at getting this balance right, and their example – although imperfect – needs to be studied by other organizations and fora.

The politics of representation becomes central, especially when a breadth of civil society groups and spheres of action are involved

BOX 2:

Do all roads really lead to Rome? Engagement with the UN's Rome-based Agencies



The cost-benefit of global institutional collaboration is not always clear to grassroots organizations, particularly when it comes to the UN's Rome-based agencies, known in civil society as the 'RBAs'. These are the Food and Agriculture Organization (FAO), the World Food Programme (WFP), the International Fund for Agricultural Development (IFAD), and the reformed UN Committee on World Food Security (CFS). There is plenty of cause for scepticism about an alphabet soup of UN acronyms: geopolitical manipulation of the UN's supposed *'one country one vote'* system; the pervasive influence of the non-UN Bretton Woods institutions and global corporations; and the inertia endemic in multilateral agencies with opaque funding and rigid employment quotas. As we write, the CFS is being threatened by corporate capture and co-option from within, as well as a UN Food Systems Summit that has attempted (at least initially) to circumvent it altogether.

Despite these limitations, many civil society actors, including global social movements such as La Via Campesina, devote precious resources to UN battles. This may be partly because the RBAs have more resources, flexibility, and influence than it appears. Furthermore, the RBAs are not monoliths, and their secretariats have plenty of goodwill and expertise. For many, the UN system, and the reformed CFS in particular, at least have the makings of what equitable agri-food governance could look like.¹² CSOs have in fact proven their ability to influence debates at the RBAs, and to change these institutions in the process. Notable examples include: the farmer-led establishment of the International Institute for Agriculture (1908) leading to the FAO (1945); the establishment of the UNCTAD Common Fund for Commodities (1976) and the FAO Commission on Genetic Resources for Food and Agriculture (1983); the influencing of landmark summits and processes, such as the FAO Freedom from Hunger Campaign (1960–1990s), the UN World Food Conference (1974), the World Food Summits (1996, 2002, 2008) and the International Conference on Agrarian Reform and Rural Development (ICCARD) (2006); the 2009 reform of the UN Committee on World Food Security (CFS), including the establishment of a mechanism for autonomous and active participation of civil society (Civil Society and Indigenous Peoples' Mechanism - CSM); and adoption of the Land Tenure guidelines (Brent et al., 2017; Tramel, 2019). Such developments are not only shifting governance norms, but also influencing knowledge and discourse, as evidenced by the global recognition of agroecology over recent years.

INGREDIENT #2

Broadening alliances and restructuring relationships

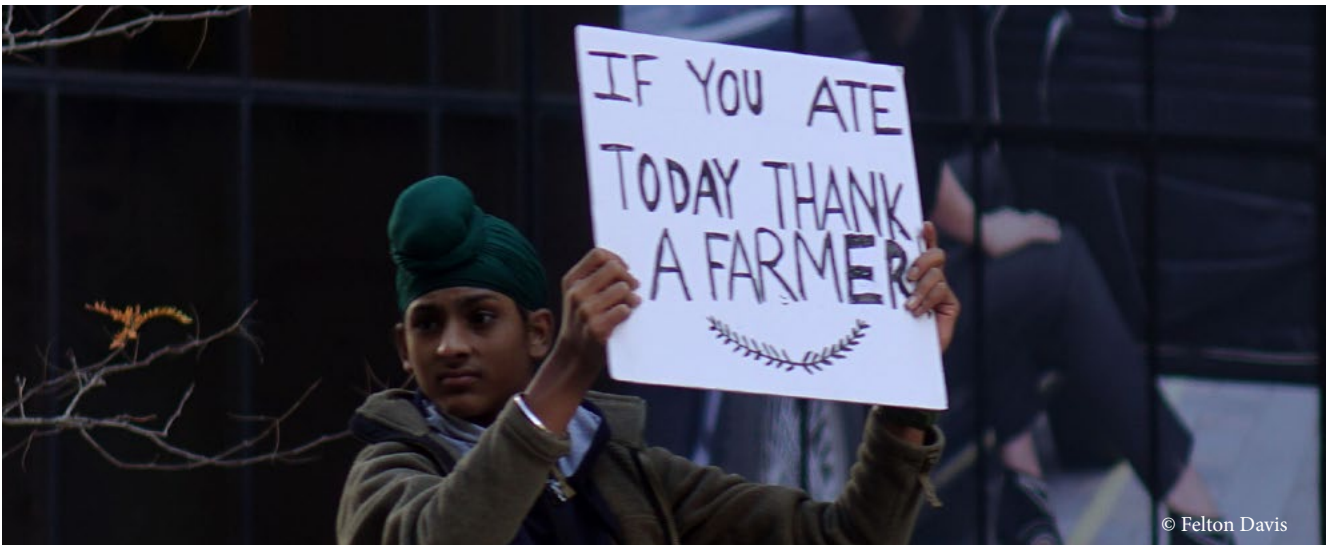
‘Horizontal conversations’ are crucial to complement the vertical ones. **Building and maintaining effective alliances is a recurrent theme in civil society’s greatest advances.** Food movements occupy an ever-shifting terrain of struggle, and CSOs can sometimes find themselves working towards a particular goal alongside unlikely allies who can provide them with important sources of leverage (so-called ‘objective alliances’) (Fox, 1993; Migdal, Kohli & Shue, 1994). Civil society may draw upon these relations to seize political opportunities, and to forge new openings where they do not (yet) exist. **Lessons can be learned from community experiences** where CSOs have been adept at reaching out to health, housing, worker safety, and employment groups, as well as coordinating (or, at least, negotiating) with local authorities and businesses. Many social movements, straining their resources to the max, already link their food agenda with work on trade agreements, health, climate, or biodiversity issues. But several disconnects are still visible (see Box 3).

Box 3:

The connections that still need to be made



Within food movements, there remain weaknesses and gaps around labour, health, decolonization, trade, and climate, and inadequate attention to the crucial participation of women, racialized communities, LGBTQ+ communities, and youth. There is also a tendency to concentrate more on peasants than other types of food providers (e.g., fishers, pastoralists) and, equally, to focus on food providers with less attention to other marginalized communities and workers. While there is considerable collaborative work on crop genetic diversity, there is much less support for similar work in fisheries and livestock. Food movements also have to confront a gap – in understanding and in practice – between social movements and other civil society organizations. Another challenge is to build stronger and more strategic links between food and labour movements around food chain abuses, living wage campaigns, and food worker control and ownership. Strengthening the connections between food, climate, and biodiversity is also a priority.



Although significantly weakened over the last few decades, some level of **support and buy-in from the state** is needed for civil society to achieve ambitious changes – from land reform to social protection, to public funding for agroecological research and training (Shattuck et al., 2015), and to hold corporations to account, e.g. via human rights instruments (Suárez, 2013). Many (maybe most) of food movements' successes – particularly national policy wins – have been driven by strategic collaborations with municipalities, national governments, or even political parties (Fox, 1993; Gaventa & McGee, 2010).

New governance spaces have also been forged through state-CSO collaboration. For example, Brazil's social movements have collaborated effectively with state (and sometimes national) governments to establish the World Social Forum – complete with its city, national, and hemispheric offspring (Conway, 2012; Smith, Byrd, Reese & Smythe, 2015). At times, relations with the state are necessarily adversarial (business leaders are rarely teargassed or gunned down by the authorities), and positive collaboration may sometimes be limited to specific issues, e.g. the humanitarian dimensions of food security.

Important allies can also be found in international institutions. Notwithstanding the complexities of UN-level engagement (see Box 2), food movements have worked in innovative configurations to advance their agendas in these settings. Civil society cobbled together the government and UN secretariat coalitions that led to an

FAO Commission on Genetic Resources for Food and Agriculture, followed by a seed treaty including Farmers' Rights. An unorthodox peasant-led collaboration with UN officials and the US ambassador resulted in the restructuring of the CFS. Food movements have also aligned themselves with other CSO allies, academics, and friendly governments to force the aforementioned tech moratoria, and negotiations on corporate impunity and agribusiness concentration.

There have been occasions – controversial and unresolved – when **civil society has engaged with agribusiness to leverage influence** with governments or UN agencies. In the early days of international negotiations around the control of seeds, for example, CSOs used several years of multi-stakeholder dialogue to gain airtime and credibility for their arguments. A similar dialogue around intellectual property allowed CSOs to argue their opposition to life patenting with policymakers. Food movements often work well with small local companies. For example, common cause has been found with the natural products industry (challenging the use of synthetic biology in food, flavour and fragrance products), organic seed companies (opposing specific patents or patent regimes), and smaller companies along the industrial food chain (fighting agribusiness mergers). There also tends to be good collaboration between food movements and producer and consumer cooperatives.

Overall, food movements have a mixed record in terms of navigating the **many challenges of cross-sectoral alliance-building**. Those seeking to reach beyond their silos have sometimes been accused of 'mission creep' by allies receiving support from the same funders, and too often these tensions go unaddressed. Collaboration with the private sector is perhaps most complex, and the impetus often comes from the outside. Seemingly oblivious to the power imbalances and concomitant risks, governments, funders, and corporations (or trade associations) have been pressing for commodity roundtables and 'multi-stakeholder dialogues' that bring together policymakers, companies, and CSOs.

Those seeking to reach beyond their silos have sometimes been accused of 'mission creep' by allies

Engagement with the private sector in Rome has been particularly divisive. While some CSOs felt that the participation of agribusiness would destroy the CFS, others felt it would lose the attention of governments if agribusiness wasn't also at the table. Underlying these decisions about who to engage with are **vital questions about representation, co-option, and opportunity costs** (in time and human resources). Those who have experienced food movements' high points of collaboration have important stories to tell about tensions, divisions, co-options, and exclusions.

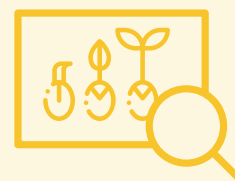
INGREDIENT #3 *Connecting long-range commitment to wide-range 'horizon scanning'*

One of civil society's greatest strengths is its ability to hang in for the long haul. Diplomats and bureaucrats come and go, as do their governments. Agribusinesses march on their bellies – satisfying short term-needs one quarterly report at a time – and buy or spin off subsidiaries, cannibalize business units, and discard CEOs as shareholders demand.¹³ Food movements' long-term commitment, institutional memory, and connections allow them to potentially leverage major changes over an unmatched timeline. This means that civil society can outlast not just agribusiness' latest quarterly growth imperatives, but also the multi-year technological trajectories and market strategies underpinning them (see Section 3). Also working to civil society's advantage is that time tends to affirm its positions (e.g. many of the trends playing out today around climate change, biodiversity loss, and new technologies were flagged far in advance by civil society).

With so many actors now coalescing around food sovereignty and agroecology, a **shared vision** is taking shape among today's food movements (see Box 4). This collective sense of direction is essential in order to harness the full benefits of long-term planning. In building further alignment, civil society will need to strike a balance between being overly optimistic and overly cautious, the latter leading to possible failures of vision or ambition.

Civil society will need to strike a balance between being overly optimistic and overly cautious, the latter leading to possible failures of vision or ambition

BOX 4:
*Food sovereignty and agroecology:
a shared vision for a Long Food Movement?*



Despite the diversity of priorities and plans among civil society groups, their visions for future food systems are highly convergent. For many, this future is grounded in **food sovereignty**, defined by social movements as “the right of peoples to healthy and culturally appropriate food produced through ecologically sound and sustainable methods, and their right to define their own food and agriculture systems” (Maitreuweb, 2007). Food sovereignty was first launched by the global peasant movement La Via Campesina outside the World Food Summit in 1996. A decade in, the concept had extended well beyond its peasant origins, as evidenced by movements of consumers, urban agriculturalists, workers, women, Indigenous peoples, fishers, pastoralists and others at the Nyéléni 2007 Global Food Sovereignty Forum in Mali. Now a quarter of a century on, food sovereignty is providing a unifying framework for a whole range of movements in the face of converging crises (Tramel, 2018). As both a vision and a proposal for transforming food systems, food sovereignty is based around the following six principles: 1) focuses on quality food for people; 2) values food providers; 3) localizes food systems; 4) puts control locally; 5) builds knowledge and skills; and 6) works with nature.¹⁴

Agroecology is essentially synonymous with the sixth principle of food sovereignty (‘works with nature’) as it involves the application of ecological principles to agriculture and food systems. This makes it a core component of food sovereignty, while it is also a vibrant and growing science, practice, and movement in its own right,¹⁵ and a unifying framework for broad cross-sections of global civil society.

Other frameworks complement and/or broaden food sovereignty and agroecology. The **right to food** – which overlaps considerably with the first principle of food sovereignty – emphasises those most vulnerable to hunger as rights holders, and the responsibility of the state to ensure people’s access to healthy food and/or the resources necessary to produce their own food. Another prominent framework is **food justice** (and relatedly economic justice), promoted mainly by urban-based movements in the global North, and often tied to disparities rooted in structural racism and colonization.

Various **land rights** movements, mainly in the global South, intersect with the fourth principle of food sovereignty on local control over resources. Some find the focus on the family farm to be problematic in light of **gender disparities** within households (Agarwal, 2010a, 2014; Agarwal, Anthwal & Mahesh, 2021), and focus on cooperative models that free women from these strictures (Agarwal, 2020). Those working at the intersection of **sexual diversity/ LGBTQ+ and food issues** similarly see the transformation of gender norms and patriarchal structures as a key part of food systems transformation. Movements connected to **Indigenous struggles** have broadened dialogues around land and resources to the concept of territory, as well as introducing concepts such as 'buen vivir'. Like the food sovereignty movement, the **localization and decentralization movements** are focused on control of resources – and apply this logic to energy, finance, and other elements beyond food.

These frameworks do not tend to be mutually exclusive. For example, many CSOs strategically draw upon food sovereignty *and* human rights frameworks, particularly in global governance spaces (Claeys, 2015), as reflected in Section 4.

Though food movements have had some success in building alliances and working across scales, they have fared less well in long-term planning and 'horizon scanning'. The challenge is not just to set long-term goals: **food movements can only plan ahead effectively if they are planning in context**, i.e. looking to the horizon and considering the implications of political, economic, and environmental changes. With exceptions, CSOs see the world as it is – and then program to make a better world over the next two or three years. Few consider that all the pieces of the puzzle are shifting simultaneously, and that the world could be very different by the time those projects end. This reflects the fact that **CSOs are habitually under-resourced** and overwhelmed by daily realities (Hoey & Sponseller, 2018). Where post-WWII development NGOs focused down on digging wells, building schools, or adopting children, progressive CSOs today are fighting the immediate dangers of land grabs or pesticides or digital DNA.

The natural instinct to cooperate and engage in long-term planning is further challenged by **competition for resources** and **the caprices of funders**. Many CSOs identify small grants and short funding timeframes as barriers to developing effective long-term strategies. These constraints have generally increased over the last decade, forcing CSOs to react defensively to threats rather than to pursue new opportunities. This is manifested differently between policy-oriented CSOs (forced into defensive mode) and project-oriented CSOs (more often seeking support to expand), while grassroots organizations simply lack funding (with or without strings attached).

INGREDIENT #4 *Being ready for change and disruption*

Referring to the 2007-09 financial crisis, Nassim Taleb coined the term ‘**Black Swan**’ to describe an unexpected event that changes everything, while insisting that the market collapse was in fact entirely predictable. The term stuck but Taleb’s definition has largely been forgotten, allowing bankers, CEOs, and politicians to invoke the Black Swan excuse as a ‘get out of jail free’ card (sometimes literally). Donald Rumsfeld presaged Taleb when he talked about “the things we didn’t know we didn’t know”. Governments just weren’t prepared (Ale, Hartford & Slater, 2020).

But alongside Black Swans are **Grey Swans** – the *things food movements don’t know they know*, and are well-placed to use to their advantage. We understand now that the shocks of the past dozen years should not have been very shocking. Most of the gravest changes, such as the accelerating loss of global soil fertility and mass extinctions of species, were predictable and predicted – not so much in date and detail but in parameters and probability. The future might also be **more predictable than we think**. The dates and detail may be uncertain, but Grey Swans arise from plausible conditions and come with relatively predictable – and usually compound – risks and opportunities: hurricanes, floods, and droughts are followed by epidemics and famines; food failures often have multiple sources;¹⁶ and every so-called large-scale ‘natural’ disaster can reasonably be assumed to instigate an economic disaster that can trigger a political upheaval.

Most of the gravest changes, such as the accelerating loss of global soil fertility and mass extinctions of species, were predictable and predicted. The future might also be more predictable than we think

The difference between Black Swans and Grey Swans comes down to two things: food movements having an **early warning system** that allows them to anticipate and recognize coming upheavals; and, secondly, an **early listening system** – having in place an internally-negotiated response strategy that addresses the immediate crisis, but also a plan and an audience for the restructuring to follow. There is no reason (nor excuse) for food movements and their funders to be unprepared for Grey Swan events in the years ahead. Some examples of what these events and responses might look like are provided in Box 5, while many of the opportunities for future action in Section 4 are based on using Grey Swan events to advance civil society’s agenda.

Box 5:
Damage control: preparing for the next Grey Swans



Here are four examples of how civil society might prepare for Grey Swan events:

- Recognizing that another food price crisis is inevitable in the years ahead (whether induced by a climate or financial event), food movements could: (1) have ready a documented record of the effectiveness of territorial markets and agroecological practices in meeting local needs; and (2) have an implementable plan to strengthen local food security, and suspend all trade rules, land-grab contracts and regulatory constraints in support of territorial food systems;
- Anticipating crop and/or livestock diseases in industrial food chains, and ensuing demands to cull local species: (1) provide documented evidence of the risks of genetic uniformity of industrial breeds and the disease-tolerance of local species; and (2) present a plan for bringing greater diversity to local production;
- Knowing that an opportunity will arise where a critical mass of governments are at a tipping point in their critiques of the Rome-based agencies: (1) prepare and keep updated an independent review of the RBAs; and (2) launch a pre-set strategy to win governmental support for the recommendations;
- Assuming cyber attacks or other big data failures: (1) pre-document the vulnerabilities; and (2) implement an independent information/transportation strategy connecting food provisioners with local markets.



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Closely linked to Grey Swan preparedness is the need to recognize **social tipping points** that can spur large-scale, citizen-led transformations. History is filled with events which – for good or ill – abruptly transformed politics, morals, or economies. Think back a century to the Gilded Age when the gap between the top 1% and the rest was as great as it is today; when the grain, railway, oil, and steel trusts paralleled today’s technology platforms; and when a world war followed by depression and a pandemic forced governments in Europe and North America to build unprecedented social welfare systems. Now, a century later, another pandemic – combined with environmental breakdown, and hot on the heels of a financial crisis – has created similar conditions.

As shown by a growing body of behavioural research (Centola et al., 2018; Otto et al., 2020; Robson, 2019; Tabara et al., 2018), an idea adopted by just 25% of the population is a sufficient tipping point for profound change. This can also be achieved by protest or mobilization by 3–4% of the population. This points to the need for civil society to be awake to and help hasten **cultural shifts** that can precede and trigger (sometimes rapid) behavioural shifts and new political realities – especially as corporations find new ways to shape behaviour and cultural preferences (see Section 3).

Although CSOs have vast experience in reacting to calamities, the nature and frequency of these disruptions is changing. With notable exceptions, **civil society tends to move institutionally (i.e. slowly) when confronted with new issues.** As described in Section 1, food movements are very aware of climate chaos and alarmed by biodiversity loss, but tend to know little about the detail or the interconnections. Few monitor technological developments or track corporate trendlines. Incremental initiatives therefore risk falling far short of what is needed to confront the array of emergencies ahead.

The way forward: turning the ingredients of change into a recipe for a Long Food Movement

Broad-based, multi-level collaboration, coupled with long-term visioning and strategic adaptability, are not the default for civil society (as individual organizations or as a collective). Yet, **these ingredients are clearly abundant in food movements,** past and present. Moreover, as shown in interviews with CSOs, food movements are frustrated by time and resource constraints, cognizant of the importance of other movements, and interested in developing new ways of collaborating. In particular, many groups have identified the need for cross-platform collaborations spanning trade, health, climate, biodiversity, racial justice, data, decolonization, human rights, and much more.

The case for reaching out and rethinking strategies will only increase over the coming years, with environmental breakdown looming large. Most CSOs see the position of civil society as becoming weaker in the current political context. Unprecedented levels of coordination, long-term strategizing, and adaptability will be required as food movements work simultaneously to address the above challenges *and* to seize opportunities for longer-term planning.

It will also be incumbent on governments to reflect on how to address unprecedented challenges and overcome structural limitations. **State-society dynamics will themselves be in increasing flux.** Take Brazil, for example, where some of the world's most ground-breaking achievements around the right to food, accomplished through collaborations between civil society and the Workers Party (PT) (with

Unprecedented levels of coordination, long-term strategizing, and adaptability will be required as food movements work simultaneously to address challenges and seize opportunities for longer-term planning

often-blurred lines between them) (Wolford & French, 2016), are now being dismantled by the Bolsonaro government (Global Network for the Right to Food and Nutrition, 2020). Old allies cannot be taken for granted, while new and surprising partners might emerge out of a given set of circumstances. Civil society must come to view all 'wins' and 'losses' as transitory. With each 'win', a new stage of struggle will come, that it is important to anticipate and prepare for (Gaventa & McGee, 2010).

We remain confident that civil society-led transformation of food systems is possible over the next 25 years, and that **civil society can become more effective and more collaborative than ever before**. It is our hope that by showing just how much food movements could achieve over the next 25 years, the vision of 'Civil society as unusual' in Section 4 of this report will galvanise enthusiasm for working together across new horizons of time and action. But first, we consider what could happen if civil society – and agribusiness – stay in business-as-usual mode.





SECTION 3.

Looking ahead to 2045: Agribusiness as usual? (Scenario 1)

In this section we imagine a ‘business-as-usual’ food system and how it might evolve over the next quarter century – as corporations and governments respond to environmental breakdown, social dislocation, geopolitical reconfiguration, and a vast pipeline of technological possibilities. The world we imagine in this scenario is one in which power relations remain largely unchanged, even as farms, food supply chains, and the food industry undergo radical disruptions. The overarching trajectories are agribusiness-led. Civil society – itself stuck in ‘business-as-usual’ operating mode – is able to challenge the agenda and prevent the worst excesses, but not to fundamentally change the course.

We focus in particular on multinational corporations whose activities extend along multiple nodes of the food chain, across emerging sectors of the economy, and between various world regions. We also note that agribusiness may become an appendage to the strategies of other dominant economic players such as the data and financial giants. We start by identifying the mega-trends of technological development and corporate consolidation that are already underway, before identifying three further trends that could characterize the food systems of 2045 if an agribusiness-led vision prevails:

- Trend #1: Precision-engineered ecosystems and the internet of farming things
- Trend #2: Logistics corridors, resource conflicts, and the new data geopolitics
- Trend #3: Hyper-nudging, personalized diets, and new frontiers in shaping the eating experience

These imaginings are not attempts at a worst or best case scenario, but rather an exploration of where the path we are on will lead us. When looking 25 years ahead, it is important to remember that while some things have changed over the last quarter century, many of the most important things have not. 25 years ago, 80% of the world's energy came from fossil fuels – the same as today (and the actual volume of oil, coal and gas consumption has risen). Global emissions were 4% higher in 2019 than at the time of the Paris conference in 2015. Emissions are lower and skies are clearer in most OECD states, but that is primarily because they've offshored their manufacturing. Only 14 of 72 companies from the paper, cement, steel and aluminium sectors can show emissions reduction plans – not the same as actions – in keeping with the Paris 2 °C goal.



Agribusiness has set lofty goals of its own, and systematically failed to meet them (e.g. on plastics and recycling, nutrition and food waste, child labour and slavery, deforestation and water management). As far back as the 1890s, Bayer claimed that it would be able to eliminate artificial fertilizers for non-leguminous crops via a new nitrogen-fixing microbial package. And while that claim was soon debunked, the company – in collaboration with synthetic microbe-maker Ginkgo Bioworks – was making the exact same promise in 2020. Meanwhile, the Wall Street Journal recently disclosed that Coca-Cola has failed to meet its 1999 court-ordered obligation to rectify minority employment discrimination throughout the company – and following some initial progress, is now back to square one (Linebaugh & Knutson, 2020). Multi-stakeholder dialogues (from cocoa to cod) have been found to be highly unproductive (MSI Integrity, 2020) – and perhaps the gold standard of greenwashing. It is therefore with a heavy dose of scepticism that we contemplate the agribusiness-led trajectories of the future.

Setting the scene: technological trajectories, corporate consolidation, and the arrival of new biodigital agri-food giants

Over the 2020s, advances in digitalization, automation, synthetic biology, and molecular technologies promise to take the risks – and the people – out of food systems. New players argue that producing protein in petri-dishes, letting artificial intelligence manage the farm or invisibly nudge consumer behaviour, inventing novel ultra-processed foods, or backing geoengineering, are the route to resilience (as well as being highly profitable). With climate change, environmental breakdown, and pandemics wreaking havoc on food systems over the coming years, these ‘silver bullet’ solutions prove irresistible to panicking policymakers. The keys of the food system are handed over to the biodigital mega-corporations, data platforms, and private equity firms who – thanks to proliferating merger deals – become tomorrow’s agri-food giants.

As outlined in Section 1, environmental breakdown will be a constant of the next 25 years. In this context, governments will increasingly be looking to agribusiness for 'disruptive' technological breakthroughs. They won't find a shortage of potential answers: arguably, there has never been a stronger sense of the power of technological change than exists right now. The World Economic Forum declares that the '**fourth industrial revolution**' (4IR) of exponential technological change is upturning all economic sectors including food and agriculture.

Box 6:
WEF 2021: Flights of fancy



The overlap of physical and societal boundaries – and the influence of industrial and technological trendlines on both – was evidenced in 2021 when COVID-19 drove the World Economic Forum from its 50-year residency in Davos, Switzerland, to Singapore. WEF attendees who fly into Changi Airport will be immediately immersed in the 4th Industrial Revolution WEF says can rescue the planet. On the way to the baggage carousels they will pass by the Forest Valley – 900 trees wrapped around the world's highest indoor waterfall and Butterfly Garden (Mooney & Denis, 2019). Downtown, delegates could solve food security while touring the world's tallest hydroponic farm and rejig the food chain while munching petri-dish chicken nuggets in Singapore's – and the world's – first cultured-meat restaurant (Carrington, 2020b). If they brought their families, the kids might glamour camp overnight in the airport forest and even catch a flight on Singapore Airlines just long enough to have a first-class meal (no chicken nuggets) before landing back in Singapore (Moore, 2019). WEF's 2021 theme - 'The Great Reset' - reflects their post-Covid vision for global governance. High on the Forum's calendar is the World Food Systems Summit it is guiding onto the UN. Aside from the forest in the airport, WEF's 2020 Trillion Tree (planting) may not get much attention (Heathcote, 2020). In fact, Europeans struck with 'flight shame' and others alarmed by the news that a forest area the size of 35 football pitches is being destroyed every minute (Hook, 2020) could just as well have taken a train to Klagenfurt, Austria, where museum curator Klaus Littmann planted 300 trees in the football stadium and invited citizens to come and say goodbye (Heathcote, 2020).

The nature of these technologies means that, in reality, there is no such thing as (agri)business-as-usual over the next quarter century. Some of our basic assumptions about food systems – that food is produced from soil and sunlight, that food supply chains require farmers and food companies – will be upended by these developments. There are four overlapping domains, in particular, where highly disruptive innovations are likely to be rolled out over the next 25 years: **digitalization, automation, molecular technologies, and nature modification** (or DAMN for short – see Box 7). Delivering ‘climate resilience’ and ‘nature-based’ solutions is a big part of their current promise to policymakers. But in a post-pandemic world, the previously dystopian notion of a fully automated food chain without human workers is also being vaunted as a solution for food safety, hygiene, and resilience to social shocks.

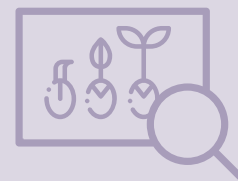
Some of our basic assumptions about food systems will be upended by current developments



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Box 7:

DAMN: The four areas of technological innovation set to transform food systems



Digitalization: Big data is increasingly a valuable commodity in its own right, leading to the rapid ascendancy of data platforms in the agri-food industry and the ‘datafication’ of all aspects of food, agriculture, health, environment, and related domains. Data is transforming each ‘link’ up and down the chain, driving breeding and genetic engineering strategies, data-mediated systems of food logistics, commodity delivery (such as the use of blockchains) and consumer digital retail (Mooney, 2018). New quantum and biological computing developments will extend the power to process and derive insights from data.

Automation: Consumer robots, 3D printers, delivery drones, and self-driving cars may be the iconic images of the so-called 'fourth industrial revolution'. However, automation is already becoming a reality in on-farm labor and across the food service sectors. The value of the global food automation industry is expected to rise from USD 9.7 billion in 2020 to USD 14.2 billion by 2027 (Global Industry Analysts, 2020). Behind the automation boom, new networks of always-on fast streaming data (5G, edge networks, and beyond) are now being rolled out across farmland or extended by satellite and aerial internet transmission. By 2045, the miniaturization and embedding of sensors, and re-engineering of life processes as programmable living machines, will see automation increasingly become 'biodigital'¹⁷ (a cross between a biological and computer system).

Molecular technologies: While molecular (chemical and genetic) technologies are most commonly associated with crop production (such as pesticides or GMO plants) or synthetic foodstuffs (like artificial flavours), developments arising from synthetic biology will transform each ‘link’ of the food chain. Within a quarter century, it may be possible for molecular manipulation – a form of nanotechnology - and genetic engineering to be driving the kind of game-shifting, platform-like changes that we currently see with data applications (and creating the same sort of monopolies as Facebook and Google). New developments in this cluster include genetically active pesticides (such as RNA sprays that hijack the genetics of the organisms), the biosynthesis of ingredients in biotech vats, gene editing, gene drive organisms, transient modification, targeted breeding by artificial intelligence and metagenomic strategies (manipulating whole communities of microbes), and foods personalized to people’s microbiomes. In a 25-year horizon we can expect that data itself (including farm data) will be increasingly carried, stored, and manipulated on biological molecules through the field of molecular communication (Farsad, Guo & Eckford, 2013).

Nature modification: The massive rise in data modelling (including environmental, biological, and agricultural data) opens up new strategies for intervening and manipulating earth system processes – such as re-engineering the carbon cycle, nitrogen cycle, nutrient flows or soil ecology. At scale, data and genomic interventions such as altering the agri-genome (microbial genomic resources, gene drives, and precision agriculture) amount to ecosystem engineering technologies. Parallel developments in weather modification, climate geoengineering, and engineered nutrient cycling will also impact food systems (ETC Group, 2018a).



Tech Glossary Alert! Throughout Section 3 we reference a number of emerging technological developments that may not yet be familiar to many readers. From Active Genetics and Artificial Intelligence to Transient Expression and Vertical Farms, we have provided a full glossary of these terms with short explanations in Annex 1.

These technologies are changing the complexion of the agri-food sector by driving **unprecedented corporate consolidation** – and the trend is showing no signs of slowing down. Marriages between giant agricultural companies have assigned new names to old players. Just four companies now dominate the consolidated interests in **commercial seeds and agrochemicals**. The merger of Dow and DuPont in 2016 gave birth to Corteva Agriscience in 2019. SinoChem, ChemChina and Adama consolidated their agricultural assets in January 2020 into the huge Swiss-based Syngenta Group. Bayer has absorbed the assets and infamous liabilities of Monsanto, after divesting substantial interests in vegetable seed and GM crop markets to BASF.

In the **synthetic fertilizer sector**, the top 10 companies account for more than 50% of worldwide sales. Just two companies supply the entire North American potash market, and three producers account for one quarter of the world's phosphate fertilizer supply (Yara, 2018).

Big players remain on the lookout for further tie-ups, with specialty fertilizer companies being particularly attractive targets.

Market concentration in the **animal genetics industry** is highest for poultry, followed by swine, and cattle. Three companies control virtually all of the world's poultry breeding stock (ETC Group, 2019a). The top 6 **farm equipment** companies account for 52% of the global market, with the North American market dominated by only 3 giants.

Corporate concentration in today's food systems


Seed & agrichemicals:
Top 4 control over 70%


Fertilizers:
Top 5 control over 50%

Animal genetics


Chickens:
Top 3 companies control almost 100%


Swine:
Top 3 companies control almost 50%



Farm equipment: Top 6 control 52%

And new players are gaining control of food systems



Asset management companies
5 own 10-30% shares
of the top agrifood firms



Tech
companies



Data processing
companies



E-commerce
retailers

But the biggest change is the **arrival of new players**. Perhaps of greatest significance for the years to come is the marriage between Big Ag and data platforms. For agri-food companies, **data strategies** are not just a means to uncover and capture new efficiencies in food, but they also result from shifts toward 'surveillance capitalism', whereby data giants amass and leverage data sets as a new form of capital (Biddle, 2019). Amazon and Microsoft provide most of the world's **cloud computing infrastructure** and are partnering with agribusiness-led digital agriculture platforms to deliver the ballooning exabytes of weather, agronomic, and production data to and from precision farming systems. Farm equipment giants are embracing the digitalization wave and building the **hardware and software for so-called 'precision' or 'digital' agriculture** into their tractors and harvesters.

Digitalization is also providing an incentive for agribusinesses (including big agrochemical and seed firms) to forge **partnerships with specialized technology companies**, e.g. drone and hyperspectral sensor manufacturers. According to Goldman Sachs, the agricultural sector will be second only to the military in its drone usage over the next five years (Begemann, 2019). Meanwhile, the **commodity titans** are forging alliances around the development of emerging digital technologies (especially blockchain and AI) to automate grain and oilseed trading, and as a general tool for traceability, transparency, and control of infrastructures (e.g. silos, ports, barges, railroad cars, and crushing/processing facilities) (Demaree-Saddler, 2018).

The rush to access **new e-retail and food delivery markets** – accelerated by the COVID-19 pandemic – is also producing new food industry giants. E-commerce companies led by Amazon (which purchased Whole Foods in 2017) and China's JD.com are now among the top ten retailers globally. New behemoths are forming as the global North's food logistics firms and data platforms merge with **e-commerce leaders in emerging markets**. Walmart's acquisition of India's Flipkart in 2018, Facebook's recent investment in India's Jio platform (owned by the biggest mobile phone provider, Reliance), and Alibaba's acquisition of a substantial stake in Indian e-retail 'unicorns'¹⁸ – namely, online grocer BigBasket and food delivery app Zomato – are indications of how **Big Tech will transform into Big Food** in the sub-continent (Phartiyal, 2018).

Alibaba and Tencent have also been buying smaller e-commerce platforms, and investing in convenience stores to gather more **consumer data** and offer **unmanned services** in India, Indonesia, and other emerging economies. Amazon, Alibaba, Microsoft, Google (through its Alphabet X) and Baidu are also moving into the production part of the food chain, with digital ag firms highly reliant on their cloud, AI, and data processing services (see Box 8).

The growing financialization of the food system – coupled with the new technologies on offer – is also creating a new tier of (largely invisible) agri-food giants. Today, a handful of **mega-size equity firms** have sensors, data streams, and financial fingers in every waypoint along the food chain (ETC Group, 2018b; Mooney, 2018). Judging by recent developments in the seed and agrochemical sectors, asset management firms are now out to buy stakes in all of the biggest firms within a market sector. Some analysts are calling this practice, known as **horizontal shareholding**, “the greatest anti-competitive threat of our time,” (Elhauge, 2019) after it helped to drive up seed prices in the US (Torshizi & Clapp, 2020). The biggest asset management companies like Blackrock, Vanguard, State Street, Capital Group and Fidelity have designated funds for investments in food and agriculture, allowing investors to go into farming without owning land. These five asset management companies own 10–30% of the shares of the top agri-food firms, and similar stakes in e-retail and cloud services (Clapp, 2019). Alternative asset managers that control hedge funds (e.g. Blackstone) have been aggressively investing in agribusinesses and agricultural land in the global South, including in Brazil, where the firm was identified as a direct driver of Amazon deforestation (Grim, 2019). The advent of large-scale aggregated food system data, combined with AI, can provide hedge funds with novel instantaneous insights to drive commodity speculation – so called **High Frequency Trading**. The recent rise of **'blank check companies'** or special purpose acquisition companies (SPACs), which are created for no purpose other than engaging in mergers and acquisitions, could drive the next generation of corporate consolidation in the agri-food sector (Scott, 2020).

The growing financialization of the food system is also creating a new tier of (largely invisible) agri-food giants

These trends will be amplified by ‘**fintech**’, i.e. the electronic payments, cryptocurrencies and electronic loans that are changing what money is and how it is handled. The super-computers needed to power fintech are administered by big companies – often financial firms – with the means to set up **blockchains** on one end and consumer banking services on the other. Meanwhile, these blockchains are becoming a tool for corporations to both mine data on consumer behaviour, and transform (in their favour) the logistics, handling, and production systems that manage food chains – with little regard for labour, equity, or ecological impacts.

As a result of these trends, **the big visible names in food by 2045 are most likely to be today's data processors**, e.g. Amazon, Alphabet (Google), Microsoft, and Alibaba – as well as the telcos who control the data pipes and 5G networks. Already these cloud services process most of the data streaming off agridigital sensors. These and other data giants are also buying up and adding to the hyper-accelerating network of cables, fibers, 5G, mobile, satellite, and edge networks (i.e. the internet in its evolving forms). Meanwhile, traditional telcos such as AT&T, Deutsche Telecom, and NTT own the supersizing internet backbone, fiber, and 5G networks. They are competing with streaming services such as Netflix to dominate the ‘edge computing’ networks that will also be important for always-on streaming farm data. Others – including Elon Musk – are deploying internet beaming satellites to position for agridigital domination from the skies. In parallel, well known agribusinesses such as Bayer, Yara, and John Deere are reinventing themselves as **rich data providers** and combining data and biotech capabilities into biodigital strategies (ETC Group, 2019a). Over time, it may not be the cloud, hardware, network, or interstellar layer that yanks the digital food chain, but instead opaque asset management firms who are pulling all the strings in the background. And with various forms of corporate consolidation continuing apace, by 2045 the big names will be considerably bigger and more powerful than they are today.

The big visible names in food by 2045 are most likely to be today's data processors

Box 8:

From fork to farm: E-commerce platforms entering the world of food production



- Baidu (the 'Google of China') is collaborating with start-up MCFLY to provide technologies for hyperspectral imaging in smart agriculture attached to drones for detection and analysis of pests and diseases in the field (Global Drone Uav, 2018);
- China's biggest retailer, JD.com, is working with Mitsubishi Chemical to build the world's biggest 'plant factory' using hydroponics (Neo, 2019), as well as developing pig facial recognition technology for better farm management and launching a 'smart agriculture development community' (JD Corporate Blog, 2018);
- Amazon is collaborating with the largest agriculture co-ops in India and processes data for Bayer's Climate Fieldview system, currently used on over 60 million hectares;
- Alibaba and Tencent – which recently launched its AI-guided autonomous greenhouses (Tencent, 2020 – are partnering with small agricultural companies in China to adapt food production to the preferences of urban-dwellers (ChinaPotion, 2020);
- Online gaming mega-corporation NetEase is now raising organic pigs with calming music and auctioning them on the company's e-commerce site Kaola (which recently merged with Alibaba's platform TMall) (Juan, 2019).



TREND #1.

Precision-engineered ecosystems and the internet of farming things

Algorithms are used to pinpoint the growing conditions of every fertile square centimetre on earth; crops and livestock are tailor-made (and modified) for those conditions; and ecosystems are engineered through data for optimal performance. Robotic tractors and drones for spraying and surveillance – an ‘internet of farming things’ – are rolled out as fast as physical and digital infrastructures allow.

Over the coming decades, agribusinesses will be vying to use new technologies – from rapidly advancing AI to wholesale digitalization – to accelerate the rollout of **‘climate-smart’ precision production systems**. By 2045, they hope, every aspect of agriculture will have been revolutionized (and monetized). Algorithms will be able to pinpoint the growing conditions of every fertile area on earth; crops will be tailor-made (and modified) for those conditions; ecosystems will be engineered for optimal performance; and the capabilities will be in place to map, sense, sequence, process, and act on data along the food chain.

Already, AI is mapping every square kilometre on the planet (including every square centimetre of farmland), for soil, nutrients, moisture, and sunshine, and combining that with massive genomic data sets to suggest AI-designed ‘climate-smart’ agroecosystems building from DNA upwards (Oak Ridge National Laboratory, 2019).



Algorithms will also be deployed to tailor either crop genetic mutations or transient Gene-sprays to specific growing environments (Tencent, 2020), while seed and agrochemical firms are investing in **new gene editing techniques** that make use of digital sequence information and computer-assisted synthesis.¹⁹ The massive rise in environmental, biological, and agricultural data modelling will also pave the way for manipulating processes at the ecosystem scale (as well as geoengineering the climate). Ecosystem-scale modification is already making its way into the field via proposed **gene drives** – a technology that aims to rapidly spread genetically modified traits, transforming entire populations and ecosystems – and the **engineering of microbes** via alteration of the agricultural and human microbiome (ETC Group, 2018c). Modifying systems in this way, rather than specific foods, could allow industry to sidestep public opposition, since it is technically no longer the product on the plate that is ‘modified’ (see Box 9).

Box 9:
Biotech without GMOs



The last 25 years have witnessed a sustained global movement against the use of genetically modified foods. Now, the biotech industry is actively looking for technological approaches that sidestep consumer resistance to GM food by technically avoiding the GMO definition, thereby avoiding labelling and oversight. Expect to see major flows of investment into biotech strategies that do not modify the DNA of the food product itself, but instead modify elements of the agroecosystems like the soil ecosystem, the insects, or the weeds. Commercial and regulatory preference will go to other biotech innovations that deliberately do not incorporate modified DNA into the final product sold to consumers. Supposedly 'non-GMO' genetic engineering strategies include approaches such as 'transient modification', and RNAi sprays, where a designed genetically active compound or molecule can invade and hijack the genetic functioning of an organism for a limited time, supposedly without changing its hereditary DNA. Hairy root cultures, biosynthesis, and big data breeding strategies such as TILLING (Targeting Induced Local Lesions in Genomes) are other examples of biotech approaches that industry may try to pass off to legislators as 'non-GMO' (Slade et al., 2005). Biotechnology firms are already deploying these arguments to exempt gene-edited organisms from existing GMO regulations.

New technologies are also making **fully automated and digitized farm management systems** a viable aspiration for agribusinesses. On-farm robots, drones for spraying and surveillance, and self-driving tractors – all tied together in an '**internet of farming things**' (Meola, 2021) – are already becoming part of food systems (The Economist, 2017). With agribusinesses looking skyward for new investments, and manufacturers hard-wiring equipment for data streaming, whole packages of remote farming services will increasingly be marketed to farmers as a solution to climate threats, pest infestations, *and* rural labour shortages. Agribusiness giants are already pitching their digital agriculture platforms as the key to 'regenerative' farming since they can supposedly track (and therefore trade) carbon in the soil.

In the post-pandemic economy, **close data surveillance** of the food system will be sold as bringing food safety and health benefits, monitoring for 'overspill' of zoonotic diseases, and managing disease outbreaks. This narrative suits corporate behemoths in the poultry

Whole packages of remote farming services will increasingly be marketed to farmers as a solution to climate threats, pest infestations, and rural labour shortages

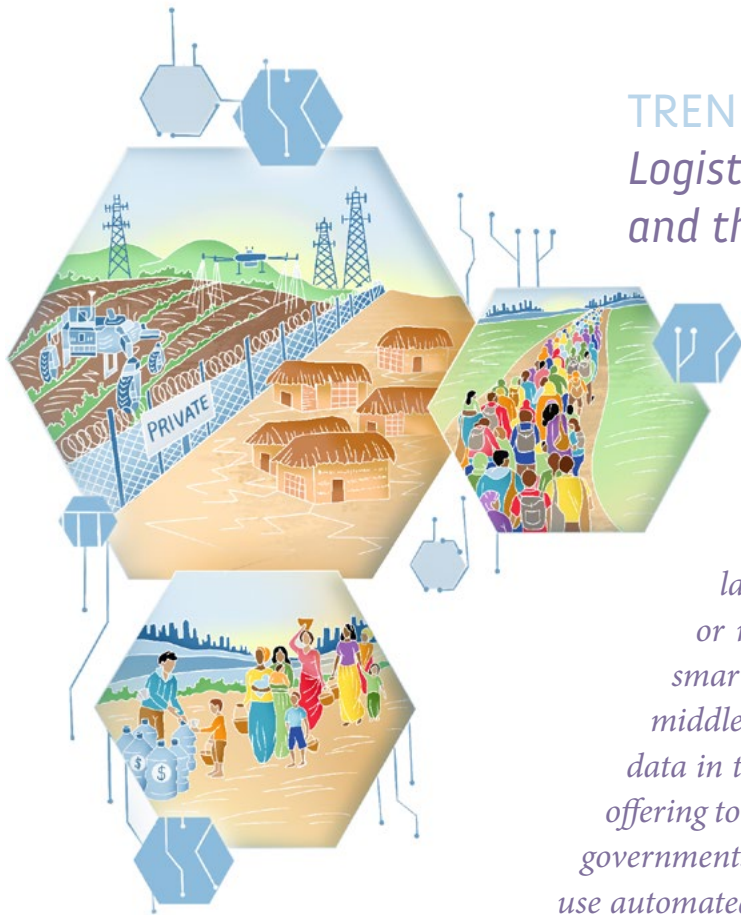
and livestock sectors who are already embracing big data, AI, and IoT to reduce labour and maximise profit. Farmers and workers will also be facing another type of surveillance and control thanks to **fintech** (see Box 10).

In response to demands for local and **smaller-scale solutions**, farm machinery companies could market their package of big data, sensors, and machines as the answer for small diverse production centres (e.g. smallholdings and fishponds). Instead of giant robotic planters and harvesters rolling across enormous fields, there are claims that they could be disaggregated into **swarms of small robots** planting different crops and varieties in different soils and slopes. XAG and DJI, both world leaders in drone technology, are now developing autonomous agricultural utility vehicles and multifunctional farm robots fitted with hyperspectral cameras designed to navigate small landholdings – and to avoid nascent regulations on drones (Bloomberg News, 2019).

BOX 10:
*Cashless and powerless: farmers at the
frontier of fintech*



CROWDE, a mobile crowdfunding platform, allows users to invest as little as one dollar in thousands of farms across Indonesia. But instead of cash, farmers receive tools, seeds, and fertilizer that CROWDE buys at a lower rate from agricultural suppliers, and producers lose control over production choices (Thomson Reuters Foundation, 2018). In Mexico, credit and subsidies for the poorest rural families are now delivered via electronic deposits that can be accessed only in certain stores that are also banks, where they purchase inputs, consumer goods, cell phones and data packages. If the farmer requests cash, the bank instead offers a credit card from that same store. The payment and interests are then deducted from government subsidies.²⁰



TREND #2.

Logistics corridors, resource conflicts, and the new data geopolitics

Putting food security at the mercy of digital networks and potential data glitches worries governments and movements alike. So does the plight of farmers (who are forced off the land into ‘smart cities’ and e-commerce villages, or reduced to digital outgrowers). But the ‘climate-smart’ and ‘risk-free’ future on offer convinces low and middle-income countries to put land, resources, and data in the hands of those supplying the technologies and offering to pre-purchase their harvests. As a result, powerful governments and their flag-bearer corporations are able to use automated logistics internets to control resources and food

supplies across vast economic corridors. Unlike previous Free Trade Agreements which opened up new markets, the FTAs of the 2020s and 2030s serve primarily to guarantee access to resources, protect rights to corporate data exploitation, and put unfavourable regulations into the deep freeze. With food seen as a strategic asset and weapon, a new wave of land, ocean, and resource grabs gets underway, and trade chokepoints are increasingly militarized.

Equipped with the technological dividend of the 4th industrial revolution, the new agri-biodigital behemoths will be confident in their own ability to upend agriculture over the next 25 years. But AI-powered precision farming can only be rolled out as fast as **physical and digital infrastructures** allow. This requires states to become allies in this venture, and their resources to be martialled. Although some governments are worried by the prospect of putting food security at the mercy of foreign-owned data systems, the ‘climate-resilient’ and ‘risk-free’ future on offer may ultimately be enough to convince low and middle-income countries to hand over their land, resources, and data.

Peasants, whose land acquires a new value now that it is more readily accessible to robotic farm equipment, are vulnerable to fresh **land grabs**. To facilitate land aggregation they will continue to be forced

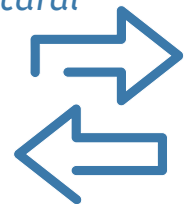
into equally digital cities, suburbs, or into variations of Alibaba's rural e-commerce villages – now being promoted abroad under the Belt and Road Initiative (Jingwen, 2020). The farmers who remain on the land are reduced to **disempowered digital outgrowers**. Workers also become more vulnerable and increasingly deskilled, 'augmented', or replaced. In other words, the 'agricultural exit' long-advocated by powerful actors is accelerated by digitalization of the countryside.

Meanwhile, agribusinesses will have little trouble securing support from their home governments. China and Russia have been most explicit about their goals, but **many powerful nations now see food as a strategic asset** rather than a standard commodity (Paskal, House & Furrie, 2011), and have grasped the geopolitical advantages of controlling resources and food supplies across vast areas. Over the next 25 years, the US and China will ramp up their digital and physical silk roads (see Box 11 on China's Belt and Road Initiative). Other countries will follow suit, working hand in fist with flag-bearer corporations to secure resources through **economic corridors** and **mass infrastructure schemes built on an 'internet of logistics'**. States and corporations will also prioritize the technological and data infrastructure that underpins 'logistics internets', i.e. the use of automation in the logistic and transport sectors to enable goods to swap between local and global handling systems more efficiently and without human interference. Through blockchain-enabled data sharing, and other software and hardware, logistics internets promise to keep food (and other commodities) moving automatically to wealthy markets in the face of social disruptions, climate change, or pandemics.

The growing rivalry between the US and China, and competition for physical and digital control of the world's trade arteries, will **accelerate agribusiness concentration** on both sides of the Pacific. Already, Cargill and ADM have formed Grainbridge as a joint venture to provide a common technology platform for North American grain farmers (Cargill, 2019).

Meanwhile, through the latest expansions of China's BRI, large regions of Kazakhstan and Pakistan have been locked into high-tech, agri-commodity production for export to China.

*South-South trade
now accounts
for 1/4 of total
agricultural
trade
flows*



In the coming years and decades, a swathe of **emerging countries will join the old powers** in vying to control food and farmland. The global centre of gravity is already shifting, with South–South trade now accounting for a quarter of total agricultural trade flows (Lee, Bellman & Hepburn, 2019). Brazil is predicted to surpass the EU and the US as an agricultural exporter by 2030 (Lee, Bellman & Hepburn, 2019), while Asia (as well as the likes of Mexico and Nigeria) is fast becoming the new powerhouse of agricultural imports. The Anglo-American domination of commodity trade – already challenged by Chinese entrants – will be increasingly eroded over the coming decades.²¹

BOX 11:

Expanding China's agro-industrial complex through the Belt and Road Initiative



Large parts of Asia, Africa, and Europe may be reconfigured into major production and distribution zones by China's mega-infrastructure plan, the Belt and Road Initiative (BRI). This would lead to an increase in China's control over farmland globally. BRI's model of infrastructure-led growth involves appropriating large areas of land and converting them into economic corridors, at the expense of traditional livelihoods and farming systems.²²

In central Asia, Kazakhstan is the focal point for Chinese agricultural plans, with infrastructure already laid. The country is being eyed by Chinese investors as a new source of wheat, sugar, meat, and vegetable oil; in turn, investors in Kazakhstan see China as a market for farm exports like beef, wheat and dairy. China is also developing a 'Digital Silk Road' (DSR) in parallel to the BRI. The DSR is a major programme of technological aid, investment and digital infrastructure upgrades for client countries using Chinese hardware. China intends to include West Africa in BRI, with Senegal as a springboard for Chinese industry throughout West Africa.

China's increasing dominance in global agribusiness is likely to concentrate global food production and distribution, and define commodity import and export markets – pushing farmers, fishers, forest people, and rural communities to the margins. Its investments are increasingly being led by the private sector, with Chinese companies investing USD 43 billion in agricultural production outside China (GRAIN, 2019a). This could increase with bilateral agreements such as the China-Pakistan Economic Corridor (CPEC). Since 2015, the CPEC has connected China to Balochistan through roads, railways, and other infrastructure. The long-term plan is to replace traditional Pakistani farming with high-tech farming, marketing systems, and a large-scale agro-industrial complex.

Deregulated markets will be a basic requirement for the logistics corridors of the future, and **trade liberalization** will continue to be demanded by corporations. But unlike the Free Trade Agreements (FTAs) which opened up new markets in the early 21st century, the FTAs of the 2020s and 2030s will serve primarily to guarantee access to resources, protect corporate data ownership, and put any unfavourable regulations (e.g. of new genetic technologies) into the deep freeze.

Big regional deals are already in the offing. The **African Continental Free Trade Agreement (AfCFTA)**, now ratified by most governments, aims to create a single liberalized market for goods and services across Africa. Meanwhile, 15 major economies in the Asia-Pacific region inked the biggest trade deal in the world – the **Regional Comprehensive Economic Partnership (RCEP)** – in November 2020. These and other trade deals may constrain governments' ability to protect local food systems and act on climate change, while enabling regional power players to export their corporate ag model or to **outsource emissions and environmental destruction** to other parts of the world – a trend well underway (see Box 12).

BOX 12:

Outsourcing emissions to the global South



While agri-food policy will be increasingly governed by carbon and climate politics, claims of carbon reductions may really be acts of carbon offshoring. Close to 30% of synthetic fertilizers ultimately end up in products that are exported, and nearly half is used for livestock feed – shifting more and more of the fertilizer runoff damage from Europe and North America (that get the protein) to Latin America (that gets the pollution) (Acción por la Biodiversidad, 2020; Heinrich Böll Foundation & Friends of the Earth Europe, 2014). 50% of nitrous oxide emissions (265-298 times more potent than CO₂) come from synthetic fertilizers spread in three countries (China, India, and the US) (Ramankutty et al., 2018). Methane emissions (from enteric fermentation in livestock) come from India, sub-Saharan Africa, Brazil and Western Europe, and about 60% of methane (from rice) is emitted by India, China, and Vietnam.

Between 72-80% of total agricultural emissions are from livestock (Bowles, Alexander & Hadjikakou, 2019; Springmann et al., 2018a) animals and/or their feed – raised in South America and consumed in the global North. China's BRI emissions (see Box 11) don't seem to be consistently counted by either China or the targets of its largesse.

The EU-Mercosur²³ trade agreement is projected to boost trade in major climate-impacting agricultural commodities. By importing cheap soy products and ethanol in order to meet their climate change targets, EU government policies may cause land grabbing and increased deforestation in countries such as Brazil, Ecuador, and Peru, leading to further climate destruction (Illegal Deforestation Monitor, 2019). GRAIN, for example, estimates that the EU-Mercosur deal will boost beef exports to Europe by 50%, rice by 60% and ethanol by 540%, potentially bumping up Mercosur emissions by 34% (GRAIN, 2019b). Meanwhile, the deal will undermine the livelihoods of small-scale farmers on both sides, creating a 'race to the bottom' in terms of farmgate prices, and deepening debt and bankruptcy in rural areas (GRAIN, 2019b). As data becomes a key input for agriculture, and the global digital infrastructure supersedes to gobble up one fifth of global electricity, the offshoring of vast quantities of agricultural and genomic data into cheaper and colder data havens will become another form of carbon emission offshoring (and data colonialism). Most of the new FTAs include chapters on digital trade and movement of data that will facilitate this.

But negotiation is not the only game in town. What governments now (rhetorically) call a 'climate emergency' will propel them to act aggressively well before 2045. More assertive tactics will be used by governments and (increasingly) corporations to gain **control over resources for food commodity production**. Across Asia, some 9.6 million hectares of farmland – an area roughly the size of Malawi or Hungary – have been transferred from rural communities to foreign corporations over the past decade (notably in Cambodia, Indonesia, Laos). These trends, also affecting Australia, are likely to intensify under the RCEP trade agreement (GRAIN, 2019c). Africa is also a major target for **large scale agricultural land grabs**, with more than 420 deals comprising ten million hectares completed between 2000 and 2016 (Goedde, Ooko-Ombaka & Pais, 2019). While in many cases land has been held rather than developed, climate change is likely to accelerate governments' quest for foreign land (and water) to produce food for their populations, as Middle Eastern and North African countries are already doing in Sudan (Schwartzstein, 2019).

Island/ocean grabbing is also likely to intensify as countries seek to solidify their influence, their food supply chains, and their global sourcing and distribution networks. In the Red Sea region, conflicts over fish and other marine resources are threatening rich biodiversity (Kleinhaus et al., 2020). Meanwhile, in the South China Sea, said to have some of the highest marine biodiversity on earth, China has been building airstrips, ports and other facilities on disputed islands and reefs, with the apparent aim of establishing military bases (Ives, 2016). Conflicts over marine resources are already occurring in South and Northeast Asia, Central and South America, and off the Horn of Africa (Bergenas, 2016), and could intensify in the Pacific – home to some of the world’s richest tuna stocks (World Bank, 2016). As climate change takes a toll on coral reefs and fish stocks, these conflicts are likely to increase, further reducing the ability of small-scale fishers to feed themselves and their communities.

While countries and corporations may succeed in appropriating resources, they will still be left to grapple with extreme volatility. **Supply shocks, price spikes, and food shortages** are likely to become a regular occurrence as several trends collide over the coming years. A number of **zoonotic and food borne diseases**, arising in particular from the industrial food chain (and specifically industrial livestock farms), are likely to proliferate over the coming years and decades. Like COVID-19, future pandemics stand to disrupt local (territorial) and global supply chains (IPES-Food, 2020a). The ongoing use of antibiotics in livestock is also likely to give rise to **antibiotic-resistant superbugs**, a phenomenon already occurring in farms across the world (Harvey, 2019). As outlined in Section 1, **wildfires, droughts, and floods** are set to occur with such regularity that whole regions will face irreversible changes in vegetation, losses of fertile land, and topsoil, and reduced food production capacity – or even 'multi breadbasket failures', where several key growing regions may fail together.

Supply shocks, price spikes, and food shortages are likely to become a regular occurrence as several trends collide over the coming years

These crises will ratchet up the pressure on **critical ‘chokepoints’ for global food trade**, i.e. the hubs of the global food distribution/logistics networks described above. The growing concentration of staple crop production in a handful of countries (Clapp, 2017), coupled with continued growth of international trade in major crops,²⁴ is building up pressures on the junctures where large volumes of staple commodities transit daily (e.g. maritime corridors such as the Panama Canal and the Strait of Malacca,²⁵ coastal infrastructure, and inland transport infrastructure in crop-exporting areas). Interruptions at these chokepoints could result in supply shortfalls and price increases, constituting an ‘underexplored risk’ to food security (Wellesley, Walsh & Tucci, 2017). The consequences would be particularly dire for highly import-dependent regions such as the Middle East and North Africa, and poor countries with structural vulnerabilities. Japan and South Korea are also at risk, as they rely heavily on food imports passing through one, two, or three chokepoints.

Political responses are likely to turn increasingly populist and authoritarian. **Export restrictions and border closures** could rapidly become the norm, far exceeding measures taken in response to COVID-19. The chokepoints themselves could become **increasingly militarized**. And rather than relocalize their supply chains, big players will hedge their bets by **forging new global supply routes**. With so much at stake, nothing will stand in their way (not even ice shelves). Beijing, for example, is seeking a foothold in Greenland in order to ensure access to the Arctic passage and reduce the exposure of its commodity networks to current chokepoints. Meanwhile, Eurasian traders are hoping that the E40 Waterway – a 2,000-kilometer inland shipping route linking the Black Sea with the Baltic – will overcome political and ecological barriers and come to fruition.



TREND #3.

Hyper-nudging, personalized diets, and new frontiers in shaping the eating experience

Downstream at the consumer end, data harvested from online activities is being combined with metadata generated from the use of digital wallets, automated food services, and other everyday activities. Connecting these data sources opens up new opportunities to track, micro-target, and invisibly nudge people's eating habits, and to reshape food cultures. The food industry shifts ever-more resources into new veneers of sustainable and ethical consumerism, leaving citizens to make sense of increasingly opaque supply chains and a dizzying array of claims.

The technological and geopolitical reconfigurations described above will ripple along the food chain over the next quarter century. The food industry (and its new entrants) will be vying to **transform every aspect of the eating experience** and to expand its reach into new frontiers in the global South. A range of developments – from mass cell phone penetration and ‘the internet of things’ to digital wallets and automation of the food service sector – will make this an increasingly realistic possibility.

Disruption is clearly on the menu. The world's biggest food and beverage manufacturers are facing multiple challenges, from **consumers who are shunning highly-processed foods** in favour of healthier and cheaper alternatives, to the **emergence of giant grocery retailers** that are stocking shelves with in-house label products while maximising food sales online.

With **unprecedented sales for online retailers** during the first six months of COVID-19, the food industry is looking at 2020 as a turning point. During lockdowns, some 28% of urban-based Europeans have used online shopping as their main channel for buying groceries, and more than 80% of new e-shoppers plan to continue the habit (Ecommerce News, 2020). US and Chinese jumps in e-retail were even more pronounced, as was the transformation of previously sluggish e-commerce markets. Online sales surged by 66% in Brazil during 2020, and are expected to triple to a USD 100 billion market in India by 2024 (Bloomberg Report, 2021). And like the internet of farming things described in Trend #1, there is a rapidly growing market for **robots designed to substitute food workers** and meet the growing demand for ultra-fast food services. As one aspiring market leader puts it: “Robotic kitchens, robot-driven cooking, ChefBots, Precision Cooking, autonomous AI-powered robots, restauroides, barista robots, edible robots... this is just the beginning.”²⁶

The potential to **extract data and track behaviour at multiple nodes of the chain** is helping the food industry to cultivate new growth markets. The growing demand for ready-to-eat meals, drinks, and a wide variety of fast-moving consumer goods (products that sell quickly at relatively low cost) has contributed to the rapid growth of convenience stores in Asia and Latin America in the last decade (Kantar, 2019). **Snacks and functional-food snacks** – foods targeted at singles, working women and students – now represent 50% of average daily food and beverage intake in the US (Hartman Group, 2016). The world snack market is set to grow at 5.34% per year between now and 2025, with most of that expansion taking place in Asia Pacific (Mordor Intelligence, 2020).

50% 
*average daily food
& beverage intake
from snacks and
'functional-food
snacks' in the US*

Traditional, non-westernized food cultures represent a barrier to the global expansion of the food industry's offerings, but thanks to FTAs, commercial enterprises are now being created and **highly-processed foods** are becoming prevalent in new markets in the global South – and with them spiralling rates of obesity and NCDs.²⁷ As local nutritional strategies are disrupted, and knowledge about cooking and the properties of food is eroded, corporations are able to exert “an absolute domination at the sales point” (GRAIN, 2015). And with stagnating wages and longer working hours, low-income populations in the global North and South are becoming increasingly dependent on cheap fast food – and often alienated from their own food cultures.

New proteins also represent a growth market and an area of increasing focus for investors, food corporations, and policymakers over the coming decades. Two proposed ‘solutions’ to the environmental impacts associated with livestock – **lab-grown meat** and **meat mimics**²⁸ – are also a source of potential market growth and disruption over the coming decades. By 2045, the most likely outcome is the creation of a **new protein market** where established meatpackers like Tyson and Cargill swallow up or partner with ‘fake food’ start-ups such as Just Foods and Impossible Foods.²⁹ These new protein giants will promote the bulk sale of diversified (and often blended³⁰) protein products from a range of different sources – maintaining market monopoly and catering to every niche.³¹

But meat is not the only thing being brought to city-centre labs. Mindful of the growing risks of supply chain disruptions, ‘**smart city**’ plans will increasingly include **indoor hydroponics**, as well as energy and nutrient-intensive **automated ‘vertical farms’**, and food ingredient **bioreactors**. Some bioreactors use genetically engineered microbes fed with methane or cell cultures to provide ‘locally brewed’ or ‘artisanal’ high-tech proteins, oils, and flavours for the processed food industry.

New proteins represent a growth market and an area of increasing focus for investors, food corporations, and policymakers over the coming decades

Niche markets of this type may be about to proliferate. Over the coming quarter century, the food industry will be aiming an ever-wider array of 'personalized nutrition' strategies at wealthier consumers in the global North and South. Fad diets are nothing new, but are now spreading fast on social media, with 'influencers' talking about eating as a waste of time, Silicon Valley icons embracing radical new diets (Mahdawi, 2019), and orthorexia – an eating disorder characterized by an unhealthy obsession with healthy eating – on the rise (NEDA, n.d.). Examples include Medifast's Optitavia diet, based on 'fuelings'; the *Lemonade diet* whose motto is "say goodbye to solid food for 20 days"; extreme carbohydrate-restricted diets; snack diets based on frequent food intakes to accelerate the metabolic rhythm; Soylent (an artificial protein drink); and meat-intensive *Paleo* and *keto* diets. Consumers are encouraged to embrace these diets and take control of their health, based on the promise of technically-enhanced physical and mental performance.



Emerging alongside these diet products are a new generation of **gadgets and AI assistant apps** designed to track food habits, biological indicators, and physical activity. Right now, smartphones can count your steps and measure walking distance, heart frequency, sleep hours, and time spent looking at screens. The next phase of ‘**digital agency**’ (Baum, 2018) is based on relieving the user from the ‘cognitive load’ needed to provide for oneself when it comes to eating, and entrusting AI assistants with helping “to achieve the perfect intake of food by analyzing factors like genetic information, life stage, personal and family history, mood, taste profile, energy needs, values, environmental impacts, costs, and other external conditions” (Allen, 2017; Greatist, n.d.). As the ‘internet of things’ takes hold, those data monitors will be built into kitchen appliances, packaging, recycling and waste bins. Some companies are even looking to monitor the customer’s digestive system (see Box 13).

Box 13:
Ingestible Hackers



According to the concept of *biohacking*, our bodies are systems that can be optimized through digital coaches and edible devices. Once the data has been collected from our organs, we can be offered customized nutritional recommendations (Faguet, 2017). Companies that are investing in biohacking technologies argue that they want to serve people by fulfilling individual needs. To this end, they are developing gadgets such as ‘ingestible sensors’ which are like pills filled with transgenic glowing bacteria that travel through our intestines to measure temperature, acidity, presence of medical molecules, and stomach bleeds (Molteni, 2018). The data is sent to our smartphones and on to the biohacking companies. The firms behind these technologies say that they want to move “from transactions to relations” by “supporting microbe-friendly foods in the marketplace,” and are hoping to “build a larger base of loyal customers” in this way (Institute for the Future & Bill and Melinda Gates Foundation, 2018).

These trends will be accompanied by a **sophisticated array of techniques for nudging consumers** toward specific behaviours and products. The same data infrastructure powering digital farming will allow the 'internet of things' to communicate data in the home and on the go, allowing food retailers to better mine consumers for data, notice their proximity, and to try to script their food consumption behaviour. 'Smart city' planners will be all too happy to also turn to big data giants to step in and help manage food delivery into and across the city, while reaping ever more data on mobility and consumption. It is expected that over 92% of the global population will own a cell phone by 2024 (Dea, 2020), allowing corporations to shape the preferences of masses of previously unreachable clients. Meanwhile, fintech has major implications for consumers as well as farmers. As internet-enabled objects automatically execute transactions (through pre-programmable 'smart contracts', and using tokens and cryptocurrencies), people's autonomy over their food purchases may be eroded, and food chains increasingly financialized (Mooney, 2018).

The 'nudges' that will be made possible by these developments range from more traditional e-coupons and products on sale at the point of e-registration, to recognizing a consumer's shopping and social media history in order to propose new products according to taste, lifestyle, and income. All this requires is shoppers with debit/credit cards who are connected to the internet, although in some cases shelf-mounted sensors may suffice (Howard, 2021). Walmart, Amazon Fresh, Costco, Freshdirect, LocalHarvest, ShopFoodEx, GoBIO, Safeway and mySupermarket are already well-advanced in their pursuit of the perfect nudge (Fisher, 2021). **Hyper-nudging** – combining big data with behavioural science – is a tool that could allow food corporations to exercise further control over consumers and markets through predictive retail analysis (see Box 14).

BOX 14:

Hyper-nudging: the next frontier in consumer capture



Critique of data platforms often focus on the ‘surveillance’ side of digital capitalism - but the sinister companion to big brother is the big nudge. Mass digitalization across all areas of the economy makes human beings not only trackable but also more tractable as we continually emit streams of ‘metadata’ that reveal much about our interests, motivations, and weaknesses. Hyper-nudging (sometimes called ‘psychographics’) is a practice that deliberately combines big data with behavioral sciences to shift individual and collective behaviour (Yeung, 2016). Although food corporations have long sought to manipulate consumer desire through mass-marketing, the large amount of data held on individuals now opens up the option of individualised AI-managed manipulation strategies. Persuasion can be automatically tailored according to psychographic profiles – timed and micro-targeted to suit the emotions, triggers, and psychological profiles of each individual, not only at the point of sale, but also through social media, digitized environments, and the ‘internet of things’.

Controversial hyper-nudging strategies have recently been exposed in the political realm (e.g. most infamously the psychological based micro targeting of voter behaviour of millions of individuals in the 2016 US election and UK Brexit referendums by Cambridge Analytica). However, the same firms also have clients throughout the food and beverage industry. This often invisible ‘mass-customisation’ approach to persuasion is also being put into action on behalf of commercial operators, making these techniques probably the most important, and least discussed, consumer-end trend in the coming decades. Corporations deploying hyper-nudging to alter behaviour can establish trends and build whole environments where people will think and act “more like consumers and less like citizens, which further threaten the agency of individuals and communities to take back control from a highly corporatized and concentrated foodscape” (Carolan, 2018).

Hyper-nudging promises fine-grained control of future markets through predictive analysis and then manipulation of retail and other data. Exponential generation of data is considered the next big thing for markets (especially online and subscription buying brands), growing at an annual rate of 11.7% since 2017 (Carolan, 2018). Due to its invisibility and control potential, hyper-nudging can pave the way for the extinction of some food systems and the dominance of others.

CONCLUSIONS:

Cracks and contradictions in an agribusiness-led future

There is considerable uncertainty around each of these trends and sub-trends. But it is clear that agribusinesses (and maybe also governments) are planning, in their own way, for a future of environmental disruption, social dislocation, and technological opportunity – whether by securing economic corridors, or engineering agroecosystems and consumer behaviour. The sum-total of these developments will be nowhere near enough to bring the planet and its food systems back within a safe operating space, and some trends such as rapid digitalization – in addition to their implications for social equity and dignity – will generate harmful environmental impacts of their own (e.g. energy, resource extraction, water use).

Innovation pathways are clearly being driven not so much by the urgency of the climate and nature crises, or the needs of most food system actors, but by finding new applications and new growth markets (as well as new justifications) for the latest breakthroughs in data science and molecular biology. Leading actors are focusing on removing vulnerable factors (e.g. people, soils) from supply chains, cushioning specific populations from the harshest climate or health impacts through vast ‘shock-proof’ agro-industrial complexes, and offshoring the environmental damage of industrial commodity production. And rather than promoting deep behavioural shifts and a sense of collective responsibility, food companies are inviting privileged consumers to surrender agency over what they eat, and embrace personalized ‘nudgeable’ solutions, while continuing to erode existing food cultures and homogenize the diets of millions. As industries sideline keeping humanity in a safe operating space, they will shift ever-more resources into creating new veneers of sustainability, leaving citizens – already bombarded by ‘fake news’ – to make sense of increasingly opaque supply chains and a dizzying array of sustainability and ‘clean label’ claims.

As industries sideline keeping humanity in a safe operating space, they will shift ever-more resources into creating new veneers of sustainability

'Climate-Smart', 'nature-based', digital and genomically-enhanced agriculture could be successfully marketed as 'pro-poor' solutions for small-scale farmers, while reinforcing the grip of mega-corporations on technologies, resources, and future farming decisions.

In this context, the ability of the poorest populations to produce or procure food will be squeezed on all fronts. As trade liberalization (and especially digital trade) is pursued to prize open food service and delivery markets, it could disrupt the few sources of nutritious food available to large swathes of the population (e.g. local subsistence networks, territorial markets, street food stalls). In a context of mounting climate threats, biodiversity loss, and mass migration, these local provisioning systems are likely to be fragile and highly vulnerable to external shocks. Digital food provisioning may prove brittle in other ways, leaving people reliant on the lowest-quality processed items and food aid, i.e. diets severely lacking in diversity and micronutrients.

But there is nothing inevitable about these trends. Corporations and governments could find themselves facing powerful feedback loops well before 2045. Firstly, **agribusinesses are internally divided** – and not as sure of their own answers as they may publicly suggest. The technologies and trends described above reflect the aspirations of the biggest believers in big data. But these strategies do not benefit all business sectors equally, and many in the private sector will refuse to play by this script. Divisions are likely to grow among corporations as ecosystems refuse to be tamed, people refuse to be nudged, farmers hack their hardware, technologies malfunction, risks mount, and environmental and social tipping points come into view.

Secondly, tomorrow's data-dependent agri-food systems may find themselves confined by **limits and vulnerabilities around data infrastructure** itself. The high and mostly hidden energy, water, and mineral extraction costs of supersizing the internet could put the brakes on digital food systems and expose their 'low carbon' claims. Furthermore, deliberate cyber-attacks, unexpected AI failures, breakdown of data flow at 'digital chokepoints' in the global information network, and server outages could cause food shortages and highlight the vulnerabilities of digitally-mediated food chains.

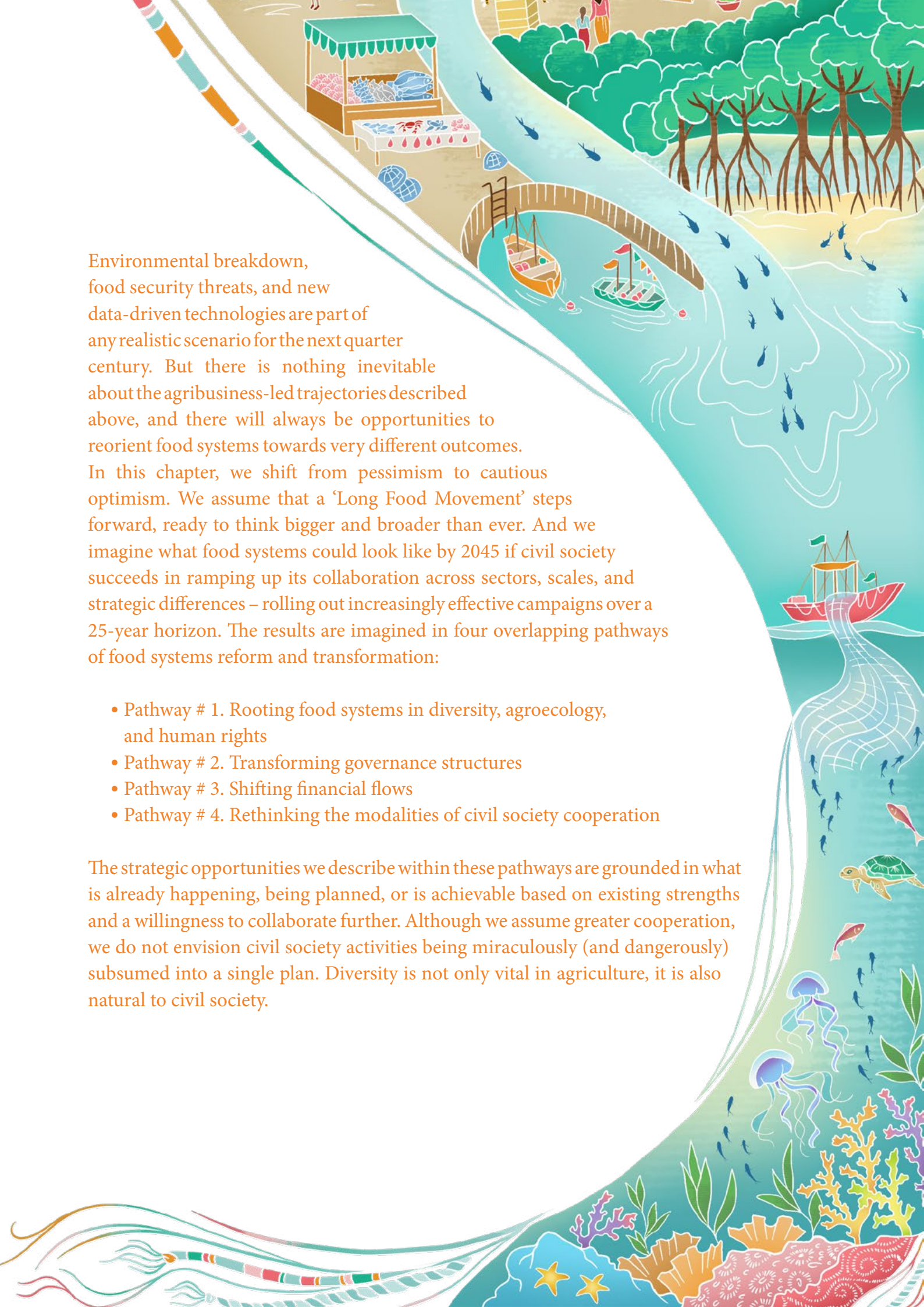
Thirdly, **social breaking points may be triggered** before 2045 – and potentially even before environmental tipping points are reached. This depends on the extent to which societies can tolerate gross inequalities without splitting apart. If social breakdown happens, it will surely do so in rapid and unpredictable ways – sparking sudden shifts in power relations, and therefore making business-as-usual an impossibility.

In Section 4, we explore how civil society might resist, respond to, and potentially reverse these trends over the next quarter century – including how glitches in the hyper-industrialized biodigital food systems of tomorrow can be used to press for a different type of transformation.

SECTION 4.

*Looking ahead to 2045:
Civil Society As Unusual
(Scenario 2)*





Environmental breakdown, food security threats, and new data-driven technologies are part of any realistic scenario for the next quarter century. But there is nothing inevitable about the agribusiness-led trajectories described above, and there will always be opportunities to reorient food systems towards very different outcomes. In this chapter, we shift from pessimism to cautious optimism. We assume that a ‘Long Food Movement’ steps forward, ready to think bigger and broader than ever. And we imagine what food systems could look like by 2045 if civil society succeeds in ramping up its collaboration across sectors, scales, and strategic differences – rolling out increasingly effective campaigns over a 25-year horizon. The results are imagined in four overlapping pathways of food systems reform and transformation:

- Pathway # 1. Rooting food systems in diversity, agroecology, and human rights
- Pathway # 2. Transforming governance structures
- Pathway # 3. Shifting financial flows
- Pathway # 4. Rethinking the modalities of civil society cooperation

The strategic opportunities we describe within these pathways are grounded in what is already happening, being planned, or is achievable based on existing strengths and a willingness to collaborate further. Although we assume greater cooperation, we do not envision civil society activities being miraculously (and dangerously) subsumed into a single plan. Diversity is not only vital in agriculture, it is also natural to civil society.

When we mention the ‘Long Food Movement’, we are referring to the collective activities and umbrella strategies of food *movements* that will remain diverse and independent, even as their strategies are – we hope – increasingly aligned. In the pathways below, we consider how that collaboration could be ramped up over the coming years and decades, with different struggles linked together across various timeframes and scales, and an ever-wider spectrum of actors identifying with an overarching Long Food Movement.

The pathways are not exhaustive. We provide some examples and perspectives, but these few pages cannot encompass the variety of struggles and visions for the future of food systems around the world. And while we present clearly defined opportunities, this should not imply that progress can be micromanaged through to 2045. These pathways will need to be grounded, built out, and filled in by every ally, and measured alongside other struggles.

PATHWAY 1.

Rooting food systems in diversity, agroecology, and human rights

Over the 2020s, food systems based on diversity show their resilience in the face of shocks, territorial markets are strengthened, and diets edge towards ethical and healthy choices. Yet, these trends remain vulnerable to a volatile climate, competing political imperatives, exclusionary technologies, and co-option by an aggressive, data-driven, and consumer-focused agri-food industry. With its consensus clear on food sovereignty and agroecology, the Long Food Movement bears down: defending the rights of the marginalised and amplifying their voices through inclusive processes; promoting diversified, agroecological systems; and accelerating alternative markets and shifts towards healthy and sustainable diets.

With a premium on resilience, and with successful early efforts to defend and rehabilitate crop and livestock diversity, farmers continue their shift to agroecology. Particularly in the global South, countries diversify their food options, improve their nutrition, and with surprising swiftness, reverse the trend toward industrial meat/dairy and cheap food consumption. Among wealthier populations the trend towards 'less but better meat' and unprocessed whole foods continues over the 2020s and 2030s to the point where a majority of consumers adopt flexitarian or vegetarian diets. Meanwhile, a succession of economic failures increases consumer (and, therefore, government) sensitivity to the wages, working conditions and rights of agricultural and food workers. Over time, their expanding unions earn more rights, respect, and influence at negotiating tables.

Despite sucking up local and artisanal brands and grasping opportunistic niches, the world's largest food processors keep losing market strength and political influence. Nationally and internationally, community and producer-controlled fair trade and climate-attuned systems cut deeply into the profits of middlemen commodity traders, capturing an ever-greater portion of cross-border trade. Caught by consumer concerns over safe and healthy eating, conventional fast food chains struggle, while street food vendors and farmers' markets gain ground.

OPPORTUNITY #1

Building resilience through diversity and agroecology

Over the 2020s, climate chaos and biodiversity loss continue to devastate agricultural productivity. While initially compelling, agribusiness' solutions – from drone pollinators to engineering ecosystems – are outperformed by diversified farming systems. A premium is placed on healthy soils,³² diverse crop varieties and livestock breeds, and vibrant aquatic- and agro-ecosystems. With new farmland hard to come by, the restoration and regeneration of remaining arable land becomes a priority.

For many small-scale food producers around the world, the logical response is to build resilience through diversity. Despite the well-documented risks, over the 2020s and 2030s species diversity continues its dangerous decline in industrial food systems (see Box 15). In contrast, Indigenous peoples and peasants once again show a capacity for rapid innovation and adaptation:³³ they safeguard landscapes and nurture a wide range of crops and their wild relatives via proliferating community gene banks, living collections, and farmer-to-farmer and fisher exchanges across neighbouring ecosystems. Through the 2020s important progress is made expanding agroecology schools – first in Latin America and then across Africa and Asia (La Via Campesina, 2019).



For many small-scale food producers around the world, the logical response is to build resilience through diversity



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Box 15:

Loss of crop, livestock and aquatic diversity



Peasants have gathered, and domesticated 7000 plant species, yet the industrial food chain relies on only 16 crop species for 86% of global food production (ETC Group, 2017). An estimated 45% of all commercial plant breeding is focused on just one crop – maize. Similarly, pastoralists and livestock keepers have domesticated an unknown number of species (only 38 have drawn scientific attention), but industry considers just five commercially important for meat, dairy and eggs. And, despite the existence of tens of thousands of aquatic and marine species, the chain focuses its R&D on 25 species. The narrow genetic base of these industrial crops, breeds, and fish makes them vulnerable to pests, diseases and climate shocks. Within these dominant species, it was originally estimated that 75% of their genetic diversity had been lost to extinction. The initial 1980s-era calculations were based on land area. ETC Group, other CSOs and peasant organizations now feel that a true estimate of the remaining genetic diversity should be connected to the number of peasant and fisher communities protecting and using this diversity.

Over the 2020s, other types of agroecological systems spread. By the end of the decade, new and widely-available **tools for measuring soil health, carbon sequestration, and biodiversity** – a collateral advantage extracted by farmers from ‘precision agriculture’ – make it possible to identify which production systems are truly sustainable. In parallel, traditional ecological knowledge related to food systems is increasingly recognized and revitalized. As COVID-19 and subsequent epidemics send developing countries veering off the SDG course, governments pay more and more attention to agroecology to reconcile hunger, poverty, and environmental goals.

But national policies take time to change, and some are unwilling to wait. Realizing that farmers already have many of the tools in their hands, provincial/state governments – working with agricultural cooperatives and universities – roll out **massive regional programmes** to ensure that farmers get the seeds they want, organic inputs, and agroecological advisory services. The push to **re-diversify diets** – in the face of burgeoning micronutrient deficiencies³⁴ – reinforces government support for agroecology. Building on long-standing civil society campaigns and inspiring victories (see Box 16), traditional

foods – and the traditional knowledge systems underpinning them – are revived over the next quarter century through the combined efforts of multiple food movement actors and allies, including farmers, fishers, social movements, chefs, public procurement officers, and policymakers. The revived foods include minor crops with high climate/disease tolerance and nutritional value,³⁵ and under-valued species of fish.

Agroecology also advances in industrialized countries and farming systems over the coming decades. Small and medium-sized farmers in the global North lose patience with high input costs, low farmgate prices, and ill-purposed government subsidies (which barely allow them to break even). Environmental disruption further undermines productivity and profits: by mid-decade, **adopting agroecology becomes an economic necessity.**³⁶ By the 2030s, subsidy reform is further shifting the economic incentives away from industrial commodity production (see Pathway 3). Civil society campaigns to redirect public sector R&D expenditures (Pathway 3) and crack down on exclusionary technologies (Pathway 2) are also bearing fruit: **new open-access, non-profit, and cooperative-owned platforms** allow agroecological farmers around the world to govern and benefit from satellite data, supply chain and market information, automated harvesters, and small-scale drones for supplemental field monitoring.

Over the decades, these advances come under constant threat of reversal. But the world's food movements are increasingly unified. Following the Nyéléni conferences of 2007 and 2015, food sovereignty is no longer considered as solely a producer concept, and is seen as a unifying vision for diverse civil society groups (see Box 4). The next iterations of Nyéléni reinforce this vision, and become a springboard for campaigns to develop a **negotiated protocol building on the FAO Plant Treaty (ITPGRFA)** and the UN Declaration on the Rights of Peasants and Other People Working in Rural Areas. The resulting agreement sets out the terms and conditions for the exchange of seeds and breeds (including across borders) while protecting the integrity of peasant research, including access and benefit sharing, and management of digital data records.

Food sovereignty is no longer considered as solely a producer concept, and is seen as a unifying vision for diverse civil society groups



In parallel, the Long Food Movement works through the 2020s, defending agroecology and advancing its political footholds (see Pathway 2). Tireless advocacy ensures that the sometimes symbolic victories of the previous decade – from FAO agroecology symposia³⁷ to the release of a High-Level Panel of Experts report on the topic (HLPE, 2019 – are translated into meaningful shifts in the structure and finance of the multilateral food system.

Although there is progress, the erosion of planetary boundaries continues and the threats of the Agribusiness-as-usual scenario don't go away. By the 2030s, a watered-down version of 'regenerative agriculture' has been mainstreamed by the world's leading food processors and retailers. Co-option and distortion endanger civil society solidarity, and there is a real threat that food movements will splinter and lose the initiative. But cross-sectoral dialogues on agroecology, building on today's conversations between farming, fishing, and Indigenous groups and communities (KNTI & WFFP, 2017), help to build common cause across sectors, along the chain, and between those referring to themselves as regenerative, permaculturalist, biodynamic, or organic. They do so by confronting, not ignoring, the core issues (including race, ethnic and gender elements) faced by agricultural, fisheries, and food industry workers. In particular, cooperation with labour movements – including dialogues on work and dignity within agroecological transitions – proves essential to broaden their support base.

Box 16:

Reviving traditional crops and diets: examples from 3 continents



- From the late 1990s onwards, a traditional Korean menu has been served at the country's schools, comprising fruits and vegetables, kimchi, and lean meats with a variety of grains and legumes – and moderate use of salt, oils, and fats. A 2010 survey found that 50% of South Korean adults followed this traditional diet, 40% followed a Mediterranean-style diet, and only 10% indulged in a 'Western' diet – down from 35% in 1998 (Greenberg & Deckelbaum, 2016).
- In 2000, six Quechua communities in the Andean region of Peru created Parque de la Papa (Potato Park) to ensure the survival of thousands of traditional potato cultivars that had been phased out with the rise of mass potato production. The tubers had been kept in a tissue culture collection, and with the collaboration of many stakeholders, some 410 Indigenous potato varieties have now been reappropriated by the native communities who grew them for thousands of years (Argumento, 2020). Meanwhile, the Peruvian Government is seeking to add traditional Peruvian Cuisine to UNESCO's List of Intangible Cultural Heritage of Humanity (Andina, 2019).
- South Africa, like much of the continent, has a rich history of highly nutritious Indigenous crops and diets based on an array of pulses, nuts, cereals, fruits and vegetables. Yet, a rapid transition to Western-style diets is driving obesity. In response, vibrant chef-led movements are developing a fusion cuisine using Indigenous ingredients and recipes – some of which were lost over the apartheid period (Teagle, 2018). Meanwhile, governments in the Southern African Development Community (SADC) have committed to further promoting Indigenous diets under wide-ranging anti-obesity strategies.³⁸

OPPORTUNITY #2

Defending human rights, nature rights, and renegotiating the contract between state and society



Confronted with environmental breakdown and continuing loss of access to land and resources, huge populations face systematic threats to their livelihoods, and their ability to produce and procure food over the coming quarter century. The fallout of COVID-19 is felt through the 2020s. The default responses of governments and corporations (food banks, automated production, processing, and delivery, and data-driven surveillance at every node in the chain) only worsen these consequences. Growing numbers experience hunger, extreme poverty, livelihood loss, and forced urban migration.

Over the next 25 years, **human rights** become more important than ever as the compass guiding food movements, the basis for challenging inequitable economic models, and a legal tool for societal and environmental defence. The indivisibility of political rights (to protest and organize), economic rights (to food, water, and land) and social and cultural rights becomes clear in the face of existential threats to food producing communities and many others.

Some of the first battles of the coming decade relate to **basic protections and entitlements**. In the wake of COVID-19's food security and livelihood shocks, CSOs fight for reformed and revitalized public services, and demand bold steps to address economic insecurity and inequality. Conditional cash transfers continue to be the preferred response for many governments, and offer some short-term relief. However, these schemes also allow employers to maintain low wages, entrench corporate subsidies, and normalize pervasive surveillance tied to digital wallets and social security credits. Through the 2020s, the onslaught of regional and global pandemics, coupled with climate-induced crop failures, stir citizen outrage and embolden civil society to demand – and win – equitable human rights-based entitlements. These include some form of 'universal basic income'³⁹ – accompanied, crucially, by digital privacy guarantees.

Human rights become more important than ever as the compass guiding food movements

With governments finally taking the 'care economy' seriously, the new entitlements help to alleviate the **dual burden of productive and reproductive work** faced by many people (most often women). Having achieved important gains nationally, broad coalitions of social actors widen the battlefield from industrialized countries to the UN, fighting for the same human rights-based principles not only in foreign aid but in all global undertakings.

Continuing through the 2020s, **labour rights** remain a flashpoint, with outrage growing over the abhorrent conditions for migrant field and food processing workers. With new awareness of 'essential workers' post-COVID, strikes lead to unionization and on to legislation. By the end of the decade, labour rights have been secured in many countries via a cascade of national laws and further strengthened by international treaties.

But this is not enough: by the 2030s, food movements are redoubling their call for states to enshrine a **universal right to resources (land, seeds, water, culture) and people-led production**, in the face of expanding agro-industrial complexes and mass automation. Support for Indigenous rights to their land (and movement) beyond colonially-imposed borders becomes mainstreamed in civil society. In food systems and beyond, work and control over resources (including land and data) becomes an interconnected moral rallying cry.

By the 2030s, these struggles coalesce into a **comprehensive vision of work, care, buen vivir, rights, and entitlements** that is shared and defended across food movements. With rights at centre stage, governments are forced to link the next set of development goals – 'Agenda 2045' – to a new financial settlement between global North and South.⁴⁰ Under pressure from an increasingly vocal and globally-networked civil society (including climate, biodiversity, racial and social justice movements, all working closely with and within food movements), facing stagnating (and in some places, rising) levels of hunger and poverty over the 2020s, and staring at the possibility of more instability in their supply corridors, wealthy countries finally budge. The deal includes debt cancellation or restructuring,⁴¹ fast-tracked climate financing (considered by some as *de facto* 'reparations'⁴²) and a new pact on (environmental) migration.

A comprehensive vision of work, care, buen vivir, rights, and entitlements is shared and defended across food movements

Each of these components is imperfect, and as civil society warns, may still be too late. But a new logic is established, and civil society has a stronger foothold to push for just food systems.

Food movements don't make the mistake of putting their trust in international development goals, and pursue a range of parallel strategies. Thanks to new collaborative tools (see Pathway 4), **connections are made between communities at either end of vast export corridors** and 'digital silk roads', and their struggles become front-page news in the home countries of the expropriating governments and corporations. Citizen and consumer pressure shuts down the most contentious projects.

Legal tools become a critical part of the arsenal of resistance, and an illustration of more positive pathways forward. In the face of rising authoritarianism through the 2020s, food movements – working with civil society allies from across the spectrum – ramp up legal strategies and support mechanisms to defend the **civil political rights of communities, unions and movement organisers**. Legal tools are also deployed to defend nature. Building on promising victories already achieved by 2020,⁴³ food movements work with grassroots organizations and allies in other sectors to grant **rights to nature** and block harmful developments via legal challenges. By 2030, with a legal observatory supporting these initiatives, the 'new animists' have succeeded in establishing rights for rivers, watersheds, ecosystems, and the planet. Civil society coalitions roll back company rights such as corporate 'personhood', and ward off efforts by some governments, municipalities, and environmental organizations to use natural personhood to assert their authority over the rights of Indigenous peoples and peasants.

A range of other legal pathways for protecting rights are explored,⁴⁴ from **ombudspersons to national and regional rights mechanisms**, and even **under-utilized/dormant UN treaties and protocols** like the 1978 Environmental Modification Treaty (ENMOD).⁴⁵ Although many CSOs see legal work as intrinsically lengthy, time-consuming, and expensive, they discover that administrative questions raised by UN agencies to the **International Court of Justice** can be pursued

*Legal tools
become a critical
part of the arsenal
of resistance*

to advance agroecology or constrain agribusiness hegemony – and can be decided relatively quickly and at minimal cost. By the end of the 2020s, civil society is also seeking to expand the mandate of the **Human Rights Council** to pursue flagrant rights violations in food systems. The **International Criminal Court (ICC)** provides another potential avenue, although civil society and many governments remain wary of its biases and shortcomings. Nonetheless, momentum grows, and by the 2040s, **famine, hunger, malnutrition, poor health, and environmental degradation are criminal violations** that can be brought before the reformed Human Rights Council (or restructured ICC).

OPPORTUNITY #3

Accelerating shifts towards territorial supply chains and ethical consumerism

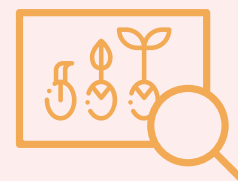
Achieving diversified agroecological systems (Opportunity #1) and just livelihoods for farming communities (Opportunity #2) is contingent on a major shift in consumer food markets and dietary habits. Over the 2020s, a series of converging trends opens up unprecedented opportunities for relocalizing and redesigning food supply chains.

In the global South, by 2021, **territorial markets** are already the norm for many small-scale producers and consumers. While these take a variety of forms, they are rarely dominated by global corporate actors, and a small but growing niche are intentionally **agroecological markets**, i.e. characterized by closer connections with consumers, shorter supply chains (with less middlemen), and collaboration based on shared commitments to sustainability and equity (FAO & INRA, 2018). Meanwhile, **public procurement schemes** (e.g. school meal programmes) also support local, small-scale producers, for example the state-run programmes in Brazil and India (De Schutter, 2014).



A series of converging trends opens up unprecedented opportunities for relocalizing and redesigning food supply chains

BOX 17:
Territorial Markets



Territorial markets are “the key markets in which smallholders operate, and how most of the world is fed, in rural, peri-urban and urban areas.” The term refers to food produced, processed, traded and consumed within local, regional and/or national food systems. “They may be informal, formal, or somewhere in between. To varying degrees, all have some links with the relevant public bodies and the state through tax collection or through public investments. Territorial markets enable a greater share of the wealth created to be retained, redistributed, and returned to producers and local economies,” as contrasted with formal global chains. They also involve and support other small-scale actors in the territory such as traders, transporters, processors and co-ops. Women are key actors in territorial markets. (See CSM, 2016).

Throughout the 2020s and 2030s, with a new premium on resilience and increasing support from municipalities and regions, CSAs and other short supply chain initiatives blossom, community and household food production grows, and producer and consumer cooperatives boom. **Territorial markets become more agroecological** (in terms of produce sold and the values underpinning them); reports of urban exodus to rural areas in response to the pandemic bear out, shifting agricultural and local food economies in both the cities and countryside, and ultimately strengthening territorial markets based around secondary cities and more remote communities.

In the face of further pandemic- and climate-induced disruptions to global supply chains, smallholders in the global South continue to **reconnect to local customers** and sustain local deliveries through lockdowns (IIED, 2020). And as COVID-19’s threat to food security registers with governments, **community and household gardens** – already rivalling the victory gardens of the last century (Brimm, 2020) – continue to flourish and enhance people’s options for accessing fresh food. By 2045, some 25% of the world’s small livestock and fruit and vegetable consumption is supplied by urban farms and households, and another 25% is supplied from within regional foodsheds.⁴⁶

These developments are facilitated on the ground by grassroots/ community groups, and reinforced by political battles waged at the global scale. Seizing the post-COVID resilience agenda, civil society works through the 2020s to build support for territorial markets and the UN policy process on 'connecting smallholders to markets' (CSM, 2016). Food movements echo this work at the WFP, where headway is made in refocusing food aid procurement on local, sustainable production (see Opportunity 8).

Over the 2020s, these trends converge with an explosion of ethical, organic, and 'local' purchasing among wealthier populations, building on the positive trendlines of the previous decade (see Box 18). In this new environment, companies risk boycotts if they cannot prove that products are sustainably sourced and fairly traded. Pressure builds in global markets to make multinationals perform 'due diligence' for all imported agricultural produce. The rise in ethical consumerism and concomitant regulations ensures that, by 2045, as much as half of the food industry's offering is fairly traded, as judged by small-scale producers.⁴⁷

In this new environment, companies risk boycotts if they cannot prove that products are sustainably sourced and fairly traded



Box 18:

Ethical consumerism on the rise



- The number of vegans in some countries was doubling every year by 2020;
- ‘Ethical’ consumer spending has risen almost fourfold in the past two decades (Smithers, 2019);
- By 2018, global organic sales had surpassed USD 100 billion per annum; organic farmland increased by more than two thirds in the EU from 2009 to 2019 (Willer et al., 2020), and by nearly 45% in Canada over a similar period (SimFRUIT, 2019);
- By 2018, revenues from Fairtrade International products had reached nearly USD 10 billion, more than trebling in value over ten years (Coppola, 2021);
- With increasing coverage in all regions, there are now an estimated 3 million+ Community Supported Agriculture (CSA) programs underway around the world;
- In the US, direct farm-to-consumer sales more than doubled in value between 2012 and 2017 (USDA, 2012);
- In a losing battle with newcomers, the largest consumer goods companies saw their operating profits drop from 6.1% to 2.6% between 2007 – 2019 (Evans, 2020). Some surveys suggest that up to a third of consumers in the UK are buying more locally-produced foods (Ewing-Chow, 2020).

Among more affluent populations, the **trend away from meat and dairy** also continues – albeit at a gradually decreasing rate – until approximately 38% of the population in wealthy countries identifies as vegan or vegetarian. With another 50% of people declaring themselves flexitarian, these diet shifts extend to as many as 80% of people in previously high-meat consuming (wealthier) population groups. Reduced consumption of red and processed meat alone delivers some USD 250.8 billion per year in global health savings (Springmann et al., 2018b).

Box 19:
Vegetarians flex their muscle



A 2019 review estimates that roughly 13% (1 billion people) around the world – but mostly in India – consider themselves vegetarians or vegans. In Germany, with a population of 81 million people, 9.3 million (11.5%) are vegan or vegetarian and their numbers are growing by more than 800,000 per year. If that trend continues, by 2045 as many as 42% of Germans will have plant-based diets. If Germany can be considered generally representative of wealthy industrialized countries, then 550–630 million people will be vegetarian or vegan by 2045. Taking into account the need for improved nutrition (including protein) in the global South, as well as a probable middle-class trend toward vegetarianism, perhaps one quarter – or 2 billion people – in the South will be vegetarian by 2045. Many more will be flexitarians. Even setting aside the very real risk of co-option by agribusiness, this positive trend is still insufficient to address our health and environmental threats in 2045 (Hagen & Masser, 2019).

The distaste for factory-farmed meat strengthens local sustainable fisheries and livestock production, and higher-protein crops. But it also opens up venture-capital interest in **lab meat**, **meat mimics**, and **high-rise hydroponic gardens**, with start-ups predicting that the production costs will come down. Although ‘*petri dish to dinner plate*’ foods are touted as clean, ‘climate-smart’, and affordable solutions to protein and other nutritional deficiencies their genetic uniformity and hyper-sterility production requirements ultimately keep costs and disease risks high. Fearing major financial losses, investors and start-ups pressure governments to award subsidies and redirect public research to address their private problems. Initially, some of the largest environmental organizations endorse the new foods, but eventually surrender to widespread consumer opposition. Health advocates against ultra-processed foods, labour rights groups, small-scale fishers, aquaculturists, pastoralists, livestock farmers, and proponents of (conventional) plant-based diets spell out the dangers of placing future food supplies in the hands of a few agribusinesses and tech giants. As a result of this vocal and effective cross-sectoral campaigning, civil society succeeds in preventing the mass rollout of novel meat and dairy mimics onto global markets.

Although ‘petri dish to dinner plate’ foods are touted as clean, ‘climate-smart’, and affordable solutions, their genetic uniformity and hyper-sterility production requirements ultimately keep costs and disease risks high

Around the world, healthy **food environment** policies – long demanded by civil society groups⁴⁸ – are gradually adopted over the 2020s and 2030s, reinforcing the shifts towards healthy, sustainable, and ethical food purchases. Over time they translate into meaningful changes to urban planning and marketing rules, zoning, licensing, public procurement, and other policies influencing people’s diets and the options available to them. Together with civil society-led public education campaigns, these efforts foster greater public awareness of and interest in locally/sustainably/ethically produced foods, with ripple effects across the entire food system.

Agribusiness sees the writing on the wall and scrambles to imitate and buy up innovative new firms serving local markets, and to roll out new strategies to capture consumers (see Section 3). But by 2045, **companies can no longer hide behind private labels**. Armed with sophisticated public blockchains, as well as fact-checking, true cost accounting and transparency apps, consumers are able to rapidly distinguish companies into three basic categories: business-as-usual, high-external cost, biodigital food corporations (‘A-corps’); companies ‘legally required to consider the impact of their decisions on their workers, customers, suppliers, community, and the environment’ (trade-marked ‘B-corps’⁴⁹), and sustainable, cooperative, true-cost enterprises that function within the solidarity economy (‘C corps’). The collective impact of these trends means that over the quarter century from 2021 to 2045, the top ten retailers are losing an annual market share of about USD 248 billion.⁵⁰

PATHWAY 2.

Transforming governance structures

The 2021 UN Food Systems Summit throws a ‘Grey Swan’ at CSOs. The controversial origins of the Summit, combined with the pandemic, not only leave civil society organizations challenging the process but also distrustful of the outcomes of a (potentially) virtual event. The Summit is only one piece of a nascent corporate takeover of the multilateral agenda. Following their respective 75th anniversaries, the UN and the Bretton Woods institutions are being fundamentally challenged and potentially restructured into a new system governed – outwardly – by states, the private sector, and civil society, but in reality functioning under a new state-corporate bilateralism.

Over the years, the Long Food Movement fights back and forces a fundamental governance reconfiguration of its own. Pivoting on the ‘food systems’ agenda, CSOs propose a total restructuring of the multilateral food and agricultural policy and programme delivery system. This includes the reunification of the Rome-based agencies (including the integration of CGIAR), the expansion of regional governance processes, and the development of transparent budgetary, electoral, and evaluation systems.

In the face of semi-permanent crises, civil society successfully makes the case for emergency responses (at national and community levels). This involves a number of inter-connected actions: suspending trade rules, resisting agribusiness concentration, requiring the evaluation of agricultural technologies, and promoting agroecology, food sovereignty, and territorial markets. These steps are underpinned by the ongoing proliferation of food policy councils, deliberative dialogues, and other models with the strengthened participation of social movements, Indigenous peoples, and NGOs. Although first proposed in the wake of the Food Systems Summit with little government buy-in, the shortfalls of the Summit eventually give the proposals traction, and a formula for negotiation falls into place.

Over time, tensions ebb and flow between CSOs committed to working with governments and intergovernmental institutions, and other social movements representing impacted populations along with allied

NGOs, piloting their own forms of governance and pushing for deeper changes. Multi-level and cross-sectoral spaces make it possible, much (but not all) of the time, for Long Food Movement inside and outside actors to coordinate their strategies.

OPPORTUNITY #4

Reviewing, reforming, and reconfiguring the UN's agri-food agencies

In October 2020, the world marked the 75th anniversary of the founding of the United Nations. In the midst of a pandemic, a global livelihoods crisis and the most tumultuous superpower transition in modern times, the anniversary went almost unnoticed. Arguably, the bigger event was a year earlier – the 75th anniversary of Bretton Woods and the post-war establishment of the world's financial infrastructure – including the World Bank, IMF, and the forerunner to the WTO.⁵¹

In among these milestones, global governance took another momentous turn: the Davos-based World Economic Forum and the UN Secretary-General signed a Memorandum of Understanding (MOU) pledging closer cooperation, and setting the stage for a World Food Systems Summit in 2021 – what CSOs note to be the first ever summit called by the private sector (see Box 20). The news followed hot on the heels of proposals to amalgamate the 15 centres of the Consultative Group on International Agricultural Research (CGIAR) into one legal entity (see Box 21), making it, *de facto*, the largest ever takeover of international agricultural public goods.



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BOX 20:

The Food Systems Summit: a hostile takeover of food systems governance?



In December 2019, the UN officially announced the launch of the 2021 Food Systems Summit (FSS), with the aim to “raise global awareness and land global commitments and actions that transform food systems to resolve not only hunger, but to reduce diet-related disease and heal the planet” (United Nations, 2020). A concept note circulated at the High-Level Political Forum in New York in 2019 indicated that the World Economic Forum (WEF) – formally registered as a business association – will be involved in organizing the Summit. It was also announced that Ms. Agnes Kalibata, president of the Alliance for a Green Revolution in Africa (AGRA), would be the Secretary General's Special Envoy for the Summit. These developments have sparked general condemnation of the Summit by civil society groups (IPC, 2020). The move also stirred concerns about a nascent corporate takeover of the multilateral agenda, and an attempt to sideline the recently-reformed UN Committee on World Food Security (CFS) – claimed by Governments to be “the foremost inclusive international and intergovernmental platform” (De Schutter & Yambi, 2020; Global Policy Forum, 2020; IPC, 2020; Karamichalis, 2019). By October 2020, 550 organizations had co-signed a letter to the UN Secretary General decrying the governance and leadership behind the Summit.

For all of the shortcomings of the multilateral institutions, CSOs are unified in their resolve to avoid corporate capture of the UN and its Rome-based agencies (RBAs) – starting with mobilizations around the 2021 UN Food Systems Summit. CSOs are initially thrown off balance by this ‘Grey Swan’ event at the heart of global governance. But they quickly regroup, drawing on decades of persistent ‘inside-outside’ mobilizing, and succeed in questioning the Summit’s purpose and curtailing some of its ambitions. Over the subsequent years, civil society takes advantage of the post-Summit vacuum to press for governance reforms of its own. The Food Systems Summit moment is a clear reminder of the problematic legacy of the 1974 World Food Conference – the splitting of food system governance functions into various agencies. The Long Food Movement makes the case for ‘RBA 3.0’: **restructuring and re-unifying the Rome-based agencies**, alongside steps to link different levels of governance (building around CFS regional conferences) and promote more participatory decision-making.

CSOs are unified in their resolve to avoid corporate capture of the UN and its Rome-based agencies

By the 2030s, civil society has built the case for reform via **commissioned reviews of the RBAs** (as well as the CGIAR). These reviews expose the inequities of the UN funding mechanism (in particular, the institutional distortions created by designated project funding versus obligatory membership contributions). They also underline the weaknesses and opaqueness of UN bureaucracy, state-level corruption in institutional election processes, and the many opportunities for more coordinated (and less expensive) collaboration.

Food movements have also found influential allies. The effectiveness of CSOs at the Summit and in its aftermath **strengthens their influence among RBA diplomats**, allowing them to embark on various independent or authorized moves towards RBA reform. Following through on discussions that began around the Summit, CSOs work with some governments and other organizations to **roll back the takeover of the 15 CGIAR centres** and the concomitant capture of public agricultural research goods (see Box 21).

Towards the end of the 2020s, the findings of the external reviews of the RBAs are brandished by CSOs and friendly governments to demand the convening of a **more inclusive world food Congress**. Although, again, not a complete success for civil society, the Congress galvanizes support for reform of the RBAs and elevates the position of the CFS.

Before the end of the decade, civil society is also influencing the **election of agency heads** in Rome and other parts of the UN apparatus. With enhanced forward-planning, a wide range of groups are sharing information and leveraging insider relationships to push favourable candidates (and scrutinize less favourable ones) at opportune moments.

By the 2030s (if not before), these developments have set the stage for **the most consequential global governance changes since the revival of the CFS in 2009**. The resulting reforms re-unify the 3 existing RBAs, under a rejuvenated and highly inclusive Committee on World Food Security (CFS) as the *de facto* governing body. They also realign the CGIAR with the other agencies, making it effectively the

fourth RBA, and turning the CGIAR Centres into RBA 3.0's regional research system.⁵² Meanwhile, policy formulation is decentralized and democratized through new CFS regional fora facilitating 'grassroots to Rome' dialogue;⁵³ cross-agency non-hierarchical working groups are revived; deliberative dialogues are mainstreamed; and a UN Digital Council for Food and Agriculture is established within the 'New Roman Forum'.⁵⁴

These reforms help to bring global-level dialogues (e.g., on agroecology, territorial markets, agrarian reform, and digitalization) into the national sphere in places where civil society has not had the capacity, or governments the inclination, to do so; to build global and national dialogues around local realities and lessons learned (see Opportunity 7); and to bridge the gap between CSOs working at local and global levels. The restructuring also makes it logical – and urgent – for civil society configurations to adapt. By the 2030s, food movements are offering coordinated and powerful interventions in debates across the RBAs.



The strategies outlined above, and a range of other potential approaches for reforming the RBAs, are described in detail in Annex 2.



BOX 21:

One CGIAR: From IARChy to Hierarchy?



Since its inception at the height of the ‘Green Revolution’ in 1971, the Consultative Group on International Agricultural Research (CGIAR) and its 15 International Agricultural Research Centres (iARCs) have facilitated the distribution of high-yielding or high-response plant varieties for a handful of major crops, especially in Asia and Latin America. With 8,000 scientists and technicians on its payroll, and nearly 800,000 peasant-bred crop varieties in its 11 genebanks, the CGIAR is a major feature in the agri-development landscape. Restructuring now underway – if concluded – will fundamentally change how CGIAR operates, and risks exacerbating its greatest shortcomings. The ‘One CGIAR’ process launched by the Bill and Melinda Gates Foundation (BMGF), the World Bank, and the US and UK governments, aims to deliver a merger of the CGIAR’s 15 legally-independent iARCs – headquartered in 14 countries – into one legal entity, a single board, and a unified operational presence (IPES-Food, 2020b). It would also involve a budget increase from USD 850 million to USD 2 billion per year, with power to allocate the funding firmly concentrated at the top. The restructuring has been proposed in a coercive manner, with budget cuts threatened if individual centres refuse. Governments and agricultural institutes in the global South, the alleged main beneficiaries of the CGIAR, have been inadequately consulted and are either unaware of or are mostly against the merger – while the big funders and agribusiness are in favour. The perspectives of farmers, civil society, and public researchers in the global South have not been encouraged. As a consequence, One CGIAR would abandon CGIAR’s historic practice of developing so-called ‘improved germplasm’ for major crops offered to national research programmes, and instead develop finished varieties of nine crops (as well as setting the conditions for their distribution by country and region). Although this policy shift is described as ‘consultative’ (between One CGIAR and national programmes), cash-starved public researchers, especially in Africa, are effectively being made an offer they can’t refuse. Dominated by the BMGF, One CGIAR’s shift from germplasm enhancement to product release focuses on the mass deployment of big data technologies and digital DNA technologies that exclude all but the biggest public researchers and multinational seed/chemical enterprises. ‘One CGIAR’ not only subordinates national and regional agricultural research, but undermines the context-specific, farmer-led, transdisciplinary research that is required to build resilient and sustainable food systems.

OPPORTUNITY #5

Cracking down on corporate impunity and techno-fixes



In the early 2020s, high-profile clashes between agroecology and ‘climate-smart’ precision agriculture bring attention to a **burgeoning pipeline of (data-driven) agricultural technologies** – and the need for monitoring and regulation. Controlling the digitalization of food systems becomes, like climate change, a question of acting now or never. The risks around new biodigital technologies become front-page news when the data infrastructures being rolled out across food systems start to malfunction. Civil society is well-positioned to seize on these opportunities. Since 2015, CSOs have been establishing regional Technology Assessment Platforms in Latin America, Africa and Asia to conduct multi-sectoral assessments of emerging technologies.⁵⁵

Beginning in the 2020s, the Long Food Movement pushes for a **new generation of UN treaties⁵⁶ and national laws to constrain corporate-led technologies** and put an end to corporate impunity. Firstly, efforts are stepped up to promote national laws and a **UN Treaty on Technology Assessment (or Protocol, as appropriate)**, to identify, monitor, regulate, or even recall technologies that are widely seen to be dangerous or failing. Front and centre in this discussion are the risks of big data, in terms of undermining resilience, dignity, privacy, and transforming economies to the disadvantage of small-scale farmers and food workers. Secondly, pressure is ratcheted up at the Human Rights Council to conclude the ongoing negotiations for a **treaty countering corporate power** (a ‘Binding Treaty on Corporations’),⁵⁷ building on the Global Campaign to Stop Corporate Impunity.⁵⁸ Thirdly, civil society accelerates the work being done on multiple fronts to push forward **antitrust and competition policy** through UN, regional and national initiatives – buoyed by the growing influence of the New Brandeis Movement in Europe and North America (Khan, 2018).

To accelerate progress, **CSOs partner with select institutional allies**. In 2020, discussions were already underway between civil society, some governments, and friendly secretariats in the CFS, UNCTAD, ILO and the HRC on the feasibility of various treaties and protocols for countering corporate power. Cross-sectoral CSO cooperation in

Efforts are stepped up to identify, monitor, regulate, or even recall technologies that are widely seen to be dangerous or failing

the wake of the UN Food Systems Summit accelerates this dialogue and creates new opportunities over the 2020s. EU resistance to the big data platforms is echoed in the new US Administration. As early as 2021, international discussions begin a process leading to global antitrust, taxation and M&A agreements that spill over from the platform companies to all economic sectors. With the OECD states split, opportunities are pushed forward nationally and regionally, with the support of a small number of committed states, and often without formal UN auspices.

Over a decade, these quiet negotiations result in a **series of treaties/protocols to constrain corporate impunity**, including a legally-binding agreement on Competition (along with protocols on Transnational Taxation and Technology Assessment), and a related treaty asserting the supremacy of human rights over shareholder rights (negotiated by the Human Rights Council). While these agreements are only ratified by a few dozen countries, global corporations stand to lose access to sizable markets, and are forced to change their global practices to meet regional rules. Because of this, corporations pressure OECD states to join the agreements with the intent of weakening their provisions. CSOs nevertheless consider the results positive, and work with some regions and subregions to retaliate with stronger protocols.

Through these debates, the special protections granted to investors also come under the spotlight. By the 2030s, broad civil society coalitions have forced governments to **eliminate Investor State Dispute Settlement ('ISDS') clauses** in trade agreements, and are calling for greater transparency in various fora governing foreign investment, and advancing their campaigns against IPR.

In parallel, the Long Food Movement ramps up **legal actions against corporations**, building on the tens of thousands of ongoing court cases against Bayer (and its recently acquired holding, Monsanto).⁵⁹ Bayer and other agribusiness giants survive the lawsuits of the 2020s – including multi-billion-dollar, class-action settlements. But even cases that are technically lost by plaintiffs turn out to be beneficial in terms of public relations,⁶⁰ and eventually lead to the divestiture of some holdings and roll back the greatest excesses of corporate concentration.

BOX 22:

Challenging corporate power: diverse tactics for change



While the Human Rights Council appears to have the broadest negotiations touching on all aspects of corporate impunity, civil society need not place its eggs in one basket. There are at least eight other ways – some expanded on above – in which food movements and other allies could challenge corporate power:

- 1. ESG Rules:** At the time of writing, both the EU and USA are drafting legislation and regulations requiring corporations, banks and investor groups to report regularly on Environmental and Social Corporate Governance (ESG) adherence. Having established the precedent at the national level, CSOs could argue for UN agencies (and UN partnerships with corporations) to enhance their ESG compliance.
- 2. Global Taxation Agreement:** Many national governments as well as the EU and OECD are exploring new laws and treaty arrangements that would prevent offshore tax havens and ensure fair and higher levels of taxation. The new US administration has signalled to the EU and the OECD its willingness to reach a quick agreement on controlling tax havens, and on developing an international tax regime for high tech companies.
- 3. Full Cost Accounting:** Current audit requirements sidestep full disclosure affording companies a tax loophole and loading the monitoring burden onto CSO's and governments. This popular policy initiative can play out both nationally and internationally.
- 4. Restrictive Business Practices:** This term has been used by UNCTAD to encompass a wide range of dubious corporate strategies such as transfer-pricing, cartels, etc. that could find political support nationally and at the UN.
- 5. Mergers and Acquisitions:** UNCTAD has a weak model law that could be strengthened and negotiated. Many governments recognize that their M&A rules require updating. There are also compelling reasons for regulating global corporate takeovers via an international treaty.
- 6. Vertical Integration:** If efforts to reform national competition policy or establish an international treaty on mergers and acquisitions is slow (or the results are inadequate), it may be easier to change regulations or win international agreement around the risks of vertical integration (where agribusiness moves up and/or down the food chain jeopardizing food security.)

7. Platforms and Digital Management: Public and political concern over technology platforms and big data management are high on the agenda of national governments and regional bodies. Although civil society is largely excluded from these negotiations, there are many reasons why governments would accept the participation of food movements. The current development of a big data council or body dealing with agricultural data offers an important opportunity.

8. Technology Assessment: The growing popular and political concern over block chains, cryptocurrencies, big data as well as automation should make it possible to establish new national regulations and – possibly building upon UNCTAD and the UN’s Forum on Science and Technology for Innovation initiative – regional or international treaties. Strong civil society participation in technology assessment, however, is essential.

OPPORTUNITY #6
*Toward an international undertaking
on food emergencies*

For decades, civil society has warned of the threat to food security when restraints are placed on small-scale farmers via trade agreements, market barriers, Intellectual Property Rights, and seed laws. In 2020, many of these concerns came to a head as COVID-19 exposed **critical supply chain weaknesses** affecting virtually every country and region. Over the 2020s, in response to persistent climate- and disease-related disruptions, industrialized states clamber to reduce raw material vulnerabilities and expand their supply corridors (see Section 3). Meanwhile, trade agreements, contracts and treaties prevent governments and communities in the Global South from preparing for – and responding to – food emergencies. In all regions, agribusinesses (and the big tech firms with which they are increasingly intertwined) push for fine-grained data-driven sensing and large-scale digital/precision farming as the best (or only) way to ramp up production quickly and ward off emergencies.



In response, the Long Food Movement turns to **disaster risk reduction strategies**, and **emergency food security protocols**.⁶¹ Civil society task forces bring forward existing frameworks (see Box 23), identify conflict points, and start developing model laws ensuring that food security is placed above other commercial or policy considerations, including trade agreements, land contracts, and regulatory arrangements.⁶² Civil society uses a 2021/2022 UNDRR sectoral conference on drought as a springboard to build on the Sendai Framework and intensify discussions around new disaster protocols. As food emergencies become more common, more intense, and more protracted over the 2020s, governments start to countenance measures that might conflict with existing legislation, contracts or treaties. In parallel, international negotiations are launched, via the UNFCCC, CFS, or the FAO Conference or one of its committees.

Box 23:
*Emergency Guidelines: the Sendai Framework
and other global frameworks*



Disaster readiness has been an area of discussion within FAO and the WFP for some time. In 2015, the UN Office of Disaster Risk Reduction (UNDRR) won approval from 160 countries for its Global Blueprint for Disaster Risk Reduction – the Sendai Framework. In it UNDRR lays out some priorities, procedures, and tools for national emergency preparedness, but falls short of addressing relevant regulatory, trade, or commercial policies, protocols, or treaties that could be either advanced or suspended in a crisis. Aside from UNDRR, it is likely that most specialized UN agencies and programmes have developed some emergency guidelines or processes. Almost by definition, UNFCCC and the WFP have been created to address food insecurity and other crises. FAO and WFP have developed guidelines and checklists, for example, but again these do not address international treaties or national regulatory considerations. Informal discussions have been held via the FAO Commission on Genetic Resources for Food and Agriculture and its closely associated Plant Treaty (ITPGREA) but this has not led to international undertakings.

By the end of the decade, model laws are being taken up by sympathetic governments. When a food crisis hits, agribusiness giants are caught off guard and there is sudden momentum to accelerate international negotiations. This leads to proposals for an **international undertaking on food emergencies** – either in the shape of an Emergency Agricultural Agreement, or a UN Covenant that builds on previously-negotiated national arrangements. With increasing concerns around intellectual property and corporate profits, and with vivid memories of the struggle to ensure universal access to COVID-19 vaccines, the process gains political momentum.

With the WTO in disarray and many **major trading countries refocused on strategic self-sufficiency** – including the EU, USA, China, Australia – the treaty passes, and some countries and regions opt to attach protocols that supersede trade rules.⁶³ Agribusiness tries to reverse the rules, but over the 2030s, CSOs convince governments that **the crisis is indefinite and emergency arrangements must be maintained**.

However, this is not enough to safeguard the food security of all populations, in a context of opaque AI-managed supply corridors. New battles get underway over **whether computer code supersedes national laws** and regulations. These battles – still raging by the 2040s – require food movements to continually expand their technical capacities and collaborations.

OPPORTUNITY #7

Building food policies, food policy councils, and new forms of citizen participation



Around the world, food movements have instigated and participated in deliberative dialogues, citizen/farmer juries, people's assemblies, mutual aid societies, and food policy councils

As CSOs map out strategies for the next quarter century, they build on the major advances of earlier decades in terms of **direct citizen involvement in local and national food system governance**. Around the world, food movements have instigated and participated in deliberative dialogues,⁶⁴ citizen/farmer juries,⁶⁵ people's assemblies, mutual aid societies (resurgent in the wake of COVID-19), and food policy councils – some in place for many years, and exercising significant influence or even regulatory authority. By the early 2020s, what had started in a few cities, municipalities, and countries was gaining traction at multiple levels around the world. From Brazil to Kenya to Sweden to Canada, civil society has been successful in pressing national governments states or provinces to establish food policies and multi-sectoral committees or councils to govern them.

Throughout the 2020s, grassroots CSOs continue to build democratic food governance spaces in cities, regions and countries around the world, ensuring a steady stream of victories. With public distribution and procurement systems sourcing as locally as possible, and cooperatives growing in strength (see Opportunity #3), territorial food systems and short supply chains are taking root in an increasing number of city-regions and provinces. These economic linkages help to build the foundation for local food governance bodies, and vice versa.

Through the 2020s, these efforts are accelerated by increasingly systematic **local-to-local exchanges**: communities fighting for democratic local food governance draw on the experience of ICLEI, C40, and the Milan Urban Food Policy Pact and other experienced networks. Codes of conduct are developed to encourage similar efforts around the world, while recognizing that governance systems differ by country and region.

Internationally-focused CSOs see the grassroots initiatives as an embodiment of food sovereignty, and as the natural **interlocutor for the regionalized food governance architecture** they are trying to build (see Opportunity #4). Progress in building sustainable food systems at sub-national levels also strengthens the case for communities and local governments to have a bigger voice in climate talks.⁶⁶

By the 2030s, the new CFS deliberative processes (see Opportunity #4) are linked into other global governance spaces, **allowing local experiences to inform international guidelines** for developing inclusive food governance processes and bodies. As governments take up these guidelines, they help to sustain deliberative initiatives and prevent corporate capture, with CSOs generally successful in establishing the primacy of social movements and most at-risk and marginalized peoples as parties to the national and extra-national bodies.



Box 24:

Multi-lateral thinking: Taking advantage of under-utilized and underrated intergovernmental spaces



The multilateral system is full of intergovernmental fora, including committees, COPs and treaties. With regular meetings at global and regional levels, they are often fairly accessible to civil society. They have overlapping mandates, making it possible for CSOs to take an issue that has been blocked in one body to another forum. The biopiracy of Indigenous human cell lines, for example, was taken up in the Biodiversity Convention instead of the Human Rights Council. Multilateral structures that look ill-resourced or irrelevant today may, under the right circumstances, become a powerhouse tomorrow (the CFS was a backwater from 1974 to 2008). The list below is not exhaustive, and comes with a health warning: the multilateral system can be a graveyard where CSOs come to bury their budgets, their innocence, and their credibility. Any engagement with an unfamiliar multilateral body demands careful, collective, and strategic entrance and exit planning.

- 1. Regional conferences (e.g. UN Environmental Assembly regional meetings):** FAO and many other multilaterals hold regional conferences that range from nothing more than expensive cocktail parties, to decision-making bodies that feed into global policies. In general, there is openness to civil society participation. Regional meetings not only address global issues but can be a launchpad for regional and national policy reforms.
- 2. Multilateral Development Banks (MDBs):** The World Bank and the regional development banks, pressured by Indigenous communities and the 1992 Rio Summit, established dispute settlement procedures accessible to affected communities. Nearly 1100 cases have been opened since 1994. A study of almost 400 cases shows that the procedures have had limited value for communities, yet have sometimes provoked long-term policy changes in the banks themselves. Elements of the procedures have proven useful (access to resources and information, etc.), and could become a template for better monitoring and dispute settlement mechanisms among the RBAs and CGIAR (Park, 2020).
- 3. International Court of Justice or “World Court” (ICJ):** Beyond boundary disputes, the World Court plays an important role responding to questions from UN bodies on jurisdiction, mandate, procedures and more. The Court tries to reply within 12 months and its decisions are rarely ignored (CGIAR centres once proposed that the Court advise on intellectual property over plant varieties, but its funders thought otherwise.) Access to the court depends on the rules of each agency, and the potential for civil society has been undervalued.

4. **Codex Alimentarius:** Jointly held by FAO and WHO and headquartered in Rome, Codex decisions carry weight at WTO for broadly interpreted food safety considerations. Although it is difficult for civil society to access, its complexity may hide opportunities.
5. **UN Convention to Combat Desertification (UNCCD):** The neglected offspring of Agenda 21, the Convention is important to pastoralists and other Indigenous communities, and its decisions could impact peasant producers in semi-arid regions. Because it has been politically underestimated, it is a power vacuum that might be filled.
6. **UN Non-Governmental Liaison Service (NGLS):** Established by UN agencies in the mid 1970s with offices in Geneva and New York, this small body suffers from limited resources and institutional neglect. Yet it played a critical role in civil society's early work on infant formula, pesticides and seeds, and provided more recent support for the campaign to establish the UN Forum on Science, Technology and Innovation. With strategic support, NGLS could improve CSO effectiveness, reduce transaction costs and provide critical information.
7. **UN Common Fund for Commodities (UNCFCC):** Fought for by CSOs, and initiated by UNCTAD in the 1970s, the Fund is intended to help commodity export-dependent countries diversify – potentially supporting producers and encouraging local markets. It is currently very weak.
8. **Environmental Modification Treaty (ENMOD):** Ratified by major governments in the 1970s, the Treaty is intended to prevent the weaponization of the environment (i.e. geo-engineering) but half-hearted efforts have been made to expand its mandate to include pesticides and toxic dumping. The treaty's expeditious links to the UN General Assembly and the World Court could make it a compelling option for addressing the climate emergency.
9. **UNDRR (UN Office of Disaster Risk Reduction):** Although it is seen to offer a service rather than a normative function, the Office could prove important in working with local and national governments and/or galvanize UNFCCC, FAO, etc. to move into controversial policy territory.

PATHWAY 3.

Shifting financial flows

Through the 2020s, the failures of industrial food systems galvanize public resistance and government action, and support for food system transformation accelerates despite competition and the continued threat of co-option. The combination of climate emergencies, food-related epidemics, and technological risks and failures means that new resources are basically off the table. But they also spark unprecedented calls for existing financial flows to be redirected.

Mindful of the agribusiness trendline (Section 3), the Long Food Movement develops strategies in three areas: i) soft targets (or 'low-hanging-fruit') like administrative and research budget lines; ii) the hard target of major commodity subsidies; and iii) untaxed/under-taxed 'externalities' and revenues of corporations. The complex interplay between 'soft' and 'hard' targets means that progress is inconsistent and uneven. A relatively soft step for some is impossible for others. At best, new taxes on junk food improve health and reduce healthcare costs, but taxation windfalls still risk being recycled into new forms of subsidy to agribusiness and the food industry.

Nevertheless, opposition to the trendlines and momentum for action grows. So does the pot of reclaimed money, with each victory also representing a dent in agribusiness' muscle to lobby and influence food politics. The fulcrum effect of 25 years of CSO collaboration (working with progressive academics, multilateral secretariats, and some governments) helps to challenge an industrial food system whose structural and technological failure render it ever more vulnerable in the face of cascading crises. By 2045, the Long Food Movement shifts at least USD 4.1 trillion in annual industrial food chain costs (including health and environmental damages) either into direct support for food sovereignty and agroecology or by reducing damages. Civil society also succeeds in reducing the industrial chain's GHG emissions by as much as 75%. These advances are complemented by forms of wealth redistribution within and between world regions (as discussed in Pathways 1 and 2), and radical steps to de-financialize food systems.

OPPORTUNITY #8

Redirecting R&D and technical budget lines to sustainable food systems



Today, some pots of public money are fiercely guarded (see below), but others are barely on the radar of most food system actors. In many jurisdictions,⁶⁷ research, administrative and technical budget lines, for example, attract relatively little attention and political debate. Over the 2020s, civil society targets these funding pots, starting with **FAO and IFAD**, where an estimated **one third of expenditures can be shifted under the radar** by willing agency heads and sympathetic civil servants. Success would mean that roughly *USD 1 billion* per annum could be redirected towards small fishers, agroecological practices and other vital forms of support for sustainable food production.

Over the 2020s, civil society also targets food aid. Emboldened by its Nobel win and operating in an increasing spotlight, the **WFP** agrees to ramp up its local sustainable sourcing (targeting 90% by 2030 at the latest) with relatively little pushback.⁶⁸ As a result, an additional *USD 640 million* is redirected towards farmers in developing countries, supporting smallholders to continue producing, or shift to producing, sustainably.

In parallel, civil society targets the dubious aid flows that subsidize trade missions, facilitate extractive foreign investment, or advance donors' geopolitical goals – i.e. **residual forms of 'tied aid'**, through which donors have historically offloaded manufactured or agricultural surpluses. One, an NGO established by Bono, recently estimated that roughly 10% of the UK foreign aid budget falls into this category and should be reallocated to genuinely beneficial purposes.⁶⁹ Applying this logic across all OECD countries, as much as *USD 10 billion* of bilateral aid could be reallocated towards sustainable food systems.

Success could mean that roughly USD 1 billion per annum could be redirected to support sustainable food production

By the end of the 2020s, even bigger sums are being clawed back as food movements step up the pressure on big-money (and often low-profile) research budgets. Government outlays on agri-food R&D – currently amounting to about USD 38 billion per annum⁷⁰ – are increasingly coming under the microscope, in particular donors’ **agricultural research projects in the global South**. In 2020 alone, three separate reports highlighted the failure of major bilateral and global donors to provide sufficient support for agroecological projects in developing countries (Biovision, IPES-Food, & IDS, 2020; CIDSE, 2020; Vermeylen & De Schutter, 2020). With COVID-19 driving economic hardship and exerting major pressure on public resources over the 2020s, all expenditures come under further scrutiny. Civil society uses this to its advantage, pointing to the wastefulness of business-as-usual projects that contribute little to meeting the SDGs. Food movements find several bilateral donors open to rethinking their agri-development strategies,⁷¹ and convince them to redirect major chunks of funding towards agroecological projects led by research institutes and CSOs in the global South.

Having successfully resisted a corporate/philanthro-capitalist takeover of global agricultural research centres over the 2020s (the ‘CGIAR’ – see Pathway 2), civil society convinces friendly governments to use their influence – as major contributors to its budget – to **realign CGIAR programming with the agroecological agenda** they have adopted in their own bilateral aid. Civil society also joins forces with cost-cutting proponents within the organization. Together they help shift some of CGIAR’s administrative expenditures – said to account for 40% of its budget – into project funds. These actions accelerate a trend that ultimately places at least half of the budget (USD 425 million) in the positive camp.

By the 2030s, **domestic agricultural research expenditures** are also starting to shift, as decision-makers grow wary of the agribusiness trendline. They are also cognizant of rapidly-growing public distrust with regard to those trends and technologies, and frustrated with the ineffectiveness of narrowly-focused investments in agricultural productivity. Success here depends heavily on national, as well as local, politics and pressures.

The situation will be different for every country and campus, but it is not unrealistic to expect that some USD 19 billion – or roughly half of the annual domestic public sector budget – could slide into the positive column over the next quarter century, with much of the remaining money kept out of the hands of agribusiness, and no longer deployed for the sole purposes of attracting FDI and driving GDP growth.

Over the 2020s and 2030s, civil society also brings **pension funds** (another type of under-the-radar funding flow) into the spotlight, resulting in the divestment of some (not all) land grabs and other harmful practices.⁷² As allies in the Peace Movement succeed in **reducing military expenditures**, military bases are abandoned and, by prior arrangement with governments, the ‘swords’ are turned into ‘plowshares’ and ordinance and toxin-free lands are surrendered to peasants and local organizers of territorial markets. Defence ministries also agree to contract with peasant agroecological producers to feed military personnel.



OPPORTUNITY #9 *Reforming major commodity subsidies*



Viewed from 2021, the toughest financial flows to redirect are major commodity subsidies. Some USD 720 billion of producer subsidies are paid out annually.⁷³ A remarkable share accrues to large sugar, tobacco, cotton, vegetable oil and biofuel industries – and most of these sectors also benefit from special import tariffs, quotas, and other trade protections. Meanwhile, fisheries subsidies alone account for an estimated USD 35.4 billion (Sumaila et al., 2019), of which some USD 18-20 billion have been classified as ‘harmful’ by the UN Secretary General’s Special Envoy for the Oceans – not least trawler fuel subsidies (Thomson, 2019).

Over the next quarter century, civil society sets its sights on shifting as much of this money as possible from input-intensive commodity agriculture and industrial fishing to sustainable food production. Ever since the WTO was created 25 years ago, a wide range of CSOs working across sectors have come together to provide effective resistance on subsidies and trade. New fronts are opened in the 2020s with similar strength and breadth, building around the cross-sectoral food-trade-climate work already taking shape. Over time, advocacy groups also deepen their collaboration with farmers’ fishers’ and food workers’ organizations, as well as consumer associations, forming a common front in favour of subsidy reform, fair pricing and living wages.⁷⁴ This allows civil society to paint big commodity subsidies as a threat to the average farmer/fisher (via the dumping of cheap subsidized produce onto global markets) and a boon to multinational agribusinesses. Consumers, now able to recognize these beneficiaries as ‘A corps’ (see Pathway 1), also come on board.

With environmental tipping points in sight, obesity surging, and the labour abuses on plantations, fishing vessels and factory farms suddenly more visible, these efforts are bearing fruit by the end of the 2020s. This starts with the removal of trawler fuel subsidies, a move that is demanded by coalitions of environmental NGOs, small-scale fishers, aquaculturalists, and many others, and wins broad public support. Payouts to cocoa, sugar, and palm oil plantations are subsequently slashed. Subsidies to industrial feedlots,⁷⁵ already being

Of the USD 720 billion producer subsidies paid annually, a remarkable share accrues to large sugar, tobacco, cotton, vegetable oil and biofuel industries

questioned at the outset of the decade, are further challenged in the wake of relentless civil society campaigns. COVID-induced public awareness of unsafe working conditions in meat and fish supply chains help bring consumer pressure to bear.

Reform opportunities at the global level are pursued in parallel by civil society. With food price spikes and trade volatility becoming a regular fixture of the 2020s, the Long Food Movement underlines the **urgency for developing countries to diversify their agriculture** and economies. Pulling on the same strings they used to revive the CFS in 2009, CSOs seize the next global food systems failure to push for recapitalization of the **UN Common Fund for Commodities**, with a renewed mandate to support commodity diversification. This provides financial support for crop and livestock diversification (and away from commodities vulnerable to price shocks), strengthening agriculture research and supporting local food cooperatives.

Civil society also turns up the pressure on agri-development funders. Some targets are out of reach: philanthro-capitalists and their public-private partnerships use the climate crisis to channel more funds into digitalization and enhancing the productivity of major (mono) crop systems. But with agroecology generating compelling results, and the (modest) investment of COVID-19 recovery funds in short supply chains starting to deliver, other funding pots come into play. By the 2030s, a handful of **global funds** (e.g. the Global Environment Facility and the Green Climate Fund) and **bilateral donors** are **diverting their investments away from ‘new green revolution’ approaches and towards agroecology** – with others potentially following suit. These trends are reinforced by the WFP’s accelerated shift towards local sustainable procurement (see Opportunity #8).

This path is riddled with complexities, and **each ‘victory’ signals the start of a new battle**. Even as subsidies are extricated from agribusiness, the Long Food Movement faces an equally tough battle to reallocate it to better ends. Investment in smallholder-led agroecological transition faces competition from a range of other priorities.

These include rebuilding self-sufficiency in strategic sectors, and the redirection of development aid to domestic priorities post-COVID, as well as building out data infrastructures for ‘climate-smart’ agriculture.

Through it all, civil society grapples with the reality that **ending unjust subsidies in rich countries does not necessarily benefit the Global South**⁷⁶ – and certainly not with immediate effect. Civil society redoubles efforts to work effectively across sectors and on multiple fronts, from building awareness of the waste and inequities of conventional subsidies to creating enthusiasm for territorial markets. This helps ensure that the end of subsidies for Big Ag is also the beginning of new ways of remunerating sustainable small-scale farmers in the global North and South.

Notwithstanding the risks and uncertainties, it is reasonable to project that between 2020-2045, two thirds of global producer subsidies, or roughly USD 470 billion, will be up for grabs. Even if half of producer subsidies are diverted to other purposes (see below), this could still yield some USD 235 billion in annual support for territorial markets and agroecology.



OPPORTUNITY #10

Levying junk food and taxing corporations fairly

The case for taxing the agri-food industry, its unhealthiest offerings, and its most polluting impacts only grows stronger over the next quarter century. The most obvious entry point is **junk food taxation**. Civil society has consistently taken the lead and played a central public opinion-forming role in the changes that have taken place in a growing number of countries. A powerful example is Chile, where consumption of sugar-sweetened drinks dropped nearly 25% in the 18 months after the country adopted a raft of regulations in 2016, including advertising restrictions on unhealthy foods, front-of-package warning labels, and a ban on junk food in schools. In 2014, Mexico adopted a 10% tax on the sale of sugary drinks, sparking a 12% drop in sales by the end of the year, and in October 2020, the Mexican state of Oaxaca banned the sale of junk food to children (BBC News, 2020). Peru, Uruguay, and Israel have adopted similar measures to Chile, and Brazil is expected to follow suit (Jacobs, 2020).

Buoyed by these successes, and facing fresh efforts by agribusiness to unearth new processed food markets (see Section 3), food movements deploy **battle-ready campaign strategies** through the 2020s and chalk up victories in all regions. In doing so, they unearth new sources of tax revenue, put a dent in agribusiness' profits⁷⁷ (and thus its lobbying and agenda-setting capacities), and deliver massive healthcare savings. Bringing global consumption of soft drinks and other ultra-processed junk foods down to zero could yield an estimated USD 1.62 trillion annually in terms of reduced health costs, with 75% reductions in the global trendline still yielding as much as USD 1.22 trillion (van Nieuwkoop, 2019).



Effects of junk food taxation:

25% drop in consumption in 18 months in Chile

12% drop in sales in 12 months in Mexico

With first-mover's advantage, food movements are able to face down fierce competition and claim roughly half of the new taxes for investments in sustainable and healthy food systems. Sensing the risks of policy reversals, civil society invests significant energy in the fight over how to reinvest the revenues – and argues compellingly for **comprehensive public health prevention packages** involving grassroots community-based organizations.⁷⁸

By the end of the 2020s, new connections have been made with **environmental taxation movements**, while consumers are able to see the 'true costs' of industrial agriculture on their apps and are asking why public authorities are not taxing these 'externalities' (see Pathway 1). The taxes that follow – on CO₂, toxins, plastic packaging and food waste – are sometimes negligible. But like with subsidies, the first movers enforce similar changes on their trading partners, sparking a cascade of reforms and a new global norm.

Emboldened by these successes, the Long Food Movement turns its attention to a target with almost incalculable benefits: putting an end to **corporate tax avoidance and evasion**. It is estimated that 40% of the taxable profits of multinational enterprises go unpaid every year – meaning as much of USD 200 billion of foregone revenues per annum, of which around USD 67 billion per annum is lost by developing countries.⁷⁹ Practices such as transfer pricing⁸⁰ are rife in the agri-food sector (see Box 25). Meanwhile, new entrants to the food sector like Amazon are able to bring immense coercive power (and possibly also artificial intelligence) to bear in order to avoid fair taxation.⁸¹

Box 25:

Corporate tax avoidance in the agri-food sector



Recent scandals have revealed that multinational agribusinesses are using the full gamut of tax avoidance techniques to protect their profits. For example:

A 2011 probe found that global grain traders like Cargill and Bunge were 'triangulating' their exports using shell companies in third countries to avoid millions of dollars of taxes in Argentina (Associated Press, 2011);

MHP, one of Europe's largest poultry producers, has been able to avoid all corporate tax on its USD 3 billion annual profits, thanks to tax refunds in its home country (Ukraine) and the location of its parent company in tax havens (Luxembourg and then Cyprus) (Counter Balance, 2020);

Karuturi Global, an India-based multinational and the world's biggest producer of cut roses, used transfer mispricing to deprive the Kenyan government of some USD 11 million in corporate tax (Tax Justice Network, 2013);

Agribusiness and drug gangs routinely use money laundering and other tax evasion schemes in Brazil, Colombia, Mexico, Guatemala, and the USA. Often described as the 'Paper Cow' strategy, mythical livestock are bought and sold and even exported internationally. In one case, a herd of 450,000 cattle was repeatedly sold and slaughtered (De Sanctis, 2017).

Progress on corporate tax avoidance and evasion requires **new levels of cross-sectoral and internationally-networked campaigning** (including coordination with constructive national governments, and liaison with sympathetic UN secretariats and academics). By 2021, many governments were already reaching a tipping point on this issue, and the new US President was promising to double taxes on the foreign earnings of companies located in tax havens, and raise corporate tax by a third (Nutall, 2020). Policymakers are emboldened to act by the public mood: over the 2020s, patience wears thin with corporations willing to accept COVID bailouts but not to pay their share in taxes.⁸²

The emerging schism between ‘A corps’, ‘B corps’ and ‘C corps’ (see Pathway 1) convinces some firms to increase their tax transparency in order to burnish their place-based, ethical credentials. By the end of the 2020s, corporate pushback and political shifts are still delaying the corporate tax crackdown – or diluting measures post hoc. When real progress does come, it unleashes virtuous circles: bringing new revenues into public coffers, and curbing the power of corporations to lobby and corrupt governments.

In parallel, food movements engage in broader strategizing on how to **de-financialize the food system**. To do so, they build ever-stronger bridges with financial justice and economic justice movements.

Over the 2020s and 2030s, food movements are among the most vocal advocates of cross-border transaction taxes, and a crackdown on speculative investments in commodities, financial investment in equities funds that contribute to corporate concentration, and harmful FDI flows – including private hedge fund and pension fund investment in farmland (Morril, 2019). These strategies prove instrumental for accelerating food systems reform.

*Food movements
engage in broader
strategizing
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Box 26:

Alternative financing approaches



Around the world, a number of alternative financing approaches are helping to get credit and resources to sustainable (often small-scale) agriculture and freeing farmers from the strictures of mainstream financing options:

- **Community-supported agriculture (CSA):** Sometimes also known as ‘crop sharing’, CSAs allow consumers to subscribe to the harvest of a given farm or group of farms. Though there are a diversity of arrangements among the 3 million+ CSAs worldwide, food share payments are often due several months before the beginning of a farming season to facilitate farmer cash flow and to share risk. A focus on ecological agriculture is standard, as illustrated within the Eastern Africa CSA Alliance vision of “increased productivity, food security, farm profitability, and sustainable farming systems” (FAO, n.d.).
- **Land Trusts:** Land trusts aim to remove barriers regarding access to farmland – often for new, young, and immigrant farmers. Land trusts receive as donations, buy, hold, and protect land that can be made available, via different arrangements, for farmers to use. Some organizations such as the Agrarian Trust in the US require land trust farmers to use organic practices.
- **Crowdfunding (donations and loans):** Crowdfunding platforms enable contributions from individuals (or groups, organizations, companies, etc.) in support of specific activities and initiatives. There are a growing number of platforms with food-related projects, including the US-based Barnraiser, devoted specifically to funding sustainable agriculture, which has raised more than USD 2 million, with an average project contribution of USD 12,000. There are also loan-based crowdfunding platforms where small sums of money are lent to a farmer for a specific purpose (e.g. the purchase of a cow), to be repaid at a set date/milestone.
- **Social finance:** Social finance leverages private capital for social and environmental outcomes, including for sustainable agriculture initiatives. There are civil society critiques of social finance, and the benefits (or not) of this approach for food movement initiatives often lies in the specifics, including questions of collateral, interest rates and sustainability standards.
- Other emerging approaches include **slow money, non-extractive finance, and worker and community co-operatives.**

BOX 27

More than the sum of its parts? Estimating the financial benefits of a Long Food Movement



Estimating the cumulative financial benefits of the Long Food Movement for people and/or the planet may be a fool's errand. That governments are persuaded to end agribusiness subsidies, tax junk food, or eliminate tax havens does not guarantee that money will be diverted to sustainable ends. Whether today's 'negative' public expenditures can be moved into tomorrow's 'positive' column depends on the strength of civil society advocacy efforts, its ability to stay the course and monitor the results, and many other factors. The fact that, over time, successful taxation of junk food should lead to a decline in junk food consumption (and thus tax revenue) further complicates matters. Furthermore, overseas development aid (a.k.a. reparations) will continue to flow over the coming decades. But any real increase in total transfers from global North to South is likely to come as investments in 'global public goods' rather than aid per se, with implications (for total economic transfers, and for sustainability) that are hard to predict. Similarly, cracking down on tax havens and restructuring tax relationships among countries is wrought with 'smoke and mirrors', and offers no guarantee of fairness.

Nevertheless, the movement that can drive significant shifts in policies and practices may reasonably be expected to have the strength and endurance to direct a significant share of the benefits to food sovereignty. Bearing these caveats in mind, here are some rough estimates:

- USD 41 billion currently in annual public sector expenditures supporting the RBAs (including CGIAR), international assistance for agriculture and rural development, and public sector agricultural R&D could, by 2045, be transferred from either counter-productive or administratively wasteful activities to better purposes.
- A total of USD 1.1 trillion in current annual spending, including a 25% super-tax on the global "junk" food and beverage industry and a 75% reduction to subsidies to agribusiness, could also be returned to governments.

- Finally, a massive USD 3 trillion reduction in annual health and environmental damages caused by food waste and “waist” (overconsumption in wealthy societies) would not only be an enormous boon to people and the planet but afford all levels of government greater financial flexibility. This estimate assumes an 85% decline in overconsumption, but only an 80% decline in other food losses (which will be more difficult to control with the climate crisis).

In sum, the Long Food Movement should be a major benefit to smallholder food provisioners and marginalized peoples, while simultaneously reducing global health and environmental damages for a total value of more than USD 4.1 trillion. More broadly, these financial shifts will have an incalculable impact on the safeguarding of planetary boundaries (especially biodiversity, soil and water), and reduce food system GHG emissions – largely from industrial agriculture – by at least 75% (and, therefore, the world’s total emissions by 23-35%).

PATHWAY 4.

Rethinking the modalities of civil society collaboration

In order to transform governance, shift financial flows, and advance alternative food systems, civil society has to operate more collaboratively than ever before. However, the pathway from 2021 to 2045 is rife with potholes, politics and detours. Long-standing rivalries, diverging priorities and competition for funding do not disappear. Yet many successful collaborative processes are already growing into trends that, over the years, help overcome some of these challenges.

The compounding social and environmental crises create a political space which CSOs seize for further collaboration. The development and dissemination of new tools and organizational approaches allows a wide range of allied groups to sync their calendars (though not necessarily their programmes), to sound the alarm on emerging crises, and garner international support for their localized struggles. Working together more strategically also allows movements to impact governance spaces by quickly sharing, transposing and translating information, monitoring commodity chains and blocking abusive ones, and embedding shared long-term imperatives into their work. Collaborations around data become ever more crucial (both civil society-led sharing/collecting data and blocking industry data takeovers). Over time, diverse CSOs routinely come together in consortia to take on targeted goals (short- as well as medium- and long-term). These initiatives persuade significant numbers of funders to commit to programme-based multi-year relationships.

By 2045, the modalities of CSO collaboration have shifted considerably, and so has their role in decision-making. From granting access to civil society on their own terms in the 2020s, governments and industry are obliged to negotiate with civil society as a genuine third force in the 2030s. And, as a strong ally of good governance and an effective foe of international capital by the 2040s. In some countries, governments institutionalize CSO support (similar to tax support to organizations in some countries today). Governance with civil society becomes the norm. As this institutionalization happens, some groups break away to ensure a more autonomous agenda. The Long Food Movement maintains a dynamic tension between institutional links and more radical organizing.

OPPORTUNITY #11

Making cross-sectoral collaboration the norm

Over the coming years, food movements work hard to overcome barriers to collaboration and to **make cross-sectoral strategizing the norm**, building on the networks that had already begun intense collaborations by 2021.⁸³ There are various degrees of alignment around politics and values, and even in instances of greatest alignment, tensions abound. Examples include significant differences in funding amounts – and associated power differentials – particularly between larger NGOs and social movements of directly impacted populations. This, in turn, connects to the politics of representation, both between NGOs and social movements, as well as within social movements and other civil society formations (which are often themselves highly heterogeneous). Over the 2020s, it becomes imperative to consciously build this awareness into strategies for change-making. The Long Food Movement works to confront issues of power and privilege around race, class, gender, and other tensions that persist within movements, as well as navigate through tough political and tactical differences.

With the future of global governance at stake, **the 2021 Food Systems Summit accelerates civil society convergences**.⁸⁴ The 2021 thematic World Social Forum becomes another opportunity for collaboration. In each case, food movements work with other social movements to advance key messages around the importance of participatory governance and the nascent corporate takeover of multilateral systems. As food systems digitize, food activists also learn quickly from the struggles of **digital justice activists** and vice versa, as well as redoubling collaboration with **climate and environmental justice movements**.

By the 2030s, a sense of shared purpose has encouraged CSOs, foundations, and networks to sync their calendars (from annual board meetings to conference timetables) in order to facilitate cross-sectoral dialogues, strategic planning, and co-fundraising opportunities. As a result, the Long Food Movement is able to establish a (relatively) **consistent pattern of local-global convenings**.



The Long Food Movement works to confront issues of power and privilege around race, class, gender, and other tensions that persist within movements, and navigate through tough political and tactical differences

These strategically-planned gatherings become biennial at regional and global levels, and back-to-back with, or replacing, regular funder/network conferences. They serve to exchange ideas, monitor progress, engage with responsive policymakers and secretariats, and update strategies, including collaborations with other CSO sectors. All include secure, multilingual, effective online modalities of cooperation to surmount a world of digital surveillance, pandemic lockdowns, and carbon-constrained travel.

But progress remains fragile. Tensions persist between emergency survival measures (in the face of multiplying crises) and longer-term strategizing. Cross-cutting collaboration within food movements and among movements comes with transaction costs, sparking concerns that it is advantageous to the best-resourced CSOs closest to power. Even when collaboration is successful, efforts to coordinate and piggy-back on already financed national and international meetings still require considerable planning and organization. The shift to online, ‘multi-stakeholder’ governance processes, rather than in-person negotiations, creates further challenges for building trust. By 2045, significant strides have been made, but the quest for **closer collaboration remains a work in progress**, and the subject of constant negotiation and dialogue.



OPPORTUNITY #12

Developing new tools to block corporate commodity chains and hack closed-door negotiations



CSOs are cognizant of geopolitical trends both globally and within the countries they operate. But most CSOs are not able to pay close attention to trends in agribusiness concentration, trade logistics, or new and emerging technologies – despite their huge implications for food movements.

Over the early 2020s, **intensive information-sharing** is therefore identified by CSOs as a prerequisite for enhancing the collective brainpower of civil society, and challenging corporate-led trajectories before it is too late. Recognizing that opposition to multinational agribusiness is high-risk, high-profile, and multi-sectoral, food movements share and expand their corporate monitoring activities, working firstly with close allies, and then reaching out to progressive CSOs in virtually every other sector. As agribusinesses strengthen their platforms and take horizontal integration to new levels, the logic of broad collaboration becomes obvious.

On a parallel front, the advantages of joint monitoring and information-sharing vis-a-vis corporate activities become increasingly apparent to **consumers, producers and workers**. Where livestock expansion leads to deforestation and appropriation, Indigenous communities, for example, connect to food and agricultural workers concerned about the same companies. Together, they alert local consumer and health organizations on **strategies to 'block chains'**. Likewise, commodity producers and workers connect with consumers to **end child and slave labour** conditions, as well as to guarantee better prices, liveable wages and to fight against synthetic replacements. Successes encourage producers and workers to address long-standing divides.

Information-sharing is ramped up to challenge corporate-led trajectories before it is too late

By the 2030s, food movements are also bringing digital tools to bear to overcome technical and capacity-related barriers to shared strategizing and multi-scale action.

An ‘Agripedia’ platform helps to facilitate information flows on commodities, companies and commitments (e.g. on marine stewardship, oil palm plantations, industrial livestock, child labour). Inspired by Wikipedia (or, more appropriately, WikiLeaks?), the platform also serves to test the veracity of company block chain promises to track the movement of mangoes from Mexico to Minnesota, or tomatoes from Italy to the UK.⁸⁵ These experimental producer-consumer connections – leading to well-publicized reports released at the right time and focused on the right commodities and companies – have significant impacts. They also help to improve the monitoring procedures of the newly-formed FAO International Digital Council for Food and Agriculture (see Opportunity #4).

Meanwhile, **new document algorithms and media apps** allow civil society organizers to decode (i.e. 'translate') negotiating texts and identify who is leading and dominating negotiations (by government, sector, region, gender, etc.). Working once again with sympathetic IT colleagues, food movements also develop and deploy tools to **connect an increasing number of people and organizations to conference rooms and negotiating texts** – from town halls to UN assemblies. As these tools are fine-tuned over the 2020s and 2030s, they allow a wider range of CSOs to monitor or participate in negotiations and bring transparency to a range of fora.

OPPORTUNITY #13

Building new partnerships to finance a quarter century of food system transformation



The corporate strategy to establish multi-stakeholder governments also requires the capture of civil society organizations. Since the beginning of the century, more technocratic foundations (sometimes termed “philanthro-capitalists”) have been shifting away from funding others to funding themselves. Seeing the potential, corporations began to establish their own in-house philanthropies throughout both the global North and global South, directly funding initiatives in support of the shareholder agenda.

Resisting the entrapment of philanthro-capitalists on one side and klepto-philanthropists on the other, over the 2020s food movements challenge bilateral donors and progressive foundations to consider **new forms of collaboration and accountability**. They also convey a new sense of urgency. With agribusinesses rapidly rolling out AI and data-powered food systems, and with Planetary Boundaries being crossed, it becomes increasingly clear that the gains which food movements are making may be too little, too late. The message becomes clear: current levels of funding delivered in piecemeal, short-term grants based on long established ‘issue’ silos and ‘SMART’ goals mean failure. Civil society and its funder allies must strike a new deal.

Current levels of funding delivered in piecemeal, short-term grants based on long established ‘issue’ silos and ‘SMART’ goals mean failure

These messages are echoed by the many desk officers in bilateral agencies and philanthropic foundations already committed to food system change and fully aware of their institutional limitations. However, **they need support in conveying messages to decision-makers in their own organizations** who may not fully appreciate how severely their rules are handicapping progress.

Through the 2020s, bilateral and philanthropic donors move from short-term project grants to **five-year funding cycles; double their food systems funding** at least every 10 years; and open up to **experimental, speculative, intersectional, and readiness-building initiatives**. Most importantly, they use their money and influence to **catalyze bigger financial shifts and policy changes**.

These efforts play an essential role in consolidating the civil society actions described through this report, and thus in shifting considerable resources away from industrial food systems (see Box 27).

As new resources and funding modalities come on stream, food movements insist that **grassroots work** be amplified and – to the extent possible – supported directly. ‘Horizon scanning’ and long-range planning activities – and support for transaction costs – (again at all levels) receive backing. And, though funding for food, agriculture, and rural development are obviously central to the Long Food Movement, funders are also encouraged to support the related work of collaborating allies in other sectors. Highlighting the closure of democratic spaces, civil society also underlines the need to fund rights defenders, watchdogs, and independent journalism.

SECTION 5.

Conclusions: short steps to a Long Food Movement?

Setting the optimistic scenario in Section 4 against the pessimistic trendlines of ‘agribusiness-as-usual’ in Section 3, it is clear that things could conceivably go in either direction. And, will likely go in both, at least in the early years. In this context, CSOs will face a series of difficult choices.

Firstly, a Long Food Movement entails **uncertain opportunities and unquantifiable transaction costs** (i.e. dedicating time and resources to partnership-building and joint strategizing). However great the strategic and logistical advances, participation in cross-sectoral food movement work will inevitably strain CSOs' human resources. Furthermore, our vision of civil society-led transformation (particularly Pathway 2) gambles on the importance of global processes. Global campaigns are sometimes opaque (involving 'inside' strategies) and require a daily negotiation of power and interests. They may also distort priorities, or detract time and resources from urgent outside goals, leaving CSOs marching to the drumbeat of a UN agenda rather than their own. This at a time when COVID-19 has highlighted the crucial need to prioritize community/locally-based work.

Secondly, **there is no guarantee of success through the few interwoven pathways we have highlighted**. From climate change to regulating and breaking up Big Tech, government and multilateral mechanisms seem generally ill-equipped to address the world's complex challenges and are vulnerable to the whims of powerful actors. Addressing the most powerful force on the planet, multinational corporations (including the new agro-digital giants), also comes with heavy transaction costs, and no guarantees of success. Confrontation is sometimes seen as a negative stratagem that takes resources away from more positive opportunities. Legal challenges are also a double-edged sword, offering potentially game-changing rulings, but equally risking a rabbit hole in which enormous amounts of money and time can disappear.

Thirdly, the combination of relentless corporate lobbying and opaque governmental and intergovernmental processes means that **progress can be rolled back** in the blink of an eye. Attacks on major subsidies, for example, will spark immediate and sustained reactions from agribusiness (including data giants, financial firms, and other powerful new entrants to the sector).

A scenario of splintered governance, where countries prefer to look inward rather than build global accords, increases the vulnerability to these attacks. As described in Section 2, even the institutions civil society has fought hard to build can be dismantled. The CFS could be next in line. Major OECD states are questioning, underfunding, and undermining the reformed committee, even as the private sector uses hard-won CSO procedures to support its own representation and subvert genuine social movement participation.

Fourthly, **several of the strategies outlined above are at risk of co-option.** Work on territorial markets, for instance, can be commandeered by global companies. Beer offers a cautionary tale. Three global breweries have effectively taken over the world's commercial beer companies and sales – including hundreds of so-called craft or artisanal breweries that many consumers believe to be local enterprises. The definitions of 'agroecology', 'regenerative', 'fairtrade', 'climate-smart', and 'nature-based' solutions always risk capture and distortion. Faced with declining market share, the biggest players can always deploy vast marketing and lobbying budgets to manipulate trademarks, advertising, regulations, and local bylaws to protect their interests. Another tactic is to co-opt civil society itself. As CSOs engage with global governance processes, there is the ever-present danger that top-down alliances might be hastily constructed between governments and UN agencies with store-bought civil society (e.g. the WEF Food Action Alliance) (WEF, 2020), forcing genuine social movements to defend their existing role and spaces rather than exercising their proper influence. But still, if the risk of co-option is ever-present, the solution cannot be to never take the risk.

Fifthly, even if executed with the utmost expediency, **these strategies will not necessarily be enough to bring humanity back to a safe operating space.** GHG emissions would have to be cut by 7.6% per year from now to 2030 to keep temperatures below a 1.5°C rise (UN Environment, 2019), and to stay below a 2°C rise, energy companies would have to cut their production by one-third before 2040. In this context, it is understandable that CSOs may shift resources towards frontline struggles for survival and crisis response.

Sixthly, **a Long Food Movement risks being dragged into culture wars.** The infamous 'Breitbart doctrine' – that politics flows downstream of culture – was something that authoritarian nationalists of recent decades took very seriously, weaponizing cultural emotions through targeted hyper-nudging to transform the political environment, particularly in North America. Today's food movements, rooted in decades of counter-cultural projects and centuries of rural and working peoples' cultures, are ripe for corporate and political players to exploit. Digitally-equipped players can fabricate instant subcultures to undermine political organizing by activating and exploiting cultural emotions related to food.⁸⁶

In spite of these risks and uncertainties, **the case for building a Long Food Movement remains compelling.** It does not require short-term strategies to defend against land grabs to be traded off against campaigns for a new international treaty. The idea is not to get everyone on the exact same page, but to help all actors to see and assemble their separate pages into a powerful plan of action toward 2045. A Long Food Movement challenges civil society groups to place multiple objectives and actions on a 25-year roadmap, and to keep this bigger picture in mind as they navigate wide-ranging campaigns, potentially rapid environmental and social breakdown, and the tidal wave of the corporate agenda.

Collaborative workflows starting now could help to prevent sabotage of a key climate or biodiversity COP in five years' time. And foresight around the planned expansion of an agribusiness commodity chain, or the rise of new biodigital players, could be what helps rights defenders stop a resource grab in its tracks. In the dematerialized, digitalized, and hyper-connected supply chains of the near future, the boundaries between global, local, and cyber action may be increasingly blurred.

Moreover, **standing still is no longer a choice.** Assuming that even a small part of Section 3 is accurate, the coming years and decades will see further pressure to weaken multilateral cooperation, pre-empted by multi-stakeholder smokescreens.

Furthermore, from COVID-induced 'Zoombie' online processes to the *de facto* algorithmic takeover of the economy by data titans, we may already be entering a particularly opaque era for civil society leverage at the global level. In the coming years, more space may be surrendered, corporate actors will fill the void, and even today's semi-functional governance spaces may no longer be available.

The ground is already shifting: it is clear that **2021 represents a major crossroads for food systems.** None of the specific initiatives outlined above entirely capture the opportunities before us now. The world is witnessing a global health pandemic that is sparking a food crisis, at least partly created by the climate and ecological emergency and the failures of industry (not just agribusiness, but health and IT) to recognize or respond to the challenges humanity faces. Over the next 12-24 months (depending upon COVID-19 and its sequels, and the attendant food crisis and economic calamity), CSOs will be engaged in critical conferences on food systems, nutrition, climate, and biodiversity. This will be backgrounded by the portents of new technologies and the push for a new bilateralism merging business and government. And as the IPCC and IPBES have warned us, what happens this decade is likely to be decisive in terms of preventing runaway climate change and slowing the sixth great extinction.

Transaction costs cannot be reduced to zero, and nor can the risks of co-optation or dominance by bigger organizations or political game-players, but **barriers to participation can be addressed head on** as an intrinsic part of the process. Arguably, the development of new collaboration modalities (i.e. Pathway 4) is the only non-negotiable part of what is outlined above.

Much is missing from the picture we have painted in this report, and the authors remain dissatisfied. We have recognized – but not met – the continuing threats of xenophobic nationalism, of racism, of patriarchy, of lands grabbed, soils degraded, diversity destroyed, and climates collapsed. Similarly, we haven't addressed the full complexity of relationships between civil society and governments.

Likewise, the report pits civil society against business while only superficially engaging with alternative business forms (co-ops, worker-owned industries, etc.) that offer different visions for the future of the 'private' sector. In reality **CSOs, social movements, governments and the private sector might all be transformed** in the decades to come. These deep, structural changes are hinted at in the pathways, but time, resources, and our imaginations have, so far, limited our ability to explore them to the full.

This report will have failed if it doesn't compel all of us to reach further into our collective capacities for reimagining change. We hope that readers will draw inspiration from the report's overarching message: that **civil society has huge untapped potential for deep, transformative change** if they get increasingly organized, proactive, and forward-thinking.

It is said that fundamental changes to corporate structure and systems of oppression are only possible 'after the revolution'. Yet, set against the *immovable object* of corporate power and historical cultures of oppression is the *irresistible force* of social energy. History shows that when confronted by necessity or opportunity, people can adapt almost overnight. Wars, embargoes, coups, and natural calamities can transform production and consumption patterns, and give rise to new networks of communication and cooperation. And the vast changes as society has adapted to COVID-19, changes that would have seemed wildly optimistic only a year ago, show that, tomorrow, anything is possible.

Endnotes

- 1 More than 25% of the world's farm work is carried out by migrant labourers (Bello, 2020a).
- 2 National campaign: 'Gente é pra brilhar não pra morrer de fome' ('People are to shine not to starve').
- 3 Through the mobilization for, and successful adoption of, UNDROP, the term 'peasant' is being reclaimed (although it has different connotations in various parts of the world and is still used pejoratively by some). In this report, we are using the term deliberately, as are others advancing 'repeasantization' (see, for example, van der Ploeg, 2018).
- 4 CREPPA's full report can be found at: www.ipes-food.org/pages/LongFoodMovement
- 5 Soil erosion is already affecting 3.2 billion people, with 33% of farmland worldwide being moderately to highly degraded, and resulting in a 23% drop in terrestrial productivity worldwide (see Loconto, Jimenez & Vandecandelaere, 2018).
- 6 In India, Nepal and many other places, forests are also being protected by thousands of village communities (see Agarwal, 2010b).
- 7 Already, more than 2 billion people are living in countries experiencing high water stress, and about 4 billion people are experiencing "severe water scarcity during at least one month of the year" (see United Nations, 2019a).
- 8 40% of human rights defenders killed in 2019 – as reported to the International Human Rights Defenders Memorial – worked on land, Indigenous peoples, and environmental rights (Front Line Defenders, 2020).
- 9 Today's most powerful non-state actors can be philanthro-capitalist foundations, fundamentalist religious organizations, or informal militaries that wield more power than some governments. Increasingly, for-profit corporations are creating corporate foundations. Likewise, some CSOs are adopting the language (and sometimes the lifestyle) of multinational corporations in scaling out cross-sectoral platforms, acquiring competitors, managing multi-million dollar programmes, and partnering with governments and companies.
- 10 The ILO estimates that slavery has increased by 18% in recent years. The Global Slavery Index says 45 million people are enslaved today. Please see: <https://www.globallslaveryindex.org>.
- 11 The creation of the World Social Forum was led by social movements such as La Via Campesina, and exemplified civil society's ability to self-organize from local to global levels, and across every sector of social justice. The Dalit movement, for example, developed close ties with MST (Brazil's landless movement) through WSF events in Porto Alegre giving it greater political strength at home in India, as explored in Smith, 2016.
- 12 Just as laws have prefigurative potential in which "[l]egal constructs shape our very capacities to imagine social or political possibilities," through the reformed CFS and the CSM, civil society is actively working to build global agri-food governance architecture with the potential to support food sovereignty (see McCann, 2006).
- 13 Of 24 corporations deemed to be responsible social leaders in the mid-1980s, only three remained intact by the end of the century (see Giridharadas, 2018; O'Toole, 2019).
- 14 The Indigenous Circle working with the Canada-based People's Food Policy project created a seventh principle, 'Food is sacred' (see Food Secure Canada, 2015).
- 15 For more on agroecology, see FAO (n.d.); IPES-Food (n.d.)
- 16 In the 1840s, Belgium's potato and rye crops failed simultaneously; in the 1880s, Java's coffee and cane crops were struck with disease, rinderpest attacked the cattle, the island's export sugar market failed and Java couldn't import rice from its neighbours; Locusts and Army earthworm are attacking African crops today.
- 17 The implication is that automation will be programmed into the genetics of living things (including for food production), being treated more as biological machines and living internets (see Basnet & Bang, 2018).
- 18 A 'unicorn' refers to a privately held startup company valued at over USD 1 billion.
- 19 Corteva Agriscience is reportedly the single biggest owner of patents on the CRISPR genetic technique and applications worldwide. They are committed to "wide adoption of this technology in agriculture." Syngenta, Bayer, and BASF also hold significant intellectual property stakes in agricultural applications for CRISPR genome editing – either via licenses or patents.

- 20 Testimonies from The Maize Network in México, zoom meeting on November 6, 2020.
- 21 For decades, all of the major commodity trading firms dominating the production, processing, transport, finance and trading of food have been US or Europe-based. The entry of China's COFCO in global commodity trading, and the earlier acquisition of Smithfield Foods by WH Group (previously Shuanghui) to gain a global foothold in meat processing, imply a clear challenge to the British-American domination of global food markets.
- 22 In Laos, a railway project (initiated before BRI but then placed under it) is grabbing the land of over 4,400 farming families, who are being displaced without compensation. Many of the families waited for compensation for more than two years, and some were forced to migrate to neighbouring countries to find work after losing their farms (see Radio Free Asia, 2019).
- 23 The Mercosur bloc is composed of Argentina, Paraguay, Brazil and Uruguay.
- 24 The production of maize, wheat, soybean, and rice – often for non human consumption – is increasingly concentrated. The nature of global trade has also changed, with products such as palm oil, fruit juice, and some processed products generating the fastest expansion, with soft drink trade growing at 8% or more annually. Traditional exports such as wheat and coffee are expanding at a slower rate of around 2% per year.
- 25 Major chokepoints include the Panama Canal and the Strait of Malacca, which are significant for linking western and Asian markets, the Turkish Straits (particularly for wheat), and others in the US, Brazil, and the Black Sea. Chokepoint dependency in the Turkish Straits is said to be increasing due to a growth in exports from the Black Sea region, especially for wheat. The Black Sea, Baltic Sea, and the Suez Canal connect continents, and could also be critical chokepoints in the future.
- 26 Announcement by “Food by Robots”, “a pioneer company that aims to create disruption by rethinking, prototyping, designing and promoting collaborative automation in the Hospitality sector” (see <https://www.foodbyrobots.com>).
- 27 With the flood of processed food from FTAs in Latin America in the 1990s came a steady growth in obesity in Chile, Argentina, Paraguay, México, and Central America. Worldwide trends in body-mass index, underweight, overweight, and obesity from 1975 to 2016: a pooled analysis of 2416 population-based measurement studies in 128.9 million children, adolescents, and adults (see NCD Risk Factor Collaboration (NCD-RisC), 2017; PAHO, 2019).
- 28 Meat mimics refer to novel plant-based products derived from yeast, bacteria, or algae, genetically modified to produce compounds that mimic protein content and other qualities of meat, dairy, or eggs through a closed industrial fermentation process.
- 29 Impossible Foods launched an ‘Impossible Burger’ in 2016. The patty was developed with a total investment of USD 372 million from sources such as Google Ventures, Bill Gates, Li Ka-shing, and the Swiss-based investment bank UBS (see ETC Group & International Union of Food Workers, 2019).
- 30 One of the biggest trends is towards ‘blended’ products whereby the big meatpackers mix processed meat with cheap plant-based fillers and sell it for a premium to ‘meat-reducing’ consumers.
- 31 There are already at least 25 fake-meat start-up companies developing such products in the US, Europe, Israel, and Japan. Far from a challenge to big livestock - the trajectory is to complement agribusiness.
- 32 Soil health has already been made a key priority at the EU level: ‘Soil Health and Food’ was identified by the European Commission as one of five key missions for post-2020 European research policy (see European Commission, 2021).
- 33 Without benefit of either fossil fuels or electronic communications, crops and livestock species have been transferred and adapted across oceans and continents between growing seasons or between farm generations. Historically – and today – peasants and pastoralists have looked to their own crop and livestock breeding and exchange to maintain genetic diversity and adapt to changing conditions.
- 34 Around 2 billion people are currently lacking essential micronutrients such as iron or vitamins for their development and health (Hunter et al., 2019; IPBES, 2019).
- 35 Sometimes erroneously described as neglected or underutilized, these crops and crop wild relatives are often found in household gardens and/or are protected by communities for specific uses.
- 36 Evidence on the economic viability of agroecology in Europe is growing (see for example van der Ploeg et al., 2019).
- 37 From 2014 to 2018, FAO's Global Dialogue on Agroecology moved through two international and six regional symposia involving 170 countries. This was followed by FAO's Scaling Up Agroecology Initiative to accompany and support national agroecology transition processes.

- 38 The 16 SADC countries made these commitments during a dialogue with the FAO in 2019 (see FAO, 2019).
- 39 Togo, for example, introduced a form of universal ultra-basic income in mid-2020 in response to COVID-19. The scheme, linking an electronic wallet to peoples' cell phones, already has 1.3 million people registered and has sent money to 500,000 in the region of Greater Lomé, Togo (the capital) alone (Duflo & Banerjee, 2020).
- 40 The authors acknowledge that the North/South division may have different implications by 2045, while assuming that it will still have some relevance (in light of deep-seated hierarchies of power, influence, and wealth).
- 41 "Developing countries have forked out over \$4.2 tn in interest payments alone since 1980 – a direct cash transfer to big banks in New York and London, on a scale that dwarfs the aid that they received during the same period" (Hickel, 2017).
- 42 Once considered unrealistic, reparation is gaining political traction, being debated in the Belgian Parliament and promised by some universities. Corporate reparations for WWII crimes against humanity and moves by some governments (i.e. France) and museums to repatriate cultural artifacts has opened the debate. Estimates of the scale of the damages involved run as low as several hundred billions of dollars and as high as several trillion dollars.
- 43 Two legal initiatives have momentum: from Ecuador to Bangladesh, cities and national governments are asserting the legal rights of rivers, watersheds, and ecosystems. Secondly, class-action lawsuits by communities and by children, accusing governments of endangering their lives and livelihoods through inaction on climate and biodiversity loss, are receiving sympathetic hearings in law courts around the world.
- 44 Based on UNDRIP and UNDROP.
- 45 ENMOD has already been ratified by most major governments. When ENMOD is invoked, the UN Secretary General is obliged to convene a meeting of its member states within 40 days of a complaint. Governments have already tried to broaden ENMOD to get toxic waste dumping and pesticides on the agenda, and both climate and biodiversity issues could find a place. Lawyers and civil society groups have been studying ENMOD over the last few years to understand how it might be deployed in the current context.
- 46 This assumption is based on cities in various world regions having already achieved rapid growth in urban agriculture. For example, in Cuba, urban agriculture (virtually chemical-free) has flourished, and now supplies up to 70% of fresh vegetables in larger cities throughout the country (see Altieri, 2016).
- 47 Recent research, however, warns that the capacity to monitor fair trade intermediaries and farms falls far short, and major failings and distortions abound. This has been exacerbated by the world's biggest food processors and retailers switching to 'in-house' fair trade labelling with still less transparency and more dubious results. Nevertheless, the impressive support for fair trade is a clear indication that consumers are willing to pay more to play fair, and it is up to civil society and government regulators to hold agribusiness accountable.
- 48 Food environments are referred to in the EU's Farm to Fork Strategy, on the back of civil society awareness-raising and advocacy.
- 49 B corporation (or B corp) certification is conferred by B Lab to for-profit institutions that have proven to value transparency, accountability, and consider social and environmental issues across their businesses. There are currently 3500 B-corp certified companies in approximately 70 countries, specialized in an array of fields including fashion, food and beverages, and finance. Examples of food companies with B-corp certification are Danone, Bledina, Ben & Jerry's, Seventh Generation, and Valrhona.
- 50 Based on 2018 figures (see ETC Group, 2019a).
- 51 These anniversaries fell in 2019 for the Bretton Woods institutions (the IMF, the World Bank, and the WTO), and in 2020 for the UN.
- 52 FAO Committees and Commissions (e.g. on forestry, commodities, agriculture, fisheries, and genetic resources for food and agriculture) typically meet biennially to review past work, adopt new programmes of work, and consider budgets as well as special resolutions. Under an RBA 3.0 merger, CGIAR centres could be assigned to the oversight of the most relevant of the existing committees or commissions.
- 53 These orientations were already suggested in the last CFS evaluation (see CFS, 2017).
- 54 In parallel to the launch of the UN Food Systems Summit process, the German government put forward proposals at the FAO for an International Digital Council for Food and Agriculture, in order to pre-empt other initiatives by philanthro-capitalist foundations.

- 55 These initiatives have brought together food providers, trade unions, scientists, specialist NGOs and academics, reinforcing their ability to influence the UN Technology Facilitation Mechanism and the Science and Technology for Innovation (STI) platform established by the Secretary-General following Rio+20 (see ETC Group, 2019b).
- 56 There at least eight negotiating instruments available for civil society to constrain transnational agribusiness: Draft Code of Conduct on Transnational Corporations; International Labor Organization's Tripartite Declaration of Principles Concerning Multinational Enterprises and Social Policy; OECD Guidelines for Multinational Enterprises; UNCTAD Set of Multilaterally Agreed Equitable Principles and Rules for the Control of Restrictive Business Practices; Draft Norms on the Responsibilities of TNCs and other Business Enterprises with Regard to Human Rights; Bilateral Investment Treaty framework; United Nations Global Compact; and Guiding Principles on Business and Human Rights.
- 57 See for example calls for a binding treaty by Friends of the Earth (Friends of the Earth International, 2020).
- 58 The Global Campaign to Stop Corporate Impunity already brings together more than 250 national and international CSOs. It is simultaneously pushing forward an International Peoples Treaty to support movements and communities in resisting corporate power and advocating for a binding UN Human Rights Council treaty to regulate corporations, stop human rights violations, and ensure access to justice for affected communities.
- 59 Many of the ongoing court cases against Bayer concern the health effects of Monsanto products – from Sri Lanka to Australia, France and the US. Some of these cases have been extraordinarily successful (see, e.g., International Monsanto Tribunal, 2019; US Right to Know, 2021).
- 60 Winners can be losers too. In the 1970s, Nestlé won a lawsuit over its infant formula but the court of public opinion led to a WHO decision against infant formula. More recently, Monsanto successfully took farmers to court over use of its proprietary seeds but became a media pariah, and has since been taken over by Bayer.
- 61 Food emergencies resulting from wars, occupations and other conflict situations are unlikely to be addressed by the protocols described here.
- 62 Practically, this could mean setting aside all regulatory market and IPR barriers that make it difficult for small food providers to breed, save, exchange, or market crops, fish, and livestock (with particular attention to accessing territorial markets); suspending any market barriers (including corporate personhood) that imperil the public good; and ensuring that women and youth have access to land and resources as well as training; that there are no legal or regulatory barriers to food diversification; and that their access to markets is stable and equitable, in line with the existing imperatives under UNDROP.
- 63 Under current trade rules and also WIPO rules, the state can grant Compulsory Licenses that have the effect of suspending patents for the public's benefit. Likewise, states can invoke reasons of national security to block imports or exports. There are also other provisions under Codex Alimentarius that allow the state to intervene to ensure public safety. In most cases, it is probably not necessary to have a direct confrontation with the WTO or other FTA arrangements.
- 64 Rather than one-sided presentations or debates, deliberative dialogues allow different perspectives to make their case and then respond to audience questions, either in a single meeting or in a series of meetings. The dialogues would be organized by civil society and still billed as 'side events', in UN parlance.
- 65 Such processes have achieved important policy impacts, from the Malian Farmers Jury (L'ECID) stimulating a national debate on GMOs and delaying their introduction into the country, to farming communities informing local resource allocation in Uganda through deliberative polling (Bryant, 2009; Fishkin et al., 2017).
- 66 See Glasgow Food and Climate Declaration (IPES-Food, 2021).
- 67 With key exceptions, for instance federal research allocations have been fiercely challenged by CSOs in the US.
- 68 By 2019, the WFP, with a food procurement budget of USD 1.6 billion, was purchasing half of food in-country (Supply Chain Division, 2019). The WFP is already committed to going further, and the main obstacle appears to be resistance from a single country – the US – making this a highly plausible target for civil society campaigning (Park, 2019).
- 69 This may be unlikely in the immediate future in the UK, for example, where foreign aid cuts are expected.
- 70 The estimate given by Pardey et al. (2018) is USD 38.8 billion, but we have subtracted from that the portion of international R&D (1.7%) to get an estimate of total domestic R&D.
- 71 Switzerland, France, and Germany are among the countries increasingly targeting agroecology in their agri-development policies (Biovision, IPES-Food & IDS, 2020).

- 72 Financial Times (US edition) January 17, 2021 notes that new EU regulations will require, among others, pension funds to develop ESG.
- 73 According to the OECD, in 2016-18, the agricultural policies of 53 countries provided a total of USD 705 billion per year to their agricultural sectors. About three-quarters of this support – USD 528 billion per year – was transferred to individual producers. The 53 countries examined represent almost three quarters of global agricultural gross value added. We estimate total agricultural direct transfers/subsidies to producers globally to be roughly USD 700 billion per year (OECD, 2019).
- 74 The US National Family Farm Coalition, for example, emphasizes that the most effective antidote to subsidies – and to the tremendous power of large commodity firms – is regulations guaranteeing fair prices to farmers (National Family Farm Coalition, 2020)
- 75 For example, funds from the EU Common Agricultural Policy can be used by member states to provide ‘coupled’ payments per head of livestock (see IPES-Food, 2019).
- 76 While representing less significant sums, commodity subsidies within G-77 countries have often directly or indirectly benefited multinational commodity traders or processors – and redirecting these resources towards small-scale sustainable farms producing for local markets may be even more urgent.
- 77 Globally, sales of soft drinks represent an estimated USD 646.6 billion, and sales of confectionary and snack goods, a whopping USD 1.2 trillion (Statista, 2019).
- 78 Studies have shown that tax receipts and healthcare savings need to be reinvested in positive steps to promote healthy and sustainable diets in order to ensure a coherent, effective, and politically sellable set of interventions (Wright, Smith & Hellowell, 2017).
- 79 Estimates drawn from Cobham, 2019.
- 80 ‘Transfer pricing’ refers to practices that can be used by multinational firms to reduce their tax liability by shifting profit into lower-tax jurisdictions, e.g. by over-billing transactions between different branches of the same company.
- 81 Amazon has its headquarters in Seattle – the city with the third-largest homeless population in the US. In 2018, Amazon beat back a Seattle City Council proposal for a homeless tax aimed at the city’s biggest employers. The company paused its construction projects and threatened to relocate some of its local workforce. The tax was defeated – taking USD 53 million a year away from homeless projects. A year later, Amazon made a one-time USD 5 million donation to homeless charities. As a tech firm, Amazon is also able to reduce tax liabilities by writing off much of its income as R&D credits (see Lobo, 2020).
- 82 See example of Virgin Atlantic (Stupples, 2020).
- 83 For example, in sectors such as: trade, climate and food; multinational corporate concentration; challenges to multilateralism; agroecology; food policy councils and coalitions; ‘Green New Deal’ type approaches; regional technology assessment; and broader social movement convergences.
- 84 The members of the IPC for Food Sovereignty and the CSM are currently developing strategies to address the Summit issue.
- 85 The information carried in privately governed blockchains is circumscribed by those companies, and vulnerable to hacking (see Bas Van Leeuwen, 2020).
- 86 Nationalism, for example, is a cultural force that can sabotage international alliances between movements fighting for food and agriculture across borders. Patriarchal, colonial, and white supremacist assumptions about who has expertise or legitimacy in the food system can be cynically harnessed through proposals for ‘sustainable’ diets and farming. When radical ecologists (be they vegan-warriors or Paleo-primitivists) divide and disagree about food values in the name of the health of the planet, political alliances can splinter but corporate marketers can still reap profits and policy wins on both sides of these fights.

ANNEX 1.

Tech trends glossary: new tech terms for food movements to watch

Active Genetics, Gene Drives, and Horizontal Environmental Genetic Alteration Agents (HEGAAs) – Genetic engineering strategies overcoming natural breeding barriers where new engineered traits are actively pushed into the environment potentially to spread. One such example is a gene drive where an organism is genetically engineered to always pass on a desired trait to its offspring. Gene Drives especially applied to fast-breeding species (e.g. insects or nematodes) can quickly spread in the wild and in agroecosystems transforming entire populations and ecosystems. Gene Drives can also be used to speed up and direct agricultural breeding. Another example are HEGAAs where an insect may be modified to carry a genetically engineered virus in the environment, which in turn genetically alters organisms that it comes in touch with.

Ag-robots – Use of autonomous robots (including robot swarms) in agricultural production, mostly in the field for weeding, spraying agrochemicals, picking, harvesting, and crop surveillance.

Agrisensors – Use of digital sensor technology in farming. Includes small, distributed sensors connected by internet (i.e. internet of things) to provide real-time monitoring of soil, water, pests, livestock health, etc.

Artificial intelligence (AI), Machine learning (ML), and deep learning (DL) – Use of programmed and evolved algorithms to spot patterns and make predictions and design decisions. In ML and DL, computers use electronic circuits patterned on neural circuits from the brain to process data inputs and self-train the computer to find useful patterns for decision-making.

AI breeding/Targeting Induced Local Lesions in Novel Genomes (TILLING) – TILLING is an example of mixing old mutagenesis techniques with new DNA sequencing and big data to rapidly select mutations that drive towards a predicted phenotype. More generally genomic breeders are using AI systems to predict what genomic mutations they want to breed towards.

Biointelligence and Biofoundries – Biointelligence describes large scale collection of digital genomic data to train AI systems, and also the associated application of AI to design new genetically engineered systems (e.g. through synthetic biology or gene editing). Facilities that carry out the automated design and construction of new synthetic organisms are often called ‘biofoundries’.

Blockchain, cryptocurrencies, and smart contracts – A blockchain is a digital ledger or record of transactions that exists and is altered simultaneously on multiple networked computers, as a means to make automated “trusted” digital transactions. While it has much wider uses, the blockchain is best known as the technology that enables cryptocurrencies – digital tokens, recorded on the blockchain, that can be exchanged directly between individuals without a trusted middle institution to verify the transaction, thereby mimicking exchange of physical currency between individuals. Smart contracts are short programmes coded into the blockchain that allow automated devices to exchange cryptocurrencies or make other transactions between themselves under agreed conditions, again without human intermediation.

Cellular agriculture and hairy root cultures – Cellular agriculture is the attempt to grow high value food ingredients in cellular cultures often focused on stem cells. Much focus is on lab-grown ‘in-vitro meat’ and other artificial proteins to replace animal proteins, but the technology is also used to grow cellular plant cells such as berry cells, as a food source. Cellular cultures lend themselves to novel genetic engineering approaches such as ‘hairy root cultures’ where a root cell is infected by an engineered or non-engineered soil bacterium and then cultured to produce flavours, fragrances, and food compounds.

Computer Aided Organic Synthesis (CAOS) – Chemists are applying CAOS to the design of synthetic compounds. In this approach, machine learning and big data computation software suggests new chemical processing routes for transforming substances from cheaper ingredients to high value compounds including foodstuffs.

Environmental Genomics, Metagenomics, Microbials and the Microbiome – The microbiome describes the community of microbes found together in one place. Whether that is the soil microbes of a field, or the microbes resident in the skin, organs and cavities of the human body, these microbes regulate much of the essential functions in agriculture as well as in the body, and altering the microbiome can change health and agricultural outcomes. The rise of metagenomics – which sequences the genetics of whole microbial populations and then reconstructs them digitally using bio-informatic tools and studies their interactions, functions, and relationships – has allowed scientists to describe how specific microbial communities are constructed, and to propose altering the microbiome at different levels of intervention including with new engineered ‘microbials’.

Environmental genomics uses all levels of biodiversity data (genomic and environmental data together) to engineer new location-targeted engineered organisms and interventions for agriculture.

Explainable AI (XAI) – refers to methods and techniques in the application of AI technology such that the reasoning for results of the process can be understood by humans. It contrasts with the concept of the “black box” common in machine learning where even their designers cannot explain why the AI arrived at a specific decision.

Fintech – A portmanteau of ‘financial technology’, describes the technology industry that applies new software, devices, applications, and processes to financial matters. This includes cryptocurrencies, digital lending and transactions, digital ledgers, automated investing and trading, etc.

Food printers and bioprinting – A food printer is a device that builds a finished processed food layer by layer using additive manufacture techniques such as spray nozzles or 3D printing. Bioprinters build tissue-like structures that imitate natural tissues – for example printing artificial cell cultures with a scaffold and added nutrients to create fake meats.

Food scanners – A device that uses optical scanning technology and AI to give a real-time analysis of nutrients in a food, including allergens, toxins, etc.

Gene (or genome) editing, CRISPR – Gene editing techniques such as CRISPR CAS9, TALENS, or ‘prime editing’ are genetic engineering approaches that modify the DNA of an organism in a heritable manner. Gene editing techniques use targeted enzymes that cut and then remove or replace small segments of the DNA molecule at a faster development pace than the slower and less targeted ‘transgenic’ approaches of the past. Organisms can be rapidly ‘edited’ at multiple points simultaneously in the genome allowing quite complex and significant changes to genetic functioning including the creation of gene drives.

Geoengineering, Carbon Dioxide Removal (CDR), Solar Radiation Management (SRM), Bioenergy with Carbon Capture and Storage (BECCS), Weather modification – Geoengineering refers to the large-scale intentional modification of earth system and processes, such as the climate system or global nitrogen and water cycles. Most geoengineering development focuses on trying to counteract the warming of anthropogenic climate change through two approaches: first, SRM, in which geoengineers attempt to reflect sunlight back to space (e.g. by putting particles in the atmosphere or increasing the reflectivity of clouds, seas, land and sky); second, CDR, where geoengineers use mechanical and biological means to remove greenhouse gases from the atmosphere. One CDR technique with close links to agriculture is called BECCS, where biomass, including crop biomass, is grown and then

turned into biofuels or electricity and resulting greenhouse gases are captured and supposedly sequestered. Weather modification (e.g. suppressing storm clouds) is also sometimes regarded as geoengineering.

Hyper-nudging – Hyper-nudging describes the deliberate use of large datasets (e.g. about consumers and their purchasing behaviour) in combination with psychographic profiling and AI algorithms to design and implement sometimes imperceptible designed ‘nudges’ to shift an individual’s behaviour in targeted ways – including diets, food shopping habits, cultural attitudes towards food, etc.

Molecular Communication and Nanobionics – Molecular communication refers to encoding data on molecules – particularly biological molecules such as DNA or pheromones – and then harnessing natural mechanisms for distributing and processing that molecular version of the data. Examples include sending messages across distance by pheromone or storing libraries of digital information in synthetic DNA. Closely related is the nascent technology of plant nanobionics. Researchers have been designing sensor nanoparticles that are taken up by plants that detect environmental changes and transmit data to digital devices such as smartphones. In a future scenario, nanobionic plants could monitor soils and water and then transmit digital data to electronic platforms.

Nanotechnology, Nanoparticles and Nanomaterials – Nanotechnology refers to engineering of matter at the scale of the nanometer (the scale of atoms and molecules) and also harnessing the unusual quantum properties of matter at that scale. Nanoparticles are small, engineered lumps of nanoscale material that exhibit novel properties and can move freely in the body and the environment because of their tiny size. Other materials are described as nanomaterials when they have one or more aspects on the nano-length scale – e.g. surface coatings or novel molecular shapes are called nanomaterials.

New pesticides (e.g. protein degraders, biosurfactants, and nanoemulsions) - Protein-degrading compounds are molecules which act to target very specific proteins in crops and insects and then provoke the organism to degrade them. This can potentially be used to prevent herbicide-resistance as well as to target weeds and insects in other ways. Surfactants (surface active materials) are a class of chemicals widely used in agrochemicals that are typically synthesized from petroleum but are increasingly being developed from microbes (including genetically engineered microbes) as biosurfactants. Companies are also reformulating their agrochemicals as nanoemulsions – tiny nanosized droplets of chemical in oil with increased activity, stronger stickiness to plant surfaces and greater absorption into cells.

Personalized nutrition, nutrigenomics, and genomic diets – Advocates of personalized nutrition and nutrigenomics argue that the collection of large amounts of human and food genomic data (and other personal data) can enable the crafting of personalized diets to optimize diets to best fit a consumers genomic makeup or their microbiome. Theoretically, foods can be genetically modified to suit the genomic profile of the eater or their resident microbes.

Precision/digital agriculture, fishery, forestry and the internet of things – ‘precision’ or ‘digital’ agriculture refers to a data-driven production system in which a mix of environmental and on-field data (from sensors and the internet) drives agronomic decisions such as planting and pesticide application. Alongside digital software tools for mapping and monitoring the farm, digital farmers may also incorporate drones, ‘ag robots’, sensors and other elements of on-farm automation networked together into an ‘internet of farming things’. Similar data-driven strategies for precision fishery and forestry also utilize data models and mapping in combination with automation to increase extraction of natural resources or manage sensitive ecosystems.

Synthetic biology and biosynthesis – Synthetic biology describes the new frontier of biotechnological invention in which genome sequences are designed by computer, and then either synthetic DNA or gene editing is used to ‘programme’ living organisms. In particular, production microorganisms such as yeast, algae, and bacteria are genetically redesigned to biosynthetically produce high value compounds – usually in large vat fermentation systems similar to ethanol production. These fast-growing engineered microbes, feasting on sugar or natural gas, may be producing synthesized flavour and ingredient compounds, proteins and fats, agrochemicals, veterinary medicines, fish feed, animal feed or more.

Transient Expression, RNA Interference (RNAi) sprays, ‘transiently modified’ organisms (TMO’s) – Transient modification describes techniques where genetic material is introduced into an organism to hijack cellular functions, but these are not integrated and passed onto future generations. The most prominent example is RNAi sprays – where short strands of engineered RNA (the genetic messenger molecule that transcribes DNA) are sprayed on a crop to make that plant or insects artificially express compounds. This gives rise to TMOs where the genetics are modified but only in the current generation. TMOs are also being used as a production platform for natural products, where tobacco leaves are transiently infected with engineered soil bacteria so that the leaves start artificially producing novel compounds.

Vertical Farm – Vertical or indoor farms are intensive technologized food growing environments that can be deployed in towns and cities – typically housed in a built structure. Vertical farm proposals usually feature artificial hydroponic (soil-less) growing and nutrient and water cycling technologies, as well as a high degree of digital monitoring and automation.

ANNEX 2.

Routes to reforming the UN's Rome-based agencies – From Circo Massimo to Fora Romani?

The following nine initiatives – arranged from modest to more significant – are proposals that civil society partners might develop en route to reforming the Rome-based agencies ('RBA 3.0' - see Opportunity #4). Depending on circumstances (including Grey Swans) the nine might evolve sequentially, simultaneously, or spontaneously. Each small step makes the steps easier. Success comes down to readiness: prior agreement on the purpose and parameters of each initiative, and an understood process for moving initiatives forward as opportunities arise.

- 1. Deliberative Dialogues:** Local, national, and international negotiators are familiar with 'side events' whose greatest advantage is offering harried diplomats free lunches, and whose intent is either organizational PR or to promote one-sided perspectives on a negotiating topic. In addition to these conventional events, civil society could organize and host deliberative dialogues that bring together the peoples most impacted by the issue with academics and (possibly) government officials who could provide introductory papers shared in advance, and be available to respond to inquiries from the conference participants. Where agribusiness observers are recognized to have conflicts of interest, they would not be invited to provide information. With growing acceptance, a fuller deliberative process as has been used in numerous countries could be developed.
- 2. Informal Cross-Fora Working Groups:** Early in this century, FAO allowed or encouraged the formation of cross-cutting staff working groups interested in both broad and specific topics. The working groups were informal, customarily met at lunchtime, and were self-organized without hierarchical concerns. The result was mixed: some were captured by hierarchy; some withered away; and some produced interesting ideas that found their way into programmes and negotiations. Taking this concept one step further, civil society could propose that such working groups: cut across the RBAs and CGIAR; include interested persons from civil society; and meet during regular office hours. Government representatives could also be invited as appropriate.

3. **Participation Tools:** To facilitate the informed participation of civil society and other observers either unfamiliar with UN procedures or unable to attend the meeting in person, civil society could provide digital resources, facilitating interpretation into non-UN languages; deciphering negotiating texts and the implications of each text amendment; and monitoring conference room power dynamics by identifying speakers and timing interventions, etc. This service would undoubtedly be of interest to the negotiators themselves.¹
4. **Transparent Head-of-Agency Selections:** Although the procedures for selecting/electing the Head of Agency for each of the RBAs and CGIAR differ, they all involve nominations processes; sometimes aggressive campaigning; often public presentation; and a final decision/vote. Civil society could participate actively in all but the of these steps offering a dedicated and independent website; vetting potential candidates; hosting presentations and debates; and even suggesting job criteria. Such an initiative is best initiated when an incumbent is secure in re-election. This allows governments and secretariats to become comfortable with the process by the time a change in leadership is likely.
5. **FAO's Biennial Regional Conferences:** Long considered both programme- and policy-irrelevant, the regional gatherings nevertheless bring together regional Ministers of Agriculture and increasingly large numbers of civil society. Civil society could enhance its relevance by preparing position papers and holding national pre-meetings with interested governments, as well as hosting deliberative dialogues and side events during the conferences. The overarching goal would be to convert the biannual meetings into a national to regional to global process that is opened up to the RBAs and CGIAR. Some regions are already very open to civil society participation, but this initiative would strengthen CSO positions considerably, while converting an expensive and largely irrelevant structure into stronger regional participation in global issues.
6. **Regularized Independent External Agency Evaluations:** Currently RBA and CGIAR external evaluations are sporadic and arise only when directly funded by one or more external sources. Civil society could, comparatively inexpensively, organize regular full or meta-evaluations of each of the RBAs to be completed and presented in advance of either major events or elections. These evaluations could engage with governments in all regions as well as the Secretariat and staff unions as well as end-users, and would likely be extremely well read by governments and could prove very influential in setting the future course of an organization.

¹ However, in the new reality of digital negotiations, there is also an urgent need for tools and modalities where civil society doesn't get eternally muted – turned into 'Zoombies' – in Zoom rooms and meetings.

7. **Conflict Resolution Procedures:** The IMF, World Bank and the regional development banks all have conflict resolution procedures wherein communities affected by bank decisions or projects can seek restitution. In principle, communities are entitled to access bank information and may receive financial support for the negotiating process. Several hundred cases have arisen since the 1990s and reviewers argue that they have had some impact on long-term bank activities even if they haven't often addressed immediate concerns of communities. Notably, communities are also able to demand redress for environmental damages not directly relevant to the communities. Society has a high chance of success in arguing for conflict resolution procedures collectively through the RBAs. However, it would be important to study the experience of communities and the banks in order to improve procedures.
8. **Participation and Conflict of Interest Procedures:** Civil society could press the RBAs (individually or collectively) to negotiate and adopt conflict of interest arrangements that prohibit the intervention of private companies and their trade associations that have commercial (including shareholder) interests in an agenda item.²
9. **RBA Mission Coherence:** Each of the RBAs and CGIAR have overlapping and often complementary interests. Civil society, following a round of external evaluations, could launch an investigative process intended to prevent mission overlap and improve efficiencies by examining ways in which the RBAs could organize more closely. The result would be a *de facto* integration of the three RBAs and CGIAR into one organization in which the CFS (or its strengthened successor) becomes the single governing body of the new 'Roman Forum'.

² There is UN-level precedent for this within the CBD, where civil society successfully pressed for conflict of interest requirements for expert processes following revelations regarding corporate lobbying. There is also national-level precedent: Canada put up a firewall between industry and the revision process for its 2019 food guide.

ANNEX 3.

The Long Food Movement Advisory Group

Anderson, Molly (USA, Middlebury College)* holds the William R. Kenan Jr. Chair in Food Studies at Middlebury College in Vermont. She is a specialist in hunger, food systems, and multi-actor collaborations for sustainability.

Agarwal, Bina (India, University of Manchester)* is a Professor of Development Economics and Environment at the University of Manchester. She has won many awards, including the 2017 International Balzan Prize and the 2010 Leontief Prize, for her writings on land rights, food security, forest conservation, and gender inequality.

Belay, Million (Ethiopia, AFSA)* is the founder of MELCA - Ethiopia and coordinator of the Alliance for Food Sovereignty in Africa. He is an expert and advocate for forestry conservation, indigenous livelihoods, and food and seed sovereignty.

Chappell, Jahi (USA, Southeastern African-American Farmers Organic Network) is the Executive Director of SAAFON and a scholar-activist focusing on food sovereignty, agroecology, and farming and food security policy in the United States and Brazil. He is the author of the award-winning book, *Beginning to End Hunger: Food and the Environment in Belo Horizonte, Brazil and Beyond*.

Clapp, Jennifer (Canada, University of Waterloo)* is a Canada Research Chair in Global Food Security and Sustainability, and Professor in the School of Environment, Resources and Sustainability at the University of Waterloo, Canada. She has published widely on global governance, food security, and food systems.

DeClerck, Fabrice (Belgium/USA, EAT/OneCGIAR) has worked with farmers in many parts of the world with a focus on healthy diets from regenerative production. He holds a joint appointment with the Bioversity International/International Center for Tropical Agriculture alliance, where he is Senior Scientist - and the EAT Forum, where he is Science Director.

Dillon, Matthew (USA, Clif Bar & Company/Seed Matters) is Vice-President of Government Relations and Social Impact at Clif Bar & Company. He previously founded Organic Seed Alliance, launching the nation's first organic plant breeding programs and was an appointee to the USDA National Genetic Resource Advisory Council.

Escalante, Maria Alejandra (Colombia, Young Feminists for Climate Justice/Tierra y Libertad) is a feminist, an active member of the climate justice movement, and co-founder of *TierrActiva Colombia* – a youth led platform that works towards systematic change on both national and regional levels.

Felicien, Ana (Venezuela, Venezuelan Institute of Scientific Research/Semillas del Pueblo) works at the Venezuelan Institute of Scientific Research, is part of the national seed movement which was involved in the process of creating the national seed law, and collaborates with several food sovereignty movements in Venezuela. Her interests include agroecology and food sovereignty.

Frison, Emile (Belgium, ex-Biodiversity International)* is an expert on conservation and agricultural biodiversity. He led the global research-for-development organization Biodiversity International for ten years, after holding top positions at several global research institutes.

Gliessman, Steve (USA, ex-University of Santa Cruz)** is an agroecologist with more than 40 years of teaching, research, and field experience. He is the co-founder and President of the board of the non-profit Community Agroecology Network (CAN). He is Editor of the journal *Agroecology and Sustainable Food Systems*. Previously he was a Professor of Agroecology at the University of California, Santa Cruz.

Goïta, Mamadou (Mali, IRPAD /ROPPA)* is the Executive Director of the Institute for Research and Promotion of Alternatives in Development (IRPAD), and was previously the Executive Secretary of ROPPA (West Africa Farmers and Producers Organization). He is a founding member of COPAGEN (the Coalition to Protect African Genetic Heritage) and AFSA (Alliance for Food Sovereignty in Africa).

Guttal, Shalmali (India, Focus on the Global South)* is the Executive Director of Focus on the Global South. Her research is centered around economic and social development, community resources rights, women's rights, food sovereignty, agrarian reform, and democratization of governance in Asia, especially the Mekong region and India.

Herren, Hans (Switzerland, Biovision Foundation)* is the President and CEO of the Millennium Institute USA, and a Laureat of the 2013 Right Livelihood Award and the 1995 World Food Prize. His area of expertise is research and development projects on holistic, integrated, and sustainable agriculture and food systems.

Hobbelink, Henk (Netherlands, GRAIN) co-founded GRAIN in 1990, where he is now the Coordinator, responsible for the overall functioning of the organization as well as conducting research, writing, and outreach activities.

Lim Li Ching (Malaysia, Third World Network)* is a senior researcher at the Third World Network, with expertise on sustainable agriculture, biotechnology, and biosafety. She served as regional lead author of the International Assessment on Agricultural Science, Technology and Knowledge for Development (IAASTD).

Longley, Sue (UK, IUF) is General Secretary of the IUF (food chain workers union), the first woman to hold the post. Prior to her 2017 election, she served as IUF Assistant General Secretary, and as IUF's International Coordinator for Agriculture and Plantations.

Patel, Raj (UK/US, University of Texas)* is a Research Professor in the Lyndon B Johnson School of Public Affairs at the University of Texas, Austin, and a Senior Research Associate at the Unit for the Humanities at Rhodes University (UHURU), South Africa. His research on political ecology and food systems has been widely translated and taught, particularly his 2008 book *Stuffed and Starved: The Hidden Battle for the World Food System*.

Qualman, Darrin (Canada, Ex-National Farmers' Union) is a freelance researcher and writer, including author of *Civilization Critical: Energy, food nature and the future*. He previously worked with Canada's National Farmers Union as Director of Research and Executive Secretary (Executive Director).

Trujillo-Ortega, Laura (Mexico, University of Chapingo)** is an expert in the political ecology and economy of global food networks. She co-founded and led the first two majors in Agroecology and Agrofood Networks in Mexico, as well as a PhD Program in Rural Development at the University of Chapingo. She is currently a senior professor at the University of Chapingo working on agro-food value creation and appropriation along global v food networks.

VanGelder, Zoe (US, youth movements) is an ethnographer and a political ecologist with over a decade of experience doing research, supporting agrarian social movements, feminist organizations, and international NGOs on a variety of initiatives.

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**Alumni of IPES-Food (panel members 2015-2020)

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ABOUT IPES-FOOD



The International Panel of Experts on Sustainable Food Systems (IPES-Food) seeks to inform debates on food systems reform through policy-oriented research and direct engagement with policy processes around the world. The expert panel brings together environmental scientists, development economists, nutritionists, agronomists, and sociologists, as well as experienced practitioners from civil society and social movements. The panel is co-chaired by Olivier De Schutter, UN Special Rapporteur on extreme poverty and human rights, and Maryam Rahmanian, independent expert on agriculture and food systems.

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ABOUT ETC GROUP



ETC Group works to address the socioeconomic and ecological issues surrounding new technologies that could have an impact on the world's marginalized people. ETC Group investigates ecological erosion (including the erosion of cultures and human rights); the development of new technologies (especially agricultural but also other technologies that work with genomics and matter); and monitors global governance issues including corporate concentration and trade in technologies. It operates at the global political level and works closely with partner civil society organizations (CSOs) and social movements, especially in Africa, Asia and Latin America. ETC Group is a staff collective headquartered in Canada and Philippines, with colleagues also in Mexico, Kenya, Uruguay, UK and USA.

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