



ACTION GROUP ON EROSION, TECHNOLOGY AND CONCENTRATION

END OF YEAR REPORT 2022



Artist: Garth Laidlaw

www.etcgroup.org



ETC Group is a small, international, research and action collective committed to social and environmental justice, human rights and the defence of just and ecological agri-food systems and the web of life. We focus on understanding and challenging corporate-controlled techno-industrial systems and exposing the dangers of the technological manipulation of life, especially in relation to climate justice and food security. We uphold peasant and indigenous ways of life and knowledge systems; food sovereignty; people's control of technology; and just economies and governance. Our staff are based in Argentina, Canada, India, Mexico, the Philippines, Uganda and the UK. Our Board is drawn from five continents. We have consultative status at the United Nations.



We are deeply grateful to all those of you who have supported our work in 2022, including the 11th Hour Project, Agroecology Fund, Bread for the World, Clif Bar Family Foundation, CREPPA, CS Fund, Full Circle Foundation, the German Federal Agency for Nature Conservation (BfN), Heinrich Boell Foundation, Misereor, Polden Puckham Charitable Foundation, The Christopher Reynolds Foundation, The Nell Newman Foundation, Rosa Luxemburg Stiftung, Swift Foundation and individual supporters. Further donations gratefully received [here](#).



Amongst the many people we'd like to thank deeply for their support over the year, we'd like to thank all the wonderful artists and designers who've worked with us, including: Andrea M Medina, Aurora Francisca Y Miranda, Beatriz Godoy, Camille Etchart, Catherine Dizon, Charley Hall, Chief Nyamweya, Cristomo dela Cuesta, Daniel Passarge, Garth Laidlaw, Jenna Kessler and Stig.

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Sign up to our newsletter to keep up to date with all our news: action.etcgroup.org. Contact etc.comms@gmail.com with thoughts and ideas, or contact us on [Facebook](#) or [Twitter](#).



Finally, many thanks to the editor of this report, Nicola Baird.

May 2023

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Introduction

In 2022, the clouds of the COVID-19 pandemic started to roll back revealing a fundamentally altered corporate and intergovernmental landscape, in which corporate-backed technologies, including numerous technologies not yet developed or tested, were being gathered together on a techno-solutionist pedestal and collectively promoted as the solution to a range of crises – with breathtaking disregard for the fact that those promoting these solutions are often those who have caused these crises in the first place.

Our research and report on “Food Barons 2022: Crisis Profiteering, Digitalization and Shifting Power” showed Big Ag and Big Tech moving onto the offensive, determined to consolidate and strengthen their growing control over the Industrial Food Chain, with the tsunami of new ‘disruptive’ technologies and escalating corporate concentration that we predicted in the past emerging as a prominent feature in this new landscape (pp6-8).

To help foster a growing sharing of and understanding about the potential implications of the planned digitalization of food and agriculture we co-organised a series of Food, Data and Justice dialogues with IT for Change (pp9-12). We also began a new thread of work focused on helping to improve our and our allies’ collective capacity to unpack the powerful corporate narratives underpinning the techno-fixes outlined above. We began by co-hosting a series of well-attended workshops on digital agriculture in Africa together with the Alliance for Food Sovereignty in Africa (AFSA) (pp24-25).

Together with our allies we also updated and re-emphasised our original 2009 research showing that the Peasant Food Web really does feed the equivalent of 70 percent of the world’s people using less than 30 percent of the world’s land, water and agricultural resources – even if Big Ag would have us believe that they should take the credit. FAO had U-turned from increasingly backing agroecology to seemingly supporting academic research that hinged on definitions of ‘family farmer’ and the size of a ‘small farm’, that played into the hands of Big Ag, which is why challenging this wonky methodology was a key priority for us in 2022 (pp13-15).

At the same time, we continued our closely related work with the International Panel of Experts on Sustainable Food Systems (IPES-Food) to promote the Long Food Project, building towards more outreach activities on collaboratively identifying ‘Predictable Surprises’, with a view to holding webinars on this topic in 2023.

Over the course of 2022 we had to escalate our work countering dangerous earth manipulation because of the rapid advancement of geoengineering projects and open-air experiments, as many of the richest men in the world are now directly or indirectly financing geoengineering proposals – including some proposals that are being promoted as ‘Nature Climate-Based Solutions’ (NCBS) and even some that are clearly inspired by science fiction (pp16-19). This included informing the Mexican government and civil society about a [wild solar geoengineering experiment](#) that led the Mexican Government to formally announce they would ban solar geoengineering experiments in their

territory. This rapid government response set a unique precedent that was referred to in many of the largest global media and was also an inspiration to other Latin American and African countries.

Together with our allies at the CBD's COP-15 in Montreal, we also stopped geoengineers' attempts to include text promoting geoengineering in the Convention on Biological Diversity's Global Biodiversity Framework (GBF) targets. COP-15 also established a process for the horizon scanning, assessment and monitoring of developments in synthetic biology, although it is only a temporary provision (pp20-23).

Again with others, we similarly managed to stall any decision being taken at UNFCCC's COP-27 in Egypt approving geoengineering techniques as acceptable sources of carbon credits. Nevertheless, this threat continues, so we will remain vigilant.

We also made great strides on promoting participatory technology assessment as an alternative to the corporate techno-fix agenda. Our ground-breaking prototyping of participatory technology assessment in relation to new technologies involved hosting, in Chile, the first of two critical workshops highlighting the perspectives of Indigenous peoples and peasants on synthetic biology (pp20-23).

Finally, 2022 was a year of both recovery and development for ETC Group. Our post-pandemic experience involved having to rise to all the critical challenges outlined above, even while we were, like everyone else, recovering from the debilitating internal impacts created by COVID and its impacts on our staff and their health. This ultimately led to some departures and new arrivals, including a new Finance and Admin Manager and support staff. At the same time, we continued in our quest to transform into a small global collective, including through a series of dedicated online Organizational Development meetings amongst staff; and we were delighted to convene our first in-person staff meeting since the pandemic started, in October 2022, near Rome.

Finally, we cannot miss this opportunity to thank our much-valued colleague Jim Thomas for his remarkable contribution to achieving ETC's goals during a period of over 20 years. Towards the end of 2022, Jim announced his plan to transition off the ETC staff at the end of February 2023, to pursue his horizon-scanning research and campaigning on a freelance basis. We wish him well and anticipate many future collaborations with him in our shared struggles for a better world. Similarly, we wish our friends and supporters all around the world happiness and well-being for the coming year.

Niclas Hallström
President of the Board of Trustees

Exposing the Food Barons' iron grip on the industrial food chain

- We updated and published our multi-sectoral research in our new keynote report “Food Barons 2022: crisis profiteering, digitalization and shifting power”, which highlights the myriad problems with corporate concentration across 11 key industrial ‘agrifood’ sectors.
- We also brought attention to three critical, multi-sectoral trends that increase the ability of these Food Barons – now including Big Tech and Big Finance as well as Big Ag – to maintain control over the Industrial Food Chain: the digitalization of food and agriculture across the chain; the rising power of Asian (especially Chinese) Food Barons; and horizontal integration via asset management companies, which creates the semblance of competition, but diminishes actual competition.
- We challenged false narratives, working with our grassroots allies to remind the powerful how the Peasant Food Web feeds the equivalent of 70 percent of the world’s people using less than 30 per cent of the world’s land, water and agricultural resources.
- We re-emphasized the value of participatory assessment of technologies based on precaution and the implementation of socially and ecologically useful technologies, as well as the need for anti-competition regulators to develop new mechanisms to restrict the cross-chain powers of the Food Barons.

We researched and published our “Food Barons 2022: Crisis Profiteering, Digitalization and Shifting Power” report, which exposes the shocking intensification of corporate concentration across industrial food and agriculture. It reveals and challenges the way the Industrial Food Chain is increasingly involving and using financial capital, Big Data platforms and techno-philanthropy to promote false solutions, which the Food Barons wrongly claim will feed the world and tackle climate change.

Key industrial sectors were significantly boosted by the COVID-19 pandemic and the constraints of lockdowns around the world, combined with associated support from governments. Big Ag and Big Tech subsequently moved on to the offensive, determined to consolidate and strengthen their growing control over the Industrial Food Chain, seemingly at all costs. In particular, this update saw them continuing to join forces to digitalize and thereby control every step of the process, backed by the escalation of new ‘disruptive’ technologies and corporate concentration.

Overall, our detailed research demonstrates growing concentration of corporate power across 11 key industrial ‘agrifood’ sectors: seeds, agrochemicals, livestock genetics, synthetic fertilizers, farm machinery, animal pharmaceuticals, commodity traders, food processors, Big Meat, grocery retail and food delivery (with rankings based on 2020 sales). We found that many of these agrifood sectors are controlled by just four to six dominant firms, which enables these companies to wield unprecedented influence over markets, agricultural research and policy development, thereby undermining food sovereignty.

We also identify new corporate players that are shaping agriculture and food. Within sectors, this includes the alternative protein industry, digital grocery distribution and food delivery via online platforms. More broadly, it encompasses bio-digital convergences across the industrial food system, the entry of technology companies and the role of asset management firms.

The substantial new data and knowledge in our Food Barons report, including the race towards digitization of the food chain, can be used by food sovereignty movements and the media to show the vital role of small-scale, non-industrial farming. During the year we presented our research findings and analysis in various meetings and webinars of civil society and social movements at the national, regional and global levels, including audiences such as the feminist movement and women's rights networks. Our research findings were reported broadly across media outlets in the North and the South, including [Biodiversidad](#), [CarbonBrief.org](#), [CNBC TV18](#), [ElEconomista](#), [DiarioNorte.com](#), [GlobalAgriculture.org](#), [New Indian Express](#), [New Internationalist](#), [PrensaRural.org](#), [Rabble](#), [The Guardian](#) and [The Hindu](#); and with key opinion editorials in [La Jornada](#), and [desinformemonos.org](#).

2022 highlights

FEBRUARY: We held a seminar in Montevideo, Uruguay, on "Climate change, food systems and false climate solutions", co-organized by a network of CSOs in Uruguay.

MARCH: Neth Daño gave a presentation on corporate capture at the UN, at the Asia Pacific People's Forum in Bangkok.

JUNE: At the UNFCCC summer intersessionals in Bonn, several ETC staff joined a side event co-organised with Friends of the Earth International, the Center for International Environmental Law and the Heinrich Boell Foundation, "Climate Science on Climate Solutions: IPCC findings on overshoot technofixes & fossil fuels phase out."

JULY: Neth Daño was invited to join the organizing committee of the Regional Feminist Convening on Food Sovereignty organized by Asia-Pacific Women and Law for Development (APWLD) to provide inputs on corporate concentration in the food systems in the region.

JULY: We participated in the Continental Assembly for Climate Justice, a parallel meeting to the XI Iberoamerican Conference of Ministers for Climate and the Environment held in República Dominicana. ETC spoke on geoengineering in Latin America, and specifically about Project Vesta in República Dominicana. Silvia Ribeiro was interviewed on corporate concentration in global food and agriculture for a documentary on food sovereignty.

AUGUST: Neth Daño spoke on biodigital convergence and corporate control over the industrial food system at the webinar on Feminism and Digitalising Economies co-organized by IT for Change, APWLD and the Fredrich-Ebbert-Stiftung, as a contribution to the Asia-Pacific regional preparatory processes for the 67th session of the UN Commission on the Status of Women to be held in early 2023.

AUGUST: ETC staff participated in the preparation for an Impact Experience event to be convened by Adasina Social Capital for investors in the food sector, and ETC Group made a presentation concerning the top corporations dominating key sectors.

SEPTEMBER: We launched our Food Barons 2022 research report online in advance of the UN Committee on World Food Security, and to coincide with the one day 'Impact Experience' event, "Mobilizing Capital Away From Extractive Food and Agriculture Towards Agro-Ecology", held by Adasina Social Capital on 27 September. ETC Research Director Jim Thomas gave a keynote presentation.

OCTOBER: Our Food Barons 2022 report was shared with allies at the UN's Committee on World Food Security in Rome in mid-October, where ETC's Co-ordinator Neth Daño and Programme Manager Veronica Villa participated.

OCTOBER: ETC staff in Mexico engaged with allies and partners from across Mexico at face-to-face seminars in defence of territories.

NOVEMBER: Kavya Chowdhry was on a panel at the 53rd annual national convention of Canada's National Farmers Union themed "Confronting Concentration".

DECEMBER: We published Food Barons 2022 in Spanish.

DECEMBER: Neth Daño presented ETC Group's analysis of agricultural digitalization and digital rights at the Feminist Convenings on Digitalisation and on Trade and Corporate Power organized by APWLD in Chiang Mai. We were also invited to present key findings at La Via Campesina (LVC) South Asia's conference in Kathmandu. We convened the Asian region dialogues on Food, Data and Justice, joined by around 42 participants from around the region.

Find out more:

- See our summary [press release](#) about the Food Barons research.
- Read the [Food Barons 2022 report](#) online in full or our summary report, in English and Spanish.
- Download our [sector specific research](#) reports in full or as summaries, in [English](#) or in [Spanish](#) (click on the sector-specific icons).

Delving into digitalization and its impacts on food and farming

- We deepened our understanding of how digitalization is reshaping every step of the ‘Digital Agri-Food Value Chain’ from seed to fork.
- We co-hosted a series of global and regional Food, Data and Justice (FDJ) dialogues, creating new civil society spaces for learning and strategic discussion about the digitalization of food systems.
- We exposed the murky world of ‘agritech financialization’, focusing on Asia, launching a new report, “Cashing in on the Climate Crisis through Agricultural Digitalisation”, and researching platforms for digital agriculture in Latin America.
- We supported the development of new regional working groups, including the first formal meeting of the African Working Group on Digital Agriculture, hosted by AfriTAP.

ETC’s research into digitalization shone a critical light on increasing dependence on Big Tech across the Industrial Food Chain. We also looked at the way in which the digitalization of agriculture is accelerating corporate consolidation; and considered the far-reaching impacts it might have on the well-being, rights, autonomy and knowledge systems of small farmers and peasants across the world, and thus on food sovereignty. We also found that digitalization is now emerging as a key cross-cutting issue across all of our programs, including through the merger of ‘bio’ and digital technologies.

2022 was the year that biodigital convergence became a reality in the food and agriculture sphere. There is a worrying implication that fundamental human rights across the globe – such as the right to food – cannot be exercised without access to digital platforms controlled by giant corporations. Furthermore, this would require stable connectivity, which, in turn, requires the deployment of infrastructure of all kinds, the exacerbation of mineral resource extraction and the exponential use of electric power.

We began to unpack and explore the newer consequences of these shifting dynamics, for peasant agriculture and the rights of farmers, food producers and food consumers across the world. In particular, as a key part of our work on digitalization of agriculture, ETC worked with partners to assemble a cross-movement and cross-regional dialogue countering biodigital food systems on Food, Data and Justice (known as the “FDJ Dialogues”).

Initiatives in 2022 included nurturing and participating in regionally focused civil society working groups on food and digitalization (including biodigital aspects), including NADAWG (North American Digital Agriculture Working Group), a European working group, a new African working group (hosted by AfriTAP), a Latin American working group (hosted by Red TECLA), and through an ag-digitalization stream in our work on new digital technologies in the Asia Pacific (AP-Tech).

We also organized an international FDJ process supported by a steering group, including a teach-in (held twice to accommodate different time zones), regional discussions and a global convening of movement perspectives that will lead to a conclusions document. We created a short, illustrated pamphlet, “The Digital Agri-Food Value Chain”, which highlights how digitalization impacts each link in the Industrial Food Chain, from seeds to the consumer's table (initially available in Spanish).

The Latin American Technology Assessment Platform (TECLA) took a deep dive into assessing how the introduction of digital platforms could transform the concept of autonomy in food production, subordinating rural livelihoods and food systems to the productivist and economic decisions made through algorithms. One of the main issues identified for Latin America is that digitalization is mostly related to areas where agriculture is industrialised, producing export crops that are grown by private schemes. These export crops are in conflict with rural communities over the exploitation of their land and resources, and pollution of soils. At the same time, tech/digital actors are promoting digital tools (especially agro-platforms) aiming to incorporate small-scale Latin American farmers into the digital wave. This is considered a threat, a way of weakening small-scale farmers’ autonomy over their territories. In particular, tools such as block-chain are being used to impose a ‘digital legality’ over historical and customary land rights. Digitalization tools such as drones are also associated with surveillance. Even worse, drones and robots are being used by those producing narcotics.

During its 46th Plenary Session (14-18 October 2019), the Committee on World Food Security (CFS) adopted its four-year Programme of Work, which included a request to the High-Level Panel of Experts on Food Security and Nutrition (CFS-HLPE) to produce a report on “Data collection and analysis tools for food security and nutrition“, designed to develop actionable policy recommendations about the way the data revolution can supposedly transform food security. We have been engaged with this process throughout, including by acting as a facilitator of the FAO Civil Society and Indigenous Peoples Mechanism (CSIPM) Data Working Group, which [submitted to the CFS](#) in February 2022 with a clear warning that extreme caution is needed given the conflicts of interest entangled in data collection.

In a further 2022 research report, “Cashing in on the Climate Crisis through Agricultural Digitalisation: Emerging Cases in Indonesia, Malaysia and the Philippines”, we also revealed the ways in which the climate crisis is being turned into investment opportunities for financial actors, including through various forms of climate financialization, such as agricultural digitalization facilitating the commodification of climate into assets that can be traded commercially. Our findings show the proliferation of ‘green’ financial instruments like green bonds, the promotion of carbon farming to generate carbon credits and for offsets, increasing speculation in carbon trading especially via the introduction of blockchain, and the growing interest of sovereign wealth funds in food- and agriculture-related technologies.

2022 highlights

FEBRUARY: ETC Group’s Veronica Villa is a facilitator of the FAO CSIPM Data working group which submitted [“Comments on Data Collection and Analysis Tools for Food Security and Nutrition”](#) to the CFS, with a clear warning that extreme caution is needed given the conflicts of interest entangled in data collection.

MARCH: During the CBD intersessionals in Geneva, we pushed for and held side meetings on the adoption of technology assessment and horizon scanning mechanism in the Global Biodiversity Framework to address the impacts of biodigital convergence technologies on biodiversity and communities.

JUNE: We held two global online Food, Data and Justice (FDJ) teach-ins (at different times of day to suit different time zones), one for North America, Latin America and Europe (in English, Spanish and Portuguese) and the other for Europe, Africa and Asia (in English, Portuguese and French), both co-hosted with IT for Change. Over 600 people registered for the webinars and both were [recorded in three languages](#) as a tool for knowledge sharing.

JULY: African regional FDJ dialogue: We co-organised a meeting to share information about and discuss the impact of the digitalization of agriculture in Africa, including ways in which small-scale farmers on the continent can resist the onslaught of digitalization. Over 50 participants from non-governmental organizations and farmer movements participated. We also convened calls of the new African Working Group on agricultural digitalization.

JULY: In Asia, Neth Daño was invited to join the organizing committee of the Regional Feminist Convening on Food Sovereignty, hosted by Asia-Pacific Women and Law for Development (APWLD), to provide inputs on corporate concentration in the food systems in the region.

JULY: We co-hosted the Latin American FDJ dialogue on the assessment of the digitalisation of food and agriculture in Latin America.

AUGUST: Neth Daño was invited to speak on agricultural digitalization and corporate interests at the Forum on Agricultural Digitalisation in Southeast Asia, organized by AsiaDHRRA as the lead partner in a project of the Food and Agriculture Organization's regional office in Asia-Pacific (FAO-RAP).

AUGUST: Neth also provided the overview presentation on biodigital convergence and corporate consolidation at the Asia-Pacific Feminist Food Sovereignty Convening in Bangkok organized by APWLD.

SEPTEMBER: We launched our Food Barons 2022 report online, and Neth Daño spoke on biodigital convergence and corporate control over food systems at a webinar on Feminism and Digitalising Economies co-organized by IT for Change, APWLD and the Friedrich-Ebert-Stiftung as a contribution to the Asia-Pacific regional preparatory processes for the planned 67th session of the UN Commission on the Status of Women (CSW67) to be held in early 2023. Veronica Villa presented on digitalization at the Instituto de Estudios Ecologistas.

OCTOBER: The first formal meeting of the African Working Group on Digital Agriculture took place, hosted by AfriTAP.

OCTOBER: In the run-up to the CBD's COP15, Jim Thomas spoke to Paris Marx, on the popular tech podcast ["Tech Wont Save Us"](#), about the way in which giant food, digital and finance corporations

are moving in to tighten their grip on food production across the world, generally in the absence of technology assessment and monitoring.

NOVEMBER: In Chile, we held the first of two critical workshops highlighting the perspectives of Indigenous peoples and peasants on synthetic biology and the digitalization of agriculture and food, using our ground-breaking prototyping of participatory technology assessment techniques (through a collaboration with the German Federal Agency for Nature Conservation (BfN)).

NOVEMBER: ETC Group was invited to make a presentation on digitalization in agriculture at Kisan Swaraj Sammelan in Mysore, Karnataka organized by CSOs including ASHA (the Alliance for Sustainable and Holistic Agriculture) and to attend a seminar on Digitalisation in Agriculture with farmers' groups and civil society networks held in Delhi.

NOVEMBER: We were invited to organize a workshop on agricultural digitalization and its implications for economic and climate justice at the ASEAN Peoples' Forum (APF2022) held in Phnom Penh, Cambodia, which prompted many expressions of interest in further dialogue and debate, including from women's rights groups in Cambodia and trade unions in Indonesia. The presentations and resulting conversations raised strategic concerns about the implications of trends in climate financialization through digitalization for smallholders across Asia.

DECEMBER: In Asia, Neth presented ETC Group's analysis of agricultural digitalization and digital rights at the Feminist Convenings on Digitalisation and on Trade and Corporate Power organized by APWLD in Chiang Mai. ETC Group was invited by La Via Campesina (LVC) South Asia to present key findings of Food Barons 2022, specifically relating to digitalization and corporate concentration in food and agriculture, at their conference in Kathmandu. We convened the Asian dialogues on Food, Data and Justice, joined by around 42 participants from around the region.

DECEMBER: CBD COP15 in Montreal: ETC's team, including our Research Director and coordinators from the AfriTAP (African Technology Assessment Platform) and Red TECLA (Latin American Network for Social Assessment of Technologies) platforms joined a panel presenting on ["Establishing Technology Horizon Scanning, Assessment and Monitoring the post-2020 Global Biodiversity Framework"](#), supporting the protection of precaution within the CBD.

Find out more:

- Listen to the "Tech Won't Save Us" podcast, Episode 137: ["How tech is remaking the food system"](#), with Jim Thomas.
- Delve into the detail by watching one of the [Food Data and Justice webinars](#) (in English, Spanish or French).
- The 'long read' on digitalization: Civil Society's response to the CFS, ["Comments on Data Collection and Analysis Tools for Food Security and Nutrition"](#)
- Watch our CBD COP15 side event, co-hosted with Save Our Seeds and CREPPA, UQAM, on ["Horizon scanning, tech assessment & monitoring - protect the CBD's legacy of precaution!"](#)
- Read ["Cashing in on the Climate Crisis through Agricultural Digitalisation: Emerging Cases in Indonesia, Malaysia and the Philippines"](#).

Myth busting - 'Who feeds the world'?

- We challenged the false narratives circulating at the FAO, working with our grassroots allies to remind the powerful how the Peasant Food Web feeds the equivalent of 70 percent of the world's people using less than 30 percent of the world's land, water and agricultural resources.
- We demonstrated how corporate concentration and the digitalization of food and agriculture is bad for people, planet and small-scale farmers in our [Food Barons 2022](#) report, and through our collaborative work with allies on this issue.
- We maintained our close collaboration with allies La Via Campesina and GRAIN, to deepen our collective long-term strategic conversation about the future of food systems and how this will feed into the next step of the Nyéléni process.
- We prepared for the next stage of our work with IPES-Food (the International Panel of Experts on Sustainable Food Systems) to promote the Long Food Project, a long-term cross-sectoral challenge to the Industrial Food system.

We continued our staunch defence of food sovereignty. The UN Food and Agriculture Organization (FAO) has bumbled into a controversy over whether peasants or agribusiness feed most of the world. This is not only a clumsy departure from FAO's previous research and positions, it also feeds into an agribusiness narrative anxious to play down the importance and effectiveness of peasant production in order to build support for their proprietary technologies, subsidies and regulatory needs. Our Food Barons research shows how agribusiness is also using capital, data and power to undermine those who really feed most of the world's people.

One of our most important actions in 2022 was challenging a myth being spun by Industrial Food Chain lobbyists, who we assume are trying to move on to the offensive following increasing intergovernmental support for agroecology (e.g. in FAO). To meet the enormous food challenges of the 21st century, there are few issues more important than getting right which system is best able to feed us, and FAO had previously recognised this, advancing that family farms feed at least 80% of the world's population. Yet FAO U-turned on this, apparently supporting academic research that questions the fact that the majority of food and nutrition is provided by small-scale, non-industrial farmers. It all hinged on definitions of 'family farmer' and the size of a 'small farm', contradicting FAO's previous decisions. The new definitions introduced played very much into the hands of Big Ag, which is why challenging its wonky methodology was a key priority for ETC Group in 2022. From January onwards **we challenged this false narrative** together with our allies, [critiquing and correcting this flawed research](#), in order to remind the powerful how **the Peasant Food Web really does feed the equivalent of 70 percent of the world's people** using less than 30 percent of the world's land, water and agricultural resources.

We also prioritised our ongoing collaboration with close allies La Via Campesina and GRAIN during 2022, with a view to developing and deepening our collaborative strategies around food systems, challenging the false Agri-Tech narratives/stories and building our collective resilience to the imposition of digital agriculture. Currently, there is a lack of genuine food sovereignty at all levels

(local, territorial, national, etc). It is essential that agroecological peasant agriculture can play its rightful role in strengthening local national and global food systems. We also participated actively in the online conversations and strategy calls with allies and partners in seed sovereignty and farmers' rights movements in the Stop UPOV Campaign.

Our closely related work with IPES-Food (the International Panel of Experts on Sustainable Food Systems) to promote the Long Food Project, a long-term cross-sectoral challenge to the industrial food system, also continued across 2022, building towards more outreach activities on "Predictable Surprises", which will be rolled out in 2023). During the year we were involved in several webinars in Latin America, North America and Africa to discuss the Long Food Project perspective with dozens of networks.

The Long Food Project's multi-year collaboration and exploration focuses on using a 25-year scenario planning to understand the forces shaping global food systems, including unlikely or unforeseen events that would cause systemic disruption, that we know may be coming but have not so far paid enough attention to or prepared for. Examples include food price crises, further pandemics, systemic cyber-attacks and the collapse of data systems, and attempts to transform governance by coup (e.g., the 2021 UN Food Systems Summit). Just two years after the report was published, three out of four of these examples have already taken place, or are underway, with the fourth being an imminent possibility.

2022 highlights

JANUARY ONWARDS: The initial report ["The long food movement – transforming food systems towards 2045"](#) (March 2021) sketched out a likely 'agribusiness as usual' scenario in which big food, big tech and big finance collaborate to deploy bio-digital technologies to deepen their grip over food systems. The [Long Food Project](#) has identified encouraging cross- and intra-movement dialogue about bio-digital technologies and their impact on food systems as a top priority. Outcomes now being developed include tools to make it easier to access the research and promote strategic cross-movement conversations.

JANUARY: ETC Group challenged academic methodology to defend the '70% statistic' from challenges including from the FAO. We looked at related research and demonstrated why their methodologies are wrong. [Together with other signatories we sent our research and a public letter to FAO.](#) We also produced a [briefing that clarifies and affirms why the peasant-indigenous networks feed the world.](#)

FEBRUARY: ETC Group's Veronica Villa is a facilitator of the FAO CSIPM Data working group which submitted ["Comments on Data Collection and Analysis Tools for Food Security and Nutrition"](#) to the CFS, with a clear warning that extreme caution is needed given the conflicts of interest entangled in data collection.

FEBRUARY: ETC held a seminar in Montevideo on "Climate change, food systems and false climate solutions", co-organized by a network of CSOs in Uruguay.

MARCH: During the year, ETC Group co-published four issues of the magazine [“Biodiversidad, Sustento y Culturas”](#) which is distributed in 13 countries in Latin America. The magazine is one of our Spanish outreach tools that serves many organizations and communities. Items included articles denouncing ‘nature-based’ false solutions and geoengineering in the region.

JUNE: In Bonn at the UNFCCC’s climate change intersessional meetings, several ETC staff joined a side event co-organised with FOEI/CIEL/HBF on “Climate Science on Climate Solutions: IPCC findings on overshoot, technofixes & fossil fuel phase out.”

SEPTEMBER: ETC’s “Food Barons 2022” report was launched in advance of the UN Committee on World Food Security and to coincide with a one day ‘Impact Experience’ online event for investors, grant makers and food activists (who were provided the report in advance) held on the 27 September. At this event, “Mobilizing Capital Away From Extractive Food and Agriculture Towards Agro-Ecology”, ETC Research Director Jim Thomas gave a keynote presentation featuring data from the report.

OCTOBER: Our Food Barons report was shared with allies at the UN’s Committee on World Food Security in Rome in mid-October where ETC’s Co-ordinator Neth Daño and Programme Manager Veronica Villa participated.

Find out more:

- Read our blog and link to our letter to FAO: [“Peasants still feed the world, even if FAO claims otherwise”](#).
- Get the full facts by reading the background briefing [“Small-scale farmers and peasants still feed the world”](#).
- Check out a [short summary blog of our Food Barons 2022 report](#).

Standing firm against geoengineers' technofix agenda

- We prioritised our work on geoengineering in order to track and challenge the untried 'false solutions' geoengineers are promoting (such as 'nature-based solutions') in an increasing number of intergovernmental fora.
- Together with allies, we stopped geoengineers' attempts to include 'techno-fix' text promoting geoengineering in the Convention on Biological Diversity's planned Global Biodiversity Framework (GBF) targets.
- With others, we stopped the approval of geoengineering techniques as acceptable sources of carbon credits at UNFCCC's COP27 in Egypt, although this threat continues, and we remain vigilant.
- We stayed alert for geoengineers trying to set precedents with 'small' experiments supposedly for research purposes. We made it clear that the impact that these technologies might have at scale is impossible to test without implementing them.
- We continued to focus on spreading information about geoengineering, including by being very active in the HOME (Hands off Mother Earth) alliance and by managing www.geoengineeringmonitor.org.

Geoengineering technologies are being pushed towards the centre of a range of global negotiations including on the climate change crisis and biodiversity loss. What's worrying is that geoengineering is increasingly touted as the only solution by 'technosolutionists' and billionaires with a vested interest in promoting these technologies. This risks becoming a major challenge, as project promoters can now count on significant financial resources, something they've not had before.

During 2022, we prioritized our work on geoengineering in order to track and challenge the spectrum of 'false solutions' that geoengineers are promoting in an increasing number of intergovernmental fora, including climate change and biodiversity negotiations.

One of ETC's key objectives is to ensure that official fora, such as the UN Framework Convention on Climate Change (UNFCCC) uphold the Convention on Biological Diversity (CBD)'s existing *de facto* global moratoria on geoengineering technologies in order to protect biodiversity, the environment, the climate, the rights of Indigenous peoples and the human rights of local communities.

The challenge has been the rapid advancement of geoengineering projects and open-air experiments, despite the pandemic, as almost all the richest men in the world are now directly or indirectly financing geoengineering proposals – including some proposals that are being promoted as Nature Climate-Based Solutions (NCBS) and even some that are clearly inspired by science fiction. This shift means that project promoters can now count on significant financial resources, something they've not had on this scale before, which is also helping them to lobby extensively and gain traction in critical intergovernmental fora – proposing, for example, to include geoengineering

technologies as acceptable means of generating carbon credits under the new market mechanism (Art 6.4) of the Paris Agreement. Marine geoengineering, along with the promotion of agricultural soils as carbon sinks, are of particular concern at the moment.

However, together with our allies, we successfully stopped geoengineers' attempts to include text promoting geoengineering in the Convention on Biological Diversity's Global Biodiversity Framework (GBF) targets. More than 80 civil society organisations from 40 countries, including ETC, published an [open letter](#) calling on COP15 to say no to geoengineering and yes to protecting biodiversity, the environment, the climate, the rights of Indigenous peoples and the human rights of local communities. With [80-foot banners at COP15](#) we also denounced the attempt by mega billionaires such as Jeff Bezos (founder of Amazon.com) and Bill Gates (founder of Microsoft) to perversely influence global decisions about biotechnology and conservation including restructuring global biodiversity financing in unaccountable ways.

Again with others, we managed to stall any COP decision approving geoengineering techniques as acceptable sources of carbon credits at UNFCCC's COP27 in Egypt. Nevertheless, this threat continues, so we will remain vigilant. We also remain alert for geoengineers trying to set precedents with 'small-scale' experiments that are allegedly for research purposes (especially because the impact that these technologies might have at scale is actually impossible to test without implementing them at scale).

Throughout the year, we consolidated our resistance to geoengineering activities collaboratively with allies by helping to coordinate the international campaign Hands Off Mother Earth, which facilitated resistance to geoengineering lobbying and activities in 2022. The [HOME Alliance](#) is a vital space where civil society comes together to track and challenge geoengineering technologies, including their expressions as false 'Nature-Based Solutions', digitalization in food and agriculture and other new technologies, and to focus on real solutions. Among other activities, we collectively supported Indigenous peoples' resistance to the solar geoengineering Arctic Ice Project and to Harvard's Scopex.

We also contributed to this effort by maintaining and supporting the coordination of the Geoengineering Monitor and Monitor de Geoingeniería websites, which include a flow of updated news, documents and fact sheets on geoengineering techniques and experiments. This included a set of 15 fact sheets on geoengineering in Spanish.

We also had a key intervention to inform the Mexican government and civil society about a [wild solar geoengineering experiment](#) that led the Mexican Government to formally announce they will ban solar geoengineering experiments in their territory. This set a unique precedent that was referred to in many of the largest global media and was also an inspiration to other Latin American and African countries.

Many open-air experiments are planned on Indigenous territories without obtaining Free, Prior and Informed Consent – a right established in the [UN Declaration on the Rights of Indigenous People](#). Such experiments are a textbook case of climate colonialism and greenwashing, with entrepreneurs from one of the highest emitting countries in the world often trying to use a country in the Global

South and Indigenous peoples' lands as a testing ground for their private business while selling 'cooling credits' to companies that want to be seen as reducing their emissions.

2022 highlights

FEBRUARY: ETC helped to co-organise a civil society seminar in Montevideo on "Climate change, food systems and false climate solutions".

MARCH: ETC made two keynote speeches about geoengineering at two different events in the National University in Bogota, Colombia.

APRIL: Our Latin America Director, Silvia Ribeiro, gave a presentation on geoengineering to the People's Forum panel on corporate capture.

JUNE: Marine geoengineering and the promotion of agricultural soils as carbon sinks are of great concern. In parallel to the UNFCCC intersessional meetings in Bonn, ETC co-organized and participated in a global strategy meeting to deepen and scale-up work on geoengineering. It was also agreed to affirm international collaboration by transforming the HOME campaign into an Alliance.

JULY: We participated in the Continental Assembly for Climate Justice, a parallel meeting to the XI Iberoamerican Conference of Ministers for Climate and the Environment held in República Dominicana. ETC spoke on geoengineering in Latin America, and specifically about Project Vesta in República Dominicana.

SEPTEMBER: Due to the large demand for information about the region, ETC organized a well-attended [teach-in on Geoengineering in Latin America](#).

OCTOBER: In the run up to UNFCCC COP27, ETC held two webinars on "[Geoengineering in Climate Negotiations](#)", sharing how these under-the-radar techniques could cause even more climate chaos and function as a costly distraction from real solutions. One was specifically targeted to Latin America.

NOVEMBER: We launched a new [briefing](#) to show how geoengineering is being promoted within the UNFCCC climate negotiations.

NOVEMBER: Our [video update](#) from UNFCCC's COP-27 in Sharm El-Sheikh looked at how geoengineering has been creeping into climate negotiations over the past couple of years with smoke-and-mirrors trickery, using the banner of 'Net Zero' and carbon removals.

DECEMBER: ETC has long been a geoengineering watchdog so when we learnt, at the end of the year, that a small US-based start-up had conducted illegal solar geoengineering experiments in Mexico, we were able to alert organizations, the public and the government. This led to good news at the start of 2023 as the Mexican government announced its intention to ban solar geoengineering experiments, setting a global precedent that we hope will be followed by other governments.

DECEMBER: More than 80 civil society organisations from 40 countries, including ETC, published an [open letter](#) calling on the parties of the UN Conference on Biodiversity (CB) to say no to geoengineering and yes to protecting biodiversity, the environment, the climate, the rights of Indigenous peoples and the human rights of local communities. Together, we succeeded and the text was deleted.

Find out more:

- For comprehensive information on geoengineering visit [Geoengineering Monitor](#), which is a collaboration between ETC Group, Biofuelwatch, Heinrich Boell Foundation and Global Forest Coalition.
- Learn more about geoengineering technologies and threats from our [Geoengineering in climate change webinars](#), our teach-in on [Geoengineering in Latin America](#) (in Spanish), and our [briefing on the promotion of geoengineering in UNFCCC](#).
- Find out more about the [rogue solar geoengineering experiment](#) in Mexico, plus an [update on Mexico's plans](#) to stop solar geo experiments.

New hope flourishes despite bittersweet biodiversity deal

- We tracked and systematized information about digital technologies for agriculture, especially in Latin America, where our TECLA network convenes regular processes of horizon scanning, monitoring and assessment of technologies.
- We co-hosted, through TECLA, a key regional workshop of people from Indigenous and peasant communities, which explored and prototyped methodologies relating to the participatory assessment of new GMOs.
- We paid particular attention to the Convention of Biodiversity (CBD)'s process of defining a new Global Biodiversity Framework, including at COP15.
- We warned about the traps contained in the CBD's proposed text, especially in relation to 'agri-tech', false 'nature-based solutions' and the rights of Indigenous peoples and peasants.
- We promoted the inclusion of agroecology, rights and precautions, technology assessment and ways CBD can critically scan horizons for new, risky technologies.

During 2022, we made great strides promoting participatory technology assessment as an alternative to the corporate 'techno-fix' agenda. A collaboration with the German Federal Agency for Nature Conservation (BfN) enabled the first of two workshops highlighting the perspectives of Indigenous peoples and peasants in relation to synthetic biology. We also turned our attention to the Convention on Biodiversity (CBD)'s COP15 as business, billionaires and biotech-backers brokered a deal for biodiversity that works in their interests. Together with our allies we ensured some important damage control, but the critical principles of human rights and precaution lost ground overall, resulting in a 'bittersweet bargain' on biodiversity.

It is critical to engage those who will be impacted by technologies in their initial assessment and ongoing monitoring, to enable potential impacts to be identified. Our ground-breaking prototyping of participatory technology assessment in relation to new technologies involved hosting the first of two critical workshops, in Santiago, Chile, highlighting the perspectives of Indigenous peoples and peasants on synthetic biology (through a collaboration with the German Federal Agency for Nature Conservation (BfN)). These perspectives, along with a guide for future participatory activities of this kind, are now being prepared for use by the CBD.

Identifying the unexpected dangers of agro-digital platforms is another example of the growing trend to promote corporate 'techno-fixes'. Researching and systematizing information on digital technologies for agriculture in Latin America was one of our main objectives for 2022, to be followed up in the Asia Pacific region in 2023; and we also provided a space/process for discussion on trends and developments in ag digitalization through a series of collaborative Food Data and Justice (FDJ) dialogues with allies in Latin America, Africa and Asia. A new African Technology Assessment Platform is also being established, with a team based in Burkina Faso, Nigeria and Uganda.

We found that farmers have to subscribe to platforms to register their treatment of soils and their ways of sowing and harvesting. The platforms then dictate what they should do to achieve greater efficiency, verify their contribution to combating global warming, avoid waste, etc. At the same time they are generating vast troves of valuable data which now constitutes a worrying new commercial commodity that will impact farmers' rights, autonomy and knowledge systems. This vogueish 'techno-fix' agenda also includes food production in carbon markets, implying that climate change can supposedly be addressed by industrial agriculture.

Together with our allies we ensured some important damage control in relation to the new Global Biodiversity Framework being negotiated at the long-delayed COP15 summit, which was finally held in Montreal in December, although the critical principles of human rights and precaution lost ground overall, resulting in a "bittersweet bargain" on biodiversity. We promoted the inclusion of agroecology, rights and precautions, technology assessment and ways CBD can critically scan horizons before new, risky technologies – such as synthetic biology and geoengineering – are agreed to and implemented, potentially affecting our health, communities and nature. However, COP15 was supersized, swollen by an army of wealthy corporate and philanthro-capitalist lobbyists (including World Economic Forum members and the Bezos Earth Fund) and large delegations from biotech-friendly governments, lobbying hard for geoengineering technofixes.

But there was good news from COP15 too. Agroecology made it into the Global Biodiversity Framework, along with ambitions to halve pesticide risks (Target 7) and a halving of global food waste (Target 16) – although both goals would best be met by moving away from the Industrial Food Chain entirely. Following the decision made in COP14 (supported by ETC and allies), COP15 also established a process for the horizon scanning, assessment and monitoring of developments in synthetic biology, although the governments of Brazil, Argentina and some African states (swayed by Gates Foundation lobbyists) weakened the decision by insisting that it only be allowed for one two-year cycle (but they failed in their attempt to make it a narrow bioscience 'experts only' group). We expect that our work with BfN (as described above) should feed into this process.

We additionally helped influence the CBD process through our interventions on the SynBio Open Ended Online Forum, again with a view to demonstrating the importance of civil society as organizers of horizon scanning processes on new biotechnologies. We were able to reinforce how TECLA (Latin America's civil society network established for the regular horizon scanning, monitoring and assessment of technologies) and AfriTAP (the African Technology Assessment Platform) compile inputs from a diversity of professional experts and those whose expertise comes from their life experience.

2022 highlights

MARCH: ETC Group actively engaged with government delegates and worked with civil society networks such as the CBD Alliance and the Synthetic Biology Working Group at the negotiations session of the Global Biodiversity Framework (GBF) in Geneva. We pushed for and held side meetings on the adoption of technology assessment and horizon scanning mechanism in the Global Biodiversity Framework, to address the impacts of biodigital convergence technologies on biodiversity and communities.

JULY: We participated in the Continental Assembly for Climate Justice, a parallel meeting to the XI Iberoamerican Conference of Ministers for Climate and the Environment held in República Dominicana. ETC spoke on geoengineering in Latin America, and specifically about Project Vesta in República Dominicana.

OCTOBER: During the UNFCCC Neth Daño, Silvia Riberiro and Niki Martinez held two [webinars](#) on Geoengineering in Climate Negotiations, and how these under-the-radar techniques could cause even more climate chaos and function as a costly distraction from real solutions. [One workshop was specifically targeted to Latin America.](#)

NOVEMBER: The technology assessment forum in Chile, co-hosted by ETC, TECLA and the Alliance for Biodiversity, brought together people from Indigenous and peasant communities allowing the assessment of new GMOs, with contributions from Silvia Ribeiro, Veronica Villa and Tom Wakeford.

NOVEMBER: Through the TECLA Network (Latin American Network for Social Assessment of Technologies) we held several dialogues on Food, Data and Justice with organizations interested in understanding digitalization as part of our technology assessment work. See also: <https://assess.technology/featured/how-latin-americans-have-assessed-new-technologies/>

NOVEMBER: We convened a series of two Conversations on the Politics of Technology together with allies in civil society organizations in the North and the South working on technology issues in food and agriculture.

DECEMBER: ETC's team prioritised COP15 of the Convention on Biological Diversity (CBD), held in Montreal. Governments adopted the final text of the Global Biodiversity Framework that includes general language on technology assessment that we can build on in upcoming intersessional processes in the CBD. Our work at the COP15 of the Convention on Biodiversity, held in Montreal, involved strategic interventions organised jointly with allies from the African Technology Assessment Platform (AfriTAP). Our conclusions about COP15 are summarised in "A Bittersweet Bargain on Biodiversity" in [English](#) and [Spanish](#). (Also see [ECO65\(6\)](#) from the CBD Alliance and the [joint statement](#) from more than 80 CSOs).

DECEMBER: ETC Group's Jim Thomas, Barbara Ntambirweki from AfriTAP and Silvia Ribeiro from Red TECLA (Latin American Network for Social Assessment of Technologies) joined a panel on ["Establishing Technology Horizon Scanning, Assessment and Monitoring the post-2020 Global Biodiversity Framework"](#) where they talked about protecting precaution in the CBD. The event was held in Montreal during the COP15.

Find out more:

- Read our briefing ["Protecting the legacy of precaution at COP15"](#).
- Listen to our [COP15 side event](#) on horizon scanning and technology monitoring and assessment.
- Read our ["Banners to Bezos and Gates"](#) blog.
- Visit www.assess.technology and www.redtecla.org

Our 2022 communications: reports, stories, games and puzzles

Sharing our research

In 2022 a great deal of our communications energy was focused on the publication of [“Food Barons 2022: crisis profiteering, digitalization and shifting power”](#), including in terms of ensuring that the report, its summary and the ten sector research briefings were illustrated with inspiring and accessible cover art, illustrations and infographics. We were able to show that every step of the Industrial Food Chain is now in the process of being digitalized, and that this is happening in parallel with and contributing to extreme corporate concentration across the Industrial Food Chain.

Honing in on SE Asia we published our research, [“Cashing in on the Climate Crisis through Agricultural Digitalisation: Emerging Cases in Indonesia, Malaysia and the Philippines”](#), in which we revealed the ways in which the climate crisis is being turned into investment opportunities for financial actors, including through various forms of climate financialization. In addition to this, as part of our focus on furthering Food Data and Justice dialogues about the digitalization of food and agriculture, we created a short, illustrated pamphlet, “The Digital Agri-Food Value Chain”, which highlights how digitalization impacts each link in the Industrial Food Chain, from seeds to the consumer's table (so far available in Spanish).

In advance of COP27 in Egypt, we co-published a warning briefing: [“False Solutions Alert: Geoengineering in Climate Negotiations”](#). Geoengineering is creeping into the UNFCCC, and this briefing provided an initial guide for those wanting to know more about our concerns and exactly where and how geoengineering is being promoted within climate negotiations. We also contributed to our ongoing efforts to challenge geoengineering proposals and proponents by maintaining and supporting the coordination of the [Geoengineering Monitor/Monitor de Geingeniería](#) websites, which include a flow of updated news, documents and fact sheets on geoengineering techniques and experiments. This included a set of [15 fact sheets on geoengineering in Spanish](#).

The CBD's COP15 in Montreal in December 2022 was a key communications focus for ETC. We co-published a briefing with Friends of the Earth US, [“Protecting a Legacy of Precaution at COP-15: Bringing Horizon Scanning, Technology Assessment and Monitoring into the future work of the CBD”](#). This provided the context and information relating to a [side event](#) co-organised with Save Our Seeds and CREPPA. We also collaborated with others in civil society to issue an [Open Call to CBD Parties and the CBD Secretariat](#) opposing geoengineering; and co-organised the drop of an [80-foot banner](#) calling out the attempted billionaire takeover of biodiversity finance and policy.

Developing narrative analysis methodologies

In addition to the above reports and other publications, and the numerous webinars and presentations made by staff across the year, our 2022 communications work introduced a new strand of work on narrative analysis, a recently launched area of work with allies in civil society, which aims to progressively and collaboratively build our collective capacity to unpack the powerful corporate narratives driving the technofixes outlined above. In particular, the rise of ag-tech poses a significant challenge to movements struggling for food sovereignty everywhere.

Working with the Alliance for Food Sovereignty in Africa, we held a series of workshops on digital agriculture in Africa, the value of African foods and the ‘fourth industrial revolution’. This included engaging press through two sessions on narratives around digital agriculture attended by over 30 African journalists. These workshops led to the development of key messages around digital agriculture in Africa and key messages around food sovereignty and the value of eating African food. We then started to coordinate with allies to launch a series of workshops exploring ways to create a narrative strategy in order to intervene vocally in the ag-tech landscape, scheduled for 2023.

Playing “Disruption!” and sharing jigsaws

A great deal of our communications energy was focused on publications in 2022, including in terms of ensuring that they were illustrated with inspiring and accessible cover art, illustrations and infographics. However, we were still able to carve out time to further our creative communications. In particular, we promoted our board game, “Disruption! the battle for the future of food”, by creating experimental pop-up events at summits such as the UNFCCC intersessional in Bonn in June; the meeting of CSIPM at FAO CSF in Rome, in October 2022; the UNFCCC COP27 in Sharm-el-Sheikh; and the ASEAN Peoples’ Forum in Phnom Penh.

At a climate financialization event that we organized in the Philippines, for participants from across the Philippines, Indonesia and Malaysia, we also successfully proto-typed a training-the-trainer module to show potential trainers how they can engage interested constituents or community members to explore and play either the short or long versions of “Disruption!”. In this way, we hope to progressively distribute the game in civil society, even though our capacity to do that ourselves is limited. As part of this project, we also published and presented our animation, Big Brother, in Bahasa Indonesia, meaning that it is now published with either voice over or captions in six languages (it is also in English, Spanish, French, Italian and Japanese).

Our 2022 communications roll call

Research report: “Food Barons 2022: crisis profiteering, digitalization and shifting power”

Full report: [English](#) [Spanish](#)

Summary report: [English](#) [Spanish](#)

Agrochemicals/seeds: [English](#) [Spanish](#)

Synthetic fertilizers: [English](#) [Spanish](#)

Livestock genetics: [English](#) [Spanish](#)

Machinery for big ag: [English](#) [Spanish](#)

Animal pharma: [English](#) [Spanish](#)

Ag commodity trading: [English](#) [Spanish](#)

Big meat & protein: [English](#) [Spanish](#)

Food & beverage: [English](#) [Spanish](#)

Grocery retail: [English](#) [Spanish](#)

Food delivery: [English](#) [Spanish](#)

Research report: “Cashing in on the Climate Crisis through Agricultural Digitalisation: Emerging Cases in Indonesia, Malaysia and the Philippines”

Full report: [English](#)

Briefing: “False Solutions Alert: Geoengineering in Climate Negotiations”

[English](#) [Spanish](#)

➤ Short read: 15 geoengineering fact sheets [Spanish](#)

Briefing: “Protecting a Legacy of Precaution at COP-15: Bringing Horizon Scanning, Technology Assessment and Monitoring into the future work of the CBD”

[English](#) [Spanish](#) [French](#)

➤ Short read: “Banners to Bezos and Gates” [English](#) [Spanish](#)

Video: COP15 Side event [English](#)

Briefing: “Small-scale farmers and peasants still feed the world.”

[English](#) [Spanish](#)

➤ Short read: “Peasants still feed the world, even if FAO claims otherwise”

[English](#) [Spanish](#)

Podcast: Tech Won't Save Us podcast, Episode 137

“How tech is remaking the food system” with Jim Thomas [English](#)

Animation: “Big Brother is Coming to the Farm: The digital takeover of food” [Bahasa Indonesia](#)

Readers' bonus: We sent these online jigsaw puzzles to our supporters as a thank you at the end of 2022. They are all based on our commissioned illustrations.

Click on the images to play the jigsaw puzzles!



How to play

We've tried out the puzzle software and really enjoyed it. It's great fun and you can go to the menu and modify the image to choose how many pieces you want your jigsaw to have (left hand icon on middle icon bar). So even if they look easy or difficult in the screenshots above you can actually change the level of difficulty.

To start, go to the middle icon bar, choose the number of pieces you want to play with (left hand icon) and whether you want to play with another player (people icon). Then click 'OK' to start. The middle icon bar will disappear.

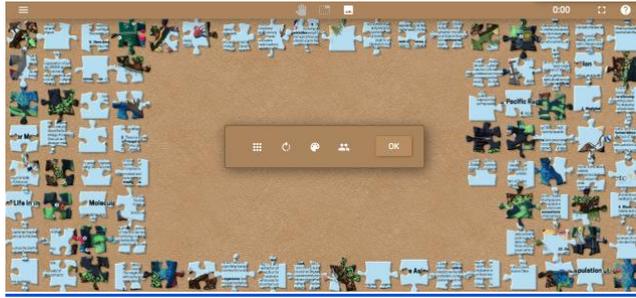
You can now drag the puzzle pieces with your cursor (this is easier than dragging with the hand icon where the puzzle pieces disappear until you click again to drop them into place). If you are playing alone there is also an option to show only the outside edges to begin with (middle icon in the top icon bar).



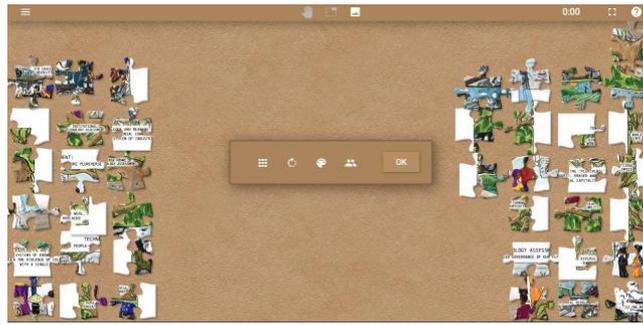
1 Asia-Pacific: Nightmare or Nirvana?
(Artist: Charley Hall)



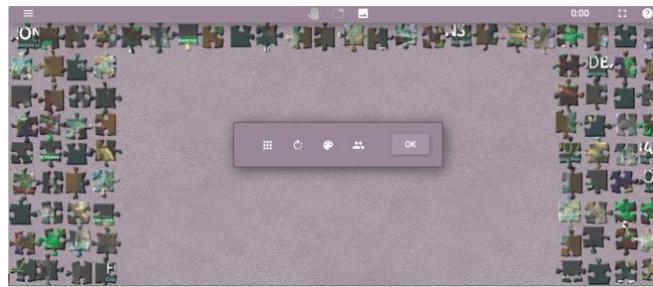
2 Asia-Pacific: Volcanic Disruption
(Artist: Catherine Dizon)



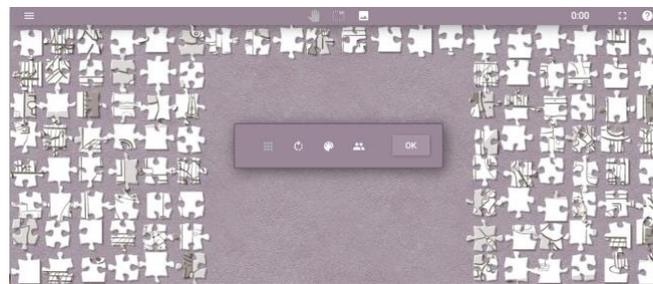
3 Asia-Pacific: Molecular manipulation
(Artist: Catherine Dizon)



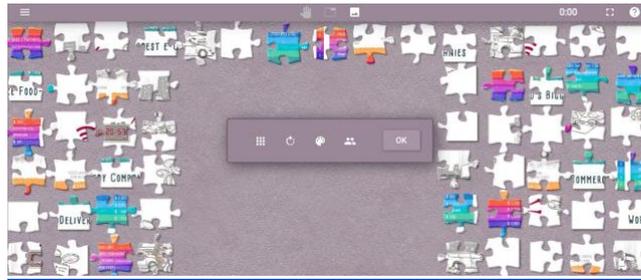
4 Asia-Pacific: Towards people-led governance!
(Artist: Camille Etchart)



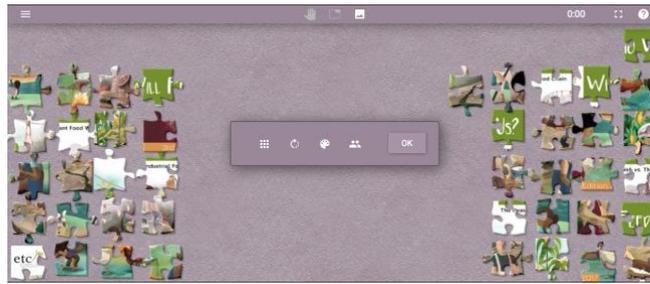
5 Food Barons: cover art
(Artist: Garth Laidlaw)



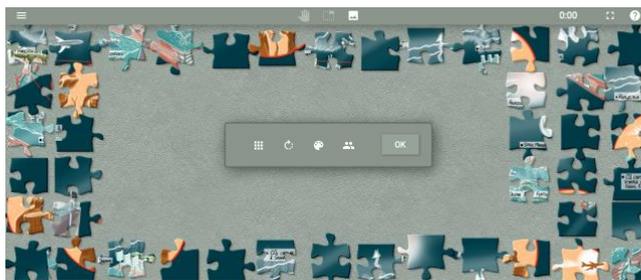
6 Food Barons: Animal pharma
(Artist: Andre M Medina)



7 Food Barons: Food delivery sector
(Artist: Andre M Medina)



8 Who Will Feed Us?
(Artists: Garth Laidlaw and Jenna Kessler)



9 AfriTAP: Geoengineering research in Africa
(Artist: Chief Nyamweya, Freehand Studios, Kenya)



10 AfriTAP: Cable Culture Nets Africa
(Artist: Chief Nyamweya, Freehand Studios, Kenya)



11 AfriTAP: Kenya criminalises indigenous seed sharing
(Artist: Chief Nyamweya, Freehand Studios, Kenya)



12 AfriTAP: Gene drives in Burkina Faso
(Artist: Chief Nyamweya, Freehand Studios, Kenya)