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The global commodification of agriculture and its perils



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Editor's Note

ALL over the world there has been a growing realisation that the current system of agriculture is deeply flawed and inimical to health and human survival. Perhaps the clearest manifestation of this unease is the growing popularity of organic agricultural products among consumers. Although such consumers are still a minority, their preference for products of an alternative agriculture is surely a reflection of a general feeling that all is not well with mainstream agriculture.

The truth is, there is much that is wrong with our current system of agriculture. In its fundamentals, this is an energy-intensive farming system based on monoculture which is heavily dependent on chemical fertilisers, pesticides and, ultimately, fossil fuels. In the West the origins of this system of agriculture can be traced back to the Industrial Revolution of the 18th/19th century, but it was really after World War II, with the development of the large-scale chemical industries particularly in the US, that this system of agriculture became dominant. In fact, it was the US that was instrumental in introducing this form of agriculture into developing countries in the 1960s as an integral part of a so-called 'Green Revolution' designed to boost rural productivity and thereby prevent rural insurgency.

Under the Green Revolution, the key to boosting agricultural productivity was for farmers to concentrate on growing a single grain crop (usually wheat or rice) using new 'high-yielding varieties' which would replace the traditional seed varieties developed by farmers of the South over the millennia. Apart from a tragic loss of genetic biodiversity, the resulting monocultures fostered a technological dependence by farmers on agencies outside their control. Seeds, which were once solely the patrimony of farmers who used to save and exchange them among themselves, now became commodities to be bought and sold in the market. The magnitude of this loss of seed sovereignty cannot be overstated, especially since the seeds had to be imported in the early days of the Green Revolution before local agencies took over the role of supplying them. Today, this commodification of seeds has been taken a step further with the advent of genetically engineered seeds over which multinational agribusinesses such as Monsanto hold exclusive patents.

Under the Green Revolution, the process of commodification was not, however, limited to seeds alone. As scholars who studied its introduction to traditional farming communities have pointed out, *all* agricultural inputs (such as land, labour and technology) and outputs were transformed into commodities.

The process of commodification also gave a powerful impetus to the vigorous development of market relations in the countryside. With the onset of globalisation, the whole dynamics of rural farming in these communities became increasingly determined by and dependent on the external market. In short, farmers became integrated into the global economy.

Economists have also drawn attention to the fact that the Green Revolution is inherently biased in favour of big farmers and landlords. The high-yielding seeds used require an abundant water supply and huge amounts of fertilisers and pesticides while large-scale monoculture makes mechanisation possible and cost-effective. Not surprisingly, the Green Revolution has opened up the rural world to corporate penetration and a dominant role for agribusiness.

Livestock breeding, which was once an integral part of traditional local farms, has long since been transformed into a species of commodity production and the domain of big business. Such commodification has resulted in the incorporation of brutal processes such as 'confined animal feeding operations' in preparing the animals for slaughter. While the feeding of the animals with high-calorie grain and hormones is designed to fatten them for the market, their extreme concentration within confined facilities for this purpose increases the risk of transmission of diseases and epidemics. Hence the resort to antibiotics to confront this hazard. Unfortunately, the profligate use of antibiotics in animals has in turn contributed to the emergence of one of the gravest public health problems of our time – antibiotic resistance.

The case for modern agriculture rests, in the final analysis, on its claim that it has reduced the cost of food. But in the light of the problems highlighted above, it is clear that this is an illusory claim. The fact is that there are hidden costs in the production of food which are not reflected in the market price. Instead, they have been, as economists say, externalised so that these costs are borne by society at large. This has been made possible by the process of commodification. As one writer aptly summed up, commodification can be characterised as the art of externalising costs.

It should be quite apparent from all this that the time for a rethink of the whole basis of our current system of agriculture is long overdue. There is a need to shift to a more sustainable system, one that is less energy-consuming and less destructive of our environment and climate. Unfortunately, little serious attention, resources and effort have been channelled by governments thus far towards supporting alternative systems such as agroecology, whose benefits are already widely documented. Given the urgency of the whole problem, we cannot afford to take a business-as-usual approach by continuing with a system of food production which destroys the very ecosystem on which all life depends.

In our cover story, we consider the hidden costs of our current system of agriculture. After an overview of its many problems, we focus on the Green Revolution to highlight how it has opened the floodgates to corporate dominance of global agriculture. We conclude with a spotlight on agroecology as a viable alternative forward.

— *The Editors*

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Industrial farming has brought in its wake a host of adverse economic, social and environmental effects which underscore the need for a more sustainable system of agriculture.

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Four years after Fukushima, the same paradigm prevails in nuclear energy

The same skewed decision-making process that led to ignoring the tsunami risk at Fukushima is still being applied to new nuclear construction and old nuclear operation, warns *Arnie Gundersen*.



A worker walks amid water tanks at the tsunami-hit Fukushima Daiichi nuclear power plant. The continuing problems at Fukushima Daiichi during the last four years stem from skewed priorities favouring the nuclear industry.

FOUR years have passed since the 11 March 2011 tragic triple meltdowns began at Fukushima Daiichi. There is no end in sight.

Let's be clear: The disaster at Fukushima Daiichi was human-made. Tokyo Electric (TEPCO), and indeed the entire nuclear industry worldwide, act as if they are the victims of a natural disaster, but in fact the nuclear industry is the perpetrator of this travesty. When the US nuclear companies General Electric and Ebasco built Fukushima Daiichi for TEPCO, they knew that huge tsunamis were a real risk. Instead of designing for the worst imaginable consequences – which

would make nuclear power unaffordable – the industry chose to save money, allowing economics to trump safety.

The continuing problems at Fukushima Daiichi during the last four years stem from those skewed priorities. Tokyo Electric, the government regulators in Japan and the worldwide nuclear industry grossly underestimated the initial radioactive releases, underestimated the magnitude of the disaster and underestimated the consequences of not taking action. The Japanese people will pay the price for decades to come.¹

Is Tokyo Electric or the Japanese

government incompetent? I don't think so. As I look back at the last four years, I think that TEPCO, Japanese regulators and worldwide regulatory agencies wanted nuclear power to succeed so badly that they focused on saving Tokyo Electric and forgot about the people they were created to serve.²

At each nuclear catastrophe – Three Mile Island, Chernobyl and again at Fukushima Daiichi – the companies, governments and agencies responding to these disasters were not working to protect people, but worked instead to protect the ongoing operation and potential future of

nuclear power. The mishandling of this disaster has shown us that emergency response must be directed by organisations that put people first - not agencies that have a vested interest in perpetuating nuclear power, banking and industrial interests.

Why have the nuclear industry, its regulators and governments worldwide attempted to minimise the devastation created by the obvious collapse of the myth of nuclear safety? The answer is money. Throughout the world, banks and governments are heavily invested in the financial success of the ongoing operation of their nuclear power plants, no matter what health consequences and personal loss are forced upon the people of their nations.

Following the Fukushima Daiichi triple meltdown, governments around the world have destroyed their social contracts with their citizens by pressing for costly and risky nuclear power without regard for the health and welfare of generations to come. The social contract between the people in Japan and the Japanese government has certainly been breached, perhaps for decades to come.

The same skewed decision-making process that led to ignoring the tsunami risk at Fukushima Daiichi in 1965 is still being applied to new nuclear construction and old nuclear operation. The old paradigm has not



'Throughout the world, banks and governments are heavily invested in the financial success of the ongoing operation of their nuclear power plants, no matter what health consequences and personal loss are forced upon the people of their nations.'

and likely will not change, despite five meltdowns during the last 35 years disproving the myth of nuclear safety.

Of all the ways electricity is produced, nuclear technology is the only one that can destroy the fabric of a country overnight. In his memoirs, Mikhail Gorbachev states that it was the Chernobyl accident that destroyed the Soviet Union, not perestroika. Five former Japanese prime ministers – Kan, Koizumi, Nakasone, Noda and Hatoyama – who span the spectrum of liberal to conservative, oppose nuclear power. And currently in Europe,

German Chancellor and former physicist Angela Merkel is leading her country to be nuclear-free by 2022.

Where there is a political will, nations can wean themselves from nuclear power without waiting for yet another nuclear disaster to occur.

'Considering the risk of losing half our land and evacuating half our population, my conclusion is that not having nuclear power plants is the safest energy policy,' former Prime Minister Naoto Kan, Japan's leader during the Fukushima Daiichi tragedy, has said. ♦



Protesters at an anti-nuclear rally in Tokyo. 'Where there is a political will, nations can wean themselves from nuclear power without waiting for yet another nuclear disaster to occur.'

Arnie Gundersen is the Chief Engineer of Fairwinds Associates and is a former nuclear industry senior vice president and licensed reactor operator. He earned his master's degree in nuclear engineering via the prestigious Atomic Energy Commission Fellowship. The above article first appeared on the Truthout website (truth-out.org/opinion/item/29575-four-years-on-after-fukushima-the-same-paradigm-prevails-in-nuclear-energy). Copyright Truthout.org. Reprinted with permission.

Endnotes

1. *Crisis Without End: The Medical and Ecological Consequences of the Fukushima Nuclear Catastrophe*, The New Press, ISBN 978-1-59558-960-6, 2014
2. John Downer, 'Fukushima and the institutional invisibility of nuclear disaster', theEcologist.org, 20 December 2014

HSBC, crime and high finance

A recent US Department of Justice report on HSBC, the British-owned bank, has observed that its 'historical cultural deficiencies continue to pervade its operations today'. Delving into the bank's history to show up the consistently criminal nature of these 'cultural deficiencies', *Jeremy Seabrook* comments that, given the hegemony of finance in our times, the bank's latest scandals are unlikely to attract any serious sanctions.

IT might have been thought that the international banking scandals of the past eight years had plumbed the depths of irregularity and impropriety by institutions which are supposed to be 'pillars of the financial architecture' of globalisation. From promiscuous 'sub-prime' lending, to shadowy dealing in complicated 'financial instruments', the rigging of exchange rates, fixing of the Libor rate, the absorption of billions in 'quantitative easing' intended to help business, and, of course, money laundering which allows drug traffickers through the alchemy of financial morality to transmute filthy lucre into pure gold.

In February 2015 it was revealed that HSBC, the world's third-largest bank (assets estimated at \$2.36 trillion), with over 7,000 offices in 80 countries, had apparently been unaware that its Swiss affiliate had not only connived at tax evasion by wealthy clients and global celebrities in the recent past, but had actually offered these oppressed people advice on how to place their money in shelters secure against the prying eyes of tax authorities.

Two years before this came to light, HSBC had reminded the world of its original roots in the global drugs trade: in December 2012, an agreement was reached between the US Department of Justice and HSBC over a 'deferred prosecution agreement' that would levy fines to the tune of



HSBC's Swiss subsidiary circumvented a European directive designed to catch tax evaders.

\$1.92 billion, as a result of the bank's numerous violations of the Bank Secrecy Act, for its role, according to the US Senate Permanent Subcommittee on Investigations, in money-laundering the assets of Mexican and Colombian drug cartels and, incredibly, dealing with financial entities that had ties to international terrorism.

Commercial homecoming

Perhaps this should have come as no great surprise. It could be seen as a kind of commercial homecoming for what had formerly been known as the Hong Kong and Shanghai Banking Corporation, founded in 1865 with money accumulated from the opium trade.

In the early 19th century, Britain wanted silk, tea and porcelain from China, but had no commodity the self-reliant Chinese desired. Opium from India, traded unofficially by East India Company employees, became the

merchandise of choice. In 1839, William Jardine, an opium merchant in Canton, sought British military assistance when his stocks of opium were seized by the Chinese, who, as had been done in Britain, had forbidden the trade in opium. Imperial indignation at this act of confiscation led to Britain's launch of the First Opium War. As a result of this, the Treaty of Nanking in 1842 ceded trading rights and Hong Kong to Britain, in a 'perpetuity' that lasted until 1997. Following the Second Opium War between 1856-60, Britain and France enforced the 'opening up' of wider swathes of territory to foreign trade, residence and missionary activity.

In that enlightened time, imperial necessity evidently required large-scale drug-dealing, in the interests of bestowing upon China the emancipatory experience of 'free trade'. 'Did not the laws of nature oblige all peoples to mingle freely with each other?' asked James Matheson, senior part-

ner with William Jardine in the opium-dealing enterprise. When the Hong Kong and Shanghai Bank was founded in 1865, as a conduit for accrued opium wealth, its principal founder, Thomas Sutherland (of the Peninsular and Oriental Steam Navigation Company), declared it would be run according to 'sound Scottish banking principles'.* It might well have adopted its contemporary abbreviation then, as a Heroin Smugglers' Benefit Corporation.

Epic malfeasance

With such antecedents and such illustrious parentage, should the world be astonished that in the epic work of malfeasance in the 21st century, no individual, no official or functionary of HSBC was prosecuted? US Senate inquiries discovered that HSBC Financial Services (Cayman) was the chief channel through which money cleansed through HSBC Mexico (HBMX) flowed. This was a mere 'shell' operation in the Caymans with no material presence, but it permitted accounts to be opened by any HBMX branch in Mexico. Total assets in the Caymans reached \$2.1 billion in 2008.

The US Department of Justice stated that 'a four-count felony criminal investigation was filed in federal court', charging HSBC with 'wilfully failing to maintain an effective anti-money-laundering programme, wilfully failing to conduct due diligence on its foreign correspondent affiliates, violating the International Emergency Economic Powers Act and the Trading with the Enemy Act'. Because the bank agreed to the filing of this information, and accepted responsibility for its criminal actions and those of its employees, the 'deferred prosecution' was effectively replaced by a financial levy, derisory though this was, given the bank's total assets. It was, however, considered 'punishment' enough, since as financial crime grows in magnitude, it seems to decrease in culpability.



In 2007, whistleblower Herve Falciani (pic) made public a cache of documents revealing how HSBC had helped wealthy clients evade taxes.

In February this year, it emerged that in 2007, Herve Falciani, a French/Italian whistleblower (an image taken from the realm of sport, a referee), had made public a cache of documents revealing the accounts of 106,000 clients in 200 countries holding \$118 billion, which showed how HSBC had helped them evade an unknown sum in taxes. Of these clients, over 9,000 were from France, while Britain was represented by 7,000 wealthy individuals.

In 2005, the European Savings Directive had required that Swiss banks take tax owed from undeclared accounts and ensure that it reached the relevant authorities. This measure, designed to catch tax evaders, was circumvented by HSBC, who wrote to its customers suggesting to them ways to circumvent this imposition.

Stephen Green was chief executive of HSBC from 2003-06 and became chairman from 2006-10, after which he was ennobled by the British government and became Minister for Trade and Investment, where he remained until he 'stepped down', no doubt decorously, in suitably elegant shoes, in 2013. He refused to make any comment on the affairs of HSBC 'on principle'; a principle evidently so high it could not be enunciated. He also has, at the time of writing, declined to appear before the Public Accounts Committee of the British Parliament; perhaps he is too busy investing his 'pension pot' of £19 million accumulated as a result of his services to HSBC.

It should be noted that HSBC was

praised for having come through the banking crisis of 2007-08 unscathed and without government 'bailouts'. Lord Green was also ordained as a minister of the Church of England in 1988. In 2009, he published a book called *Good Values: Reflection on Money and Morality in an Uncertain World*, in which he had advocated that business leaders should behave ethically, beyond the legal limit of 'what you can get away with'. It appears that while he took

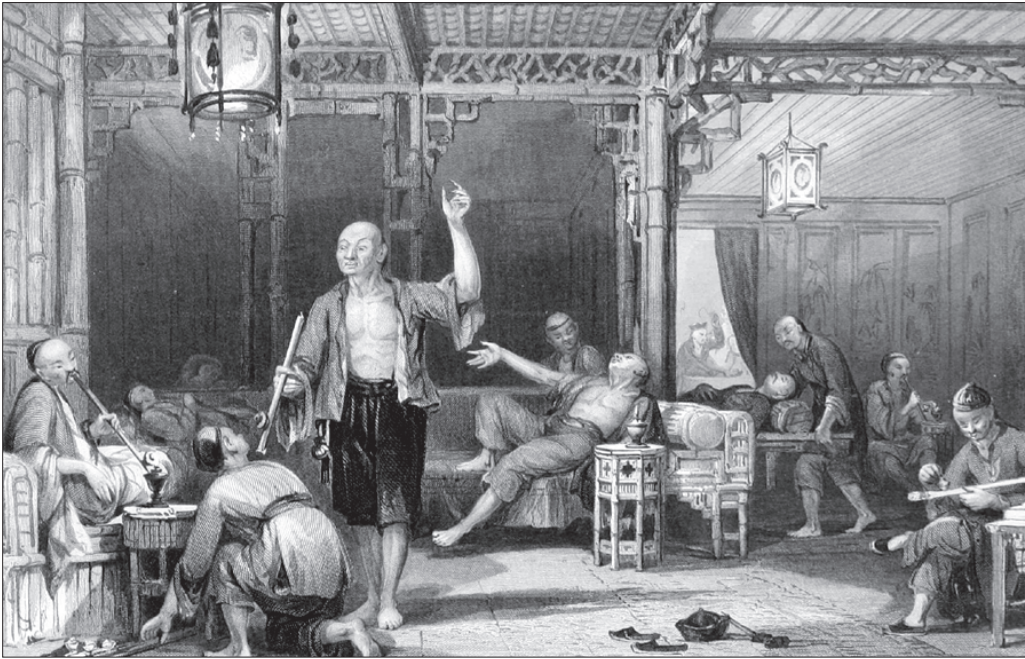
holy orders, he failed to give them to his subordinates. Much was also made of the Presbyterian tradition of HSBC, its dedication to 'Scottish' notions of frugality, restraint and high moral behaviour; the long shadow of Thomas Sutherland still provides shelter a century and a half after he founded his bank.

Self-exculpation

The ritual of self-exculpation which has become familiar in the wake of corporate wrongdoing was formally reenacted. First of all, the abuses were 'historic'. In the context of finance, it appears that the day before yesterday is prehistory; and the 'delete' button is the one most commonly pressed on the keyboard of instantaneous reckonings of contemporary bankers.

Secondly, nothing was known to the bank's senior executives of the 'behaviour' of its Swiss subsidiary. They pleaded, not exactly ignorance, but a kind of lofty nescience, which the Oxford dictionary described as 'a lack of knowledge'. It is a functional unknowing, invoked in extenuation of the role of senior figures in any kind of corporate wrongdoing.

Since then, everything has changed. 'Compliance' now takes precedence even over profitability. HSBC has completely revised its private banking business and, according to a statement put out by the bank, 'implemented numerous initiatives designed to prevent its banking services being used to evade taxes or laun-



What is now HSBC was founded in 1865 with money accumulated from the opium trade in China. The above is an illustration of Chinese opium smokers in the 19th century.

der money'. Appearing before the Public Accounts Committee, the current chief executive was asked to explain why he was paid through a Panamanian bank. He said he wished his rewards to be concealed from his fellow workers so as not to excite their jealousy. Chris Meares, in charge of private banking while the tax evasion was taking place, averred that he had never had his honesty and integrity questioned. The bank ran penitent advertisements in newspapers, admitting that this 'episode' was a 'source of shame'.

And there, for the moment, it rests for 'the world's local bank'. HSBC was reported to be facing criminal investigations in the US, France, Belgium and Argentina; but no such process has been initiated in Britain, where the headquarters of the bank are located.

This does not conclude the story in Britain. HM Revenue and Customs – the tax authorities – received all the data from Falciani in 2010. By early 2015, it claimed to have identified over a thousand people from the list passed to it. To date, only one has been prosecuted. HMRC declared that it had negotiated with other clients of HSBC and had 'recovered £135 million in tax, interest and penalties' from

those who had failed to declare their income and assets. The leniency with which corporations and the very rich are treated suggests that tax-paying has been, for them, transformed into a kind of elective almsgiving – as the tax arrangements of Google, Starbucks and Amazon suggest; these have become philanthropists, by whose grace our labour, our daily bread and sustenance are provided.

What a contrast with a government so eager to 'crack down' on those guilty of benefit fraud; their pathetic pence costs the exchequer nothing by comparison with the billions foregone from the Croesus, Midas and King Solomons of the contemporary corporate world. It is difficult not to contrast their impunity with the punishment meted out to one individual I met recently, discovered to have been 'overpaid' by the benefits system in Britain in 2001: his repayment, at the rate of £7 a week, will continue until 2024. Meanwhile on the side of buses, the exhortation 'Shop a Benefit Cheat Anonymously' encourages people to denounce their neighbours. No such public-spirited invitation is extended to snitch on those who juggle millions in their deft, well-manicured hands.

The lords of money

Nothing demonstrates more clearly the elevated status of bankers in a globalised world. They, and the money they manipulate, are at the apex of a system on which we all depend; and as such, they have acquired semi-divine status. They are untouchable, since if they and the empires they run were to be toppled, we would all perish in the rubble of the unthinkable cataclysm.

So it is that the *faux-monnayeurs* of international finance go about their business of violence and injustice unimpeded, but for the occasional arrest of a symbolic rogue trader, bad apple or evader of regulatory oversight; in a more innocent age, lesser scandals would have caused empires to crumble. The commodity they control is the holy ichor that flows through the veins of capitalism, a system now so uncontested and incontestable that it has become coterminous with the known universe: it would be as foolish to attack 'the global economy' as it would be to question the cosmogony of Christianity or Islam or any other of the great world religions. We are now, it seems, living in a mythic time, where the lords of money, arbitrary, capricious and powerful as gods, work their mischief on a humbled and deferential humanity, which cannot do enough to placate and appease them. ♦

Jeremy Seabrook is a freelance journalist based in the UK. His latest book is The Song of the Shirt (published by Navayana).

* For ramifications in the historic relationships between banking, commodities and those who made fortunes out of them, see Dean Henderson, *Big Oil and Their Bankers*, especially Chapter 2: 'Hong Kong Shanghaied'.

The illusion of cheap food under commodified agriculture

In this critique of the modern food system, *Gunnar Rundgren* argues that the commercialisation of farming has led us to view land, water and nature as private property and the life of the land, our symbionts, as commodities.

It has given rise to the illusion of cheap food by externalising many of the attendant costs such as climate change, loss of biodiversity, and the pollution of our soil and water. The transition to a regenerative food system will only be possible when we begin viewing the food system as a social, ecological and economic system.

EVEN as hundreds of millions go hungry, food has a low price tag attached to it in the global market. This is because we have externalised many of the costs of producing and consuming it. We let someone else – nature, other people, future generations, taxpayers – foot the bill for climate change, for loss of biodiversity, for eutrophication, for nitrates and pesticides in our groundwater or even for losing the water or the soil altogether. It has become painfully clear that we can no longer afford cheap food.

An unsustainable system

Cheap food allows a growing proportion of the global population to eat meat, fresh vegetables and fruits all year round, something most people could only dream of a few generations back – and something many people in the world can still only dream of. People live longer, are taller and are generally healthier than in the agrarian societies of the 18th and 19th centuries. But the current food system has also produced obesity, allergies and other diseases, and destroyed the environment and devastated farming communities.

Our whole food system contributes at least a third of manmade total greenhouse gas emissions. The extraction of water for irrigation exceeds the regeneration of water sources in many parts of the world. Pesticides cause a major loss of biodiversity and hundreds of thou-



'A supermarket may carry some 50,000 food items, but a very large part of them are variations made out of the "Big Five" – wheat, maize, palm oil, sugar and soybeans – spiced, coloured, preserved and texturised with additives.'

sands of direct deaths among farmers and farm workers. Nobody really knows how they affect other aspects of our health. *The European Nitrogen Assessment* concluded that farmers using nitrogen fertilisers create costs for society at large that are on par with the economic benefits for them.¹ European chickens or Chinese pigs are, to a very large extent, fed soy protein from Latin America, much of it from the Cerrado, the Amazon or the Pampa, landscapes which are razed and raped by agribusiness. The extinction of species and the greenhouse gas emissions caused by this are also not included in the price of chicken breast or pulled pork.

That almost a billion people don't have enough to eat, while even more eat too much and huge quantities of food are simply wasted, also shows that the food and farming system is socially unsustainable. For most farmers in the world, farming is not economically viable. Global competition causes the abandonment of farms even in large parts of Europe where almost a hundred million hectares of farmland has been abandoned in the last 50 years.² Rich countries such as Sweden which could be almost self-sufficient in food import increasing quantities of foods, but even more troubling is that many of the least developed countries have become net

importers of food. Sub-Saharan Africa went from a 14% surplus of calories to a 13% deficit in the last 50 years.³

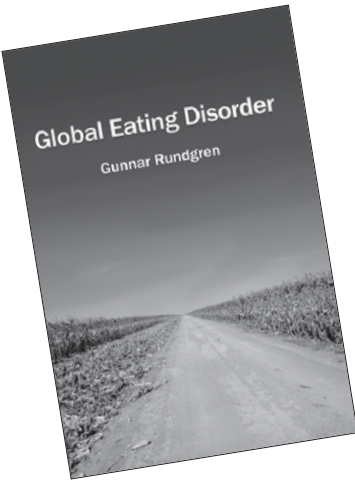
Farming has become one of the most capital-intensive businesses. The very successful Danish farms have an average debt of \$1.6 million per farm.⁴ In the United States the total farm assets in 2014 amounted to \$3 trillion,⁵ corresponding to \$1.2 million per full-time job. Low labour cost is no longer a comparative advantage in crops where production is easily mechanised, such as the main staples. On the contrary, low prices for staple crops make it impossible for small farms to mechanise production, which is why more than 80% of the farmers in sub-Saharan Africa and around half of the farmers in Asia and Latin America still farm manually. Such farmers would have to devote *all* their monetary income over a whole lifetime to upgrade to ox-ploughing. However, they are still, mostly, (just) above the threshold of survival, which means that they will continue to farm as long as there are no more promising alternatives beyond agriculture.⁶

By and large farmers are stuck on a treadmill. They are forced by competition to increase productivity, and the increased productivity leads to lower prices. Vanguard farms will constantly develop and improve and mostly increase in size, at the expense of their less successful counterparts. Larger farms are not normally more productive per area unit, but they do have lower costs of production. They will establish a new level of costs and prices, each time racking up the notch for the minimum efficiency needed to stay in business. For farmers who cannot participate in this stiff competition, there is no option except to get out. The fact that 'people will always need food' is small comfort for the farmer who cannot compete.

Chickens and commodification

A closer look at the major agricultural commodities helps us understand why things are as they are. Chicken consumption increased ten-fold from 1961 to 2009 globally. The

'We can no longer afford cheap food'



Consumer choice is a myth when it comes to food. What we eat is determined by our ancestors' choices, by corporations and governments, and by three megatrends: the use of fossil fuels in all parts of the food chain; the commercialisation of most parts of our lives; and the growth of populations and where they live.

Global Eating Disorder explains how and why almost one billion go hungry while even more people eat too much. Why food has become cheap at the expense of the environment and social development.

Author, consultant, farmer and long-term organic activist, **Gunnar Rundgren** points towards planetary stewardship and co-production and regeneration of resources embedded in new social and economic relationships. He tells the story with a mix of a historical perspective, comprehensive data and real-life experiences from all continents of the world.

Global Eating Disorder is available in internet bookshops and can be ordered to local stores or from regeneratpublisher@gmail.com
Paperback, ISBN 9198089242 & hardcover, ISBN 9198089257

past practice of chicken rearing saw small numbers of chickens raised on waste products or seeking their own feed in the farmer's yard, the thicket or the manure heap – a very popular place for the animals. Chicken meat was relatively scarce and thus expensive in many cultures. Today chicken from broilers in the shape of nuggets, wings or strips are munched 24/7. There is hardly any other food that has increased its market share at such speed in such a short period. Why is that?

A trend analyst would explain that consumer choice is driving this, that consumers prefer white meat to red for health reasons, that chicken is low in fat, that chicken is an international food or that chicken is better for the climate than eating beef. Well, I'm no trend analyst and venture that the main explanation is that chicken has become much cheaper compared to other foodstuffs.

But we can go one step further and ask why chicken has become so

much cheaper. In my book *Global Eating Disorder*, I examine why our food and farming system has developed the way it has and explore the underlying causes. There are three megatrends that have shaped our food system over the last couple of centuries: 1) the commercialisation of the entire food system; 2) the use of energy and applied technology (e.g., in the form of machinery or nitrogen fertilisers) to replace animate labour and processes; and 3) demographic changes, such as population growth and urbanisation, and the related lifestyle changes.⁷

These three megatrends are mutually reinforcing. For example, the application of energy and mechanisation in farming, in particular the use of fossil fuels, has increased productivity per agriculture worker by between 50-200 times, which meant that the share of population engaged in farming dropped tremendously. Without fossil fuels, globalisation and massive urbanisation could not have

happened. And without urbanisation, there would be little development of markets for agricultural products. Similarly, without commercialisation of farming, there would be little incentive to mechanise and use chemical fertilisers, as both presuppose market-driven farming.

With these mega-drivers as a background, we can discern some factors which have played a major role in the transformation of the luxury that was Sunday chicken into a very cheap food. Earlier, most farms with animals also produced their own feed. With the large-scale introduction of chemical fertilisers after World War II and improvements in transportation technologies, farms no longer had to integrate animals and crops. With increasing mechanisation, crop farmers could produce much cheaper grain, and later on also soybeans – increasingly grown in monocultures. The grains were sold to specialised livestock farmers, including chicken producers.

Chickens, just like humans, depend on sunlight to produce vitamin D. Therefore chickens would feed on worms and other insects in the yard and would be fed maize when they went back into the chicken house. Once farmers realised they could simply add vitamin D and other vitamins and medications to the chicken feed, they no longer had to let the chickens outdoors. Meanwhile, technology for automatic feeding had been invented. Now, the industrialisation of both broilers and laying hens could proceed apace. Mechanisation of the whole slaughtering process helped to reduce prices and increase volumes. In just over 50 years, the number of chickens produced in the United States increased 14-fold, while the number of farms having chickens dropped from 1.6 million to just 27,000.⁸ Half of all American broilers now come from farms producing more than 700,000 chicks per year.⁹ Big food industries came in and contracted producers for their brands and provided them with technologies and markets. At the beginning of this century three-quarters of global chicken production were in the hands of agribusiness companies.¹⁰



'There is no way to produce good foods and biologically diverse landscapes in a containerised, standardised and monopolistic food system.'

The development of broiler production was paralleled by developments in the processing, marketing and consumer side. The birds themselves are torn into pieces and reconfigured in a multitude of products such as nuggets and strips. In 1930 the then 40-year-old KFC founder Harland Sanders (who never was a real Colonel) was operating a service station in Corbin, Kentucky, and it was there that he began cooking for hungry travellers who stopped in for gas. He called it 'Sunday Dinner, Seven Days a Week'. Today, KFC, together with Pizza Hut and Taco Bell, is part of Yum! Brands, Inc., the world's leading restaurant company with over 40,000 restaurants and 1.5 million people employed in more than 125 countries and territories.¹¹

Chicken breeding is extremely concentrated as a result of high research expenditure and the capital-intensive nature of the chicken business. By the late 2000s only three sizeable breeding groups remained for broilers: Cobb-Vantress, Aviagen and Groupe Grimaud.¹² Two breeders control 94% of the supply of laying hens.¹³ All these developments have had profound impact on the main character of the story, *Gallus gallus*. In just half a century, the breeders cre-

ated two different specialist chickens, each one incredibly efficient for its specific purpose. A typical laying hen of today needs 1.99 kg of feed to produce 1 kg of eggs, while a broiler hen will need 5.22 kg of feed for the same quantity. But the broiler chicken is far superior in converting feed to meat. To produce 1 kg of live weight the broiler needs only 1.7 kg of feed, while the chicken of a laying hen needs 3.8 kg.¹⁴ Unfortunately, both the broiler and the laying hen are less efficient than their common ancestor in being a chicken.

Today 300 million male chicks of egg-laying hens are killed in the European Union each year as soon as they hatch, because it is uneconomical to raise them for meat¹⁵ since meat from chickens especially bred for meat production is cheaper. Many of them, and their American siblings, are consigned to 'Instantaneous Mechanical Destruction', which is a technical way of saying they are ground up alive.¹⁶ Hens that no longer lay eggs also pose a disposal problem and are burnt or thrown into wood-chipping machines, sometimes alive.¹⁷

The chicken industry provided a blueprint for the industrialisation of livestock. The capital-intensive model cuts out small farmers and pastoralists and is built on the use of bought-in

inputs: feeds, medicines, technologies and breeding stock as well as external knowledge. The production model bears a close resemblance to assembly industries, and producers all over the world use the same breeds, feed and technology. The notion of landscape, place or culture in our foods has totally lost any meaning under these conditions. What is particularly disturbing with the commercialisation of animal production is that it doesn't take into account that animals are living, sentient beings. Through the commodification of animals, their welfare and their ability to exercise their natural behaviours have become externalities – side factors of production – just as the landscape has in plant production.

The myth of choice

We might believe that we chose to eat a certain food, that it is the consumer who is the conductor of the whole food system, but that is an erroneous starting point for a conversation about which foods we eat and which we should eat. Our palates have been shaped over centuries to like some things and dislike others. Differences in local foods and food preferences are proof not of how different from each other we are, but of how well we adapt to what is available. Swedes liked herring and cheese, Bantu people liked cassava and goat stew, and people in South East Asia preferred rice. Fermentation, drying, freezing and curing have all played different roles in different countries. If you lived in the humid tropics, your culture would never develop cured ham, as the conditions for making the ham do not exist in such a climate. The availability of fats and fuels determined your favourite style of frying or roasting or if you mostly ate food boiled in water. Our food preferences were thus by and large dictated by the local ecological context we lived in.

With fossil fuel and capitalism, this all changed. Today, our food choices are by and large determined by the economy instead of ecology. In most parts of the industrial and ur-



The world's largest seed company Monsanto is also the fourth-largest pesticide company.

banised world, people hardly eat anything that comes from close by. Consumption has no direct link to local agriculture, which is organised in the same way as modern assembly lines, with parts being delivered from all over the globe to be assembled as a Gorbys' pizza, a McDonald's hamburger or a Ben and Jerry's ice cream. Indonesians consumed a stunning 14 billion packages of instant wheat noodles in 2012.¹⁸ What is strange about that? Indonesia produces no wheat at all – what has become a national dish is based on a raw material that is completely imported. The history of wheat in Indonesia began in 1969 when the United States extended food aid in the form of wheat flour and wheat to Indonesia. Indonesia's wheat imports outweigh the total agriculture development budget in this nation of 250 million people.¹⁹

Does this mean that people have almost unlimited choice from the global supermarket? Not quite. To be sure, when one stands in front of a supermarket shelf or sits at a table reading a restaurant menu, there are many choices. But before we face all those choices, a number of people have already made the selection for us to choose from. Governments and agribusiness are choice architects and they shape what consumers can and cannot buy.

The modern food system is simultaneously moving towards uniformity and diversity. Globalisation gives many people access to many

more kinds of foods than before, but at the same time the differences between regional cuisines are diminishing. We are easily duped by the bright colours of marketing messages and packaging. A supermarket may carry some 50,000 food items, but a very large part of them are variations made out of the 'Big Five' – wheat, maize, palm oil, sugar and soybeans – spiced, coloured, preserved and texturised with additives.

Globally our farming system is still based on a few grains, root crops and oil crops supplemented with animals. Most meat is also produced from the same staples. Almost no new plants or animals have been domesticated in the last centuries, so in that regard our food system is still determined by the choices of generations of ancient farmers. The balance between the staples has changed and instead of being bound to one or two staples, we can now eat rice, pasta, potatoes, cornflakes, meat, milk, cheese etc.

Armies provided a development field for logistics, food processing and, not least, mass catering, which also served the masses in the rapidly growing cities. World War II reshaped the food preferences of American citizens, both those who were drafted into the armed forces and civilians at home. This transformation of diet was influenced by the food industry and government alike. It also helped American food industries to conquer new markets. The President of Coca-

Cola, Robert Woodruff, ordered that every man in uniform should be able to get a bottle of the beverage for 5 cents wherever he was and whatever it cost the company. In 1943, General Dwight D Eisenhower sent an urgent cablegram to Coca-Cola requesting shipment of materials for 10 bottling plants. 'During the war, many people enjoyed their first taste of the beverage, and when peace finally came, the foundations were laid for Coca-Cola to do business overseas,' is how the Coca-Cola Company describes the effect on its website.²⁰

In the United States, four companies control 80% of the meat market, three companies control 80% of maize exports and 65% of soy exports, and four companies control 60% of the domestic grain market. The top 10 food and beverage firms (the three largest are Nestlé, Pepsico and Kraft) control an estimated 28% of the global market. The top five breweries have around 50% of the market while the top 10 wine marketers have around 16% of the market.²¹ And if you cannot beat your competition, you can just buy them out. Increasingly, huge multinationals have bought up pioneer organic companies or other premium brands. Many companies integrate 'upstream' production (i.e., farmers and other suppliers) and 'downstream' sales (outlets, agents), which allows them to extend their control of the chain. Most of the transnational companies in the food sector are from the United States or Western Europe, but times are changing. Brazil-based JBS SA is now bigger than Unilever, Cargill and Danone, and slaughters 85,000 heads of cattle, 70,000 pigs and 12 million birds. Each day. In September 2013, China's Shuanghui International Holdings Ltd. bought US-based Smithfield, the world's biggest pork producer.²²

The production and supply of inputs to farms is also highly concentrated. The global commercial seed market in 2009 was worth \$27 billion, with the top 10 companies having three-quarters of the market. Three of them controlled more than half of the market and one, Monsanto, now con-

trols more than one-quarter of the commercial seed market. The concentration in the agrochemical market is even higher, with the top 10 having 90% of the global market.²³ Five of the top six agrochemical companies are also on the list of the world's biggest seed companies. Monsanto is the world's largest seed company and fourth-largest pesticide company. Monsanto's seeds that are genetically modified to work together with the company's flagship herbicide, Roundup, constitute a clear example of a successful strategy.

The market has become the conductor of the whole food system from farm to fork.

The most spectacular development in the food chain in recent decades, however, is not the might of Coca-Cola or Nestlé, but the increased influence of retailers. In 2008, Walmart recorded sales of \$436 billion from 7,657 stores (this corresponded to the GDP of Sweden), Carrefour \$161 billion, Metro Group \$116 billion and Tesco \$109 billion. In 1992, the top five supermarket chains in the United States had a market share of less than 20%; by 1999, that share had increased to one-third and in 2012 the four largest retailers sold more than half of the groceries. In Australia, the two giants Coles and Woolworths now control about 80% of grocery sales, and in Sweden, ICA alone has half the retail market.²⁴

The power of the supermarkets is also strengthened by the spread of retailer-owned brands and private labels. The retail share of private labels among food products has reached almost 60% in Switzerland and between 20% and 40% in most other Western European countries.²⁵ The retailers try to uphold the idea that we have choices by introducing many different private brands. The biggest retailer in Britain, Tesco, has many own brands: Value, Standard, Finest, Dis-

count, Light Choices, Organic, Free From, Whole Foods and finally Disney Kids, which was introduced in 2007 'to help parents by providing a range of nutritionally balanced food that children will engage with and enjoy'. This range includes a Mickey Mouse-shaped pizza.²⁶

Cooking and eating were for a long time social and cultural activities done within the household or in the community, with the work being done without pay and for no costs. Gradually, cooking and eating have become commercialised and acquired a totally different meaning and role in society. In the supermarkets we find a large supply of fully prepared meals, including ready meals of all types and takeaway food for consumption at home. In any week, 45% of Europeans and Americans consume such meals.²⁷ The habit is also spreading rapidly to emerging economies where the consumption of convenience foods is increasing, partly due to increasing urbanisation: retail sales of ready meals in India and China grew by 26.9% and 11.8% respectively from 2003 to 2008.²⁸

We have seen how food processing and retail follow an industrial logic. The same is true of the production of convenience foods. The web of suppliers to these operations is so complex that it proved very difficult to pin down the point at which horsemeat became beef in the European horsemeat scandal in early 2013. The factory that supplied Tesco with its 'hamburger' was using 'multiple ingredients from some 40 suppliers in production batches, and the mixture could vary every half hour', according to the Irish department of agriculture.²⁹

The tragedy of the market

Earlier, trade in foods was very limited and determined by needs or ecological adaptation. For example, farmers in plains traded grain for meat or yoghurt from pastoralists in mountains or deserts. In most cultures there existed 'markets' for exchange, but there were few cases where farmers oriented their production fully to sales

in the market, and when they did so the market was mostly the town close by.

With the total integration of farms in national and global markets, the market, initially just a tool for distributing surpluses, has become the conductor of the whole food system, from farm to fork, determining how we farm, the whole social fabric and how, where and what we eat.

As farmers become integrated into the market economy, they no longer reproduce and regenerate their production system. The commercialisation of farming also leads us to view land, water and nature as private property and the life of the land, our symbionts, as commodities. It is this process that is the real tragedy for food. It also makes a large contribution to obesity because when food becomes a commodity its main purpose is to be consumed.

The challenge of feeding a growing population is formidable, but managing the planet's ecosystem is an even bigger challenge. Considering that farmed landscapes dominate more than half of the terrestrial area of the Earth,³⁰ it is clear that the way we farm has an enormous impact on the planet's ecosystems; that human agricultural ecosystems must be seen as planetary ecosystems. Yet, the food and farming system is increasingly managed by signals from 'the market', which do not include the signals from these ecosystems: of the species threatened by extinction and the loss of biodiversity, of pollution and of greenhouse gas emissions. The market signals also don't include the feelings of the animals brutalised in our service. The system is simply not geared towards stewardship of the planet and living beings but to the maximisation of marketable output and profit.

The straight rows of endless monocultures in Mato Grosso are reflected in the aisles of the supermarket and the lanes of the highways full of lorries bringing goods into them and cars transporting food to people's homes. But the food system is a life support system and should be based on the principles of living systems, not

on the perceived efficiency of the industrial model. Linear thinking and linear processes are fundamentally at odds with the cycles of nature, and, ultimately, nature still rules. The food system is not a smorgasbord where we can pick out the bits we like and keep those we don't like. What we eat, how we eat and how we farm are all interdependent. There is no way to produce good foods and biologically diverse landscapes in a containerised, standardised and monopolistic food system. We can't combine animal welfare with the view of animals as commodities. And we can't produce healthy foods with the use of chemicals.

It is no longer very controversial to question the direction our food system has taken. Today, expert bodies, such as the International Assessment of Agricultural Knowledge, Science and Technology for Development, clarify that 'business as usual is not an option'.³¹ We simply have to find new ways, whether we want to or not. But we will only be able to find new ways if we understand the factors that determine how we farm, what we grow and what we eat. Most commentaries focus on the technical aspects of food production and farming, such as use of genetically modified organisms and chemical fertilisers, their benefits and drawbacks. But these technical aspects of farming are only parts of the problem or the solution. The food system is a social, ecological and economic system and needs to be viewed as such.

Towards a regenerative food system

Food and farming remain, together with energy, labour and housing, one of the most regulated parts of the economy, even before we consider all the cultural norms surrounding them. This is a recognition that the free market doesn't work. Or rather, that it does indeed work according to the textbooks, but we don't like the result of its workings.

Access to food should be an inalienable right. An equitable world will have the potential to feed every-

body. It will certainly ensure that the food is distributed more fairly among the world's population. But distribution by the market is the antithesis of equitable sharing. We can still see in times of disaster, war or disturbance that societies rapidly shun the market as the main mechanism for distribution and public or community control over food are the preferred ways of ensuring proper sharing.

Instead of trying to squeeze more of the commons, such as land, water and seeds, into the market, we should rebalance food towards public goods. In this way ecosystem services and food production can be balanced within the same framework. The rethinking of food as a right, of farming as a management system of the planet and the food system as a commons will lead us to develop new institutions that complement the roles of the market and the state.

There are ample opportunities to produce more foods with regenerative methods, such as organic farming and agroecology. Regenerative methods need nature and humans to be productive, but can't use the shortcuts introduced by linear methods, externalisation of costs and massive external energy use. For example, global plant production can be sustained on a high level with a combination of biological nitrogen fixation by leguminous plants in the fields, reduced losses, integration of animals and plants, and recycling of waste and human sewage (which has to be source separated). We can still feed as many persons as with chemical fertilisers, but under current economic conditions the cost will be higher as we need to use some of the resources to regenerate and reproduce the means of production. With regenerative food systems we will also need a higher share of the population engaged in food production. This in turn affects how many people can be engaged in producing iPhones and cars or serving us coffee. By and large, I think such a shift will only be good for society, culture and nature.

We need to build new relationships in the food system, new relationships that can gradually take over

most of the food system. Those relationships should be based on food and farming as joint common activities. There should not be 'producers' and 'consumers', but co-production. Initiatives such as community-supported agriculture have the seeds for this. Consumption as a separate category should wither and we would cook and eat in harmony with production. There will most likely be markets in the future, but not 'the market' that we know today, the globalised market with unlimited competition.

Political actions of many kinds are needed. Some should be oriented to limiting the harm produced by the current system, such as bans on pesticides and harmful practices. We also need to throw sand or gravel in the machinery of unfettered global trade, as unlimited competition forces farmers and food industries into externalising costs. This includes opposition to privatisation of common resources, including fighting intellectual property rights; we need to expand the commons again. Other political actions should promote the development of alternatives. This can range from reallocating research funds from industrial farming models to regenerative farming, to revising tax codes to stimulate the numbers of people engaged in farming and facilitating emerging new economic relations.

Ultimately, it is about us as human beings. Are we ready for the great leap into an unknown future, based on new insights? Do we prefer the sterile and cheap ready-to-eat meal wrapped in plastic from the supermarket to the earthy smells and tastes of nature, combined with more sweat and toil? In the long term I don't think we have much choice. An increasing scarcity of key resources will make the choice for us. But the ride will be easier if we halt the depletion of resources and of nature and build a regenerative food system now, before we are faced with the possibility of worrying whether we will get any food at all before going to bed. ♦

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Endnotes

- European Science Foundation. 2013. 'Nitrogen in Europe: Current problems and future solutions', part of *The European Nitrogen Assessment*. www.nine-esf.org.
- FAOStat.
- FAO. 2012. *Statistical Yearbook 2012*. FAO Statistics Division.
- Statistics Denmark 2014.
- Schnepf, R. 2014. *US Farm Incomes*. United States Congressional Research Service.
- Mazoyer, M. and L. Roudart. 2006. *A History of World Agriculture: From the Neolithic Age to the Current Crisis*. Monthly Review Press.
- Rundgren, G. 2014. *Global Eating Disorder*. Regeneration.
- PEW Environment Group. 2011. 'Big Chicken'. PEW Environment Group.
- USDA Economic Research Service. 2013. 'Farm Size and the Organization of US Crop Farming'. Economic Research Report 152. United States Department of Agriculture.
- Ostendorff, F. 2013. 'Excessive industrialization of livestock production: the need for a new agricultural paradigm'. *Trade and Environment Review* 2013. UNCTAD.
- Yum! 2014. 'About Yum! Brands'. 10 May 2014. www.yum.com.
- Elfick, D. 2013. 'A brief history of broiler selection: How chicken became a global food phenomenon in 50 years'. cn.aviagen.com.
- Heinrich Böll Foundation. 2014. *Meat Atlas*.
- Leenstra, F. 2013. 'Raising cockerels as part of free range egg production'. Low Input Breeds Technical Note 4.6.
- Idel, A. 2013. 'Livestock production and food security in a context of climate change and environmental and health challenges'. *Trade and Environment Review* 2013. UNCTAD.
- Mail Online. 2010. 'The disturbing conveyor belt of death where male chicks are picked off and killed so you can have fresh eggs'. 4 November 2010. www.dailymail.co.uk.
- Chong, J-R. 2003. 'Wood-chipped chickens fuel outrage'. *Los Angeles Times*. 22 November 2003.
- World Instant Noodles Association. 2014. 'Expanding Markets'. instantnoodles.org.
- Jakarta Post*. 2013. 'Indonesia caught in wheat trap'. 11 July 2013.
- Coca-Cola. 2014. 'History of Coca-Cola: 1941-1959'. www.coca-cola.co.uk.
- Inglis, D. and D. Gimlin (editors). 2009. *The Globalization of Food*. Berg.
- Heinrich Böll Foundation. 2014. *Meat Atlas*.
- ETC. 2011. 'Who will control the Green Economy?' *ETC Communiqué* No. 107.
- Rundgren, G. 2014. *Global Eating Disorder*. Regeneration.
- Regmi, A. and M. Gehlhar (editors). 2005. *New Directions in Global Food Markets*. USDA Agriculture Information Bulletin Number 794.
- Tesco. 2014. 'Our Brands'. realfood.tesco.com.
- Government of Canada. 2010. 'Consumer Trend Report – Convenience'. *Market Analysis Report*. June 2010.
- IMAP. 2010. Food and Beverage Industry Global Report 2010.
- Lawrence, F., P. Allen and P. Scruton. 2013. 'The complex food supply chain that led to the horsemeat scandal'. *The Guardian*. 22 October 2013. www.theguardian.com.
- Ellis, E.C. and N. Ramankutty. 2008. 'Putting people in the map: Anthropogenic biomes of the world'. *Frontiers in Ecology and the Environment* 6(8): 439-447.
- IAASTD. 2009. *Agriculture at a Crossroads: Global Report*. Washington, DC: International Assessment of Agricultural Knowledge, Science and Technology for Development.

Driving agriculture into the ground

In the following article, *Clare Westwood* shows how agribusiness hijacked and ruined the food chain with the introduction into developing countries in the 1960s by the US of the model of agriculture known as the Green Revolution.

More food but more hungry

IN 1960, there were some three billion people on the planet. Around that time, the Green Revolution with its package of so-called 'modern technologies' for agriculture was launched with the announced aim of feeding the poor, especially in the developing world. Yet in 2009, after almost a half-century of 'modern' agriculture, the number of hungry shot over the one-billion mark for the first time with the worst food crisis of the decade.¹ This made up one-sixth of the world's population. Although the United Nations Food and Agriculture Organisation (FAO) says 805 million people suffer from hunger today,² other sources cite much higher figures.³ If we include micronutrient deficiency, the number rises to over two billion.⁴

In 2008, at the height of the food crisis, non-governmental organisation GRAIN issued a timely report titled 'Making a Killing from Hunger'⁵ which identified who the real profiteers in the global food system were: 'It seems that nearly every corporate player in the global food chain is making a killing from the food crisis.' According to the report, Canada's Potash Corp, the world's largest producer of potash, a key ingredient in chemical fertilisers, made over \$1 billion in profits, an increase of more than 70% from 2006. Cargill, the world's leading grain producer, recorded a whopping 86% increase in profits from agricultural commodity trading in the first quarter of 2008 compared to the same quarter the year before. Meanwhile, UK supermarket giant Tesco reported an upturn in profits of 12.3% from 2007, a record rise. Monsanto, the largest seed company globally, gained a 44% increase in



Since the introduction of chemical pesticides, farming communities all over the world have suffered from acute and chronic pesticide poisoning.

overall profits in 2007, followed by DuPont, the second-largest, with a 19% increase in profits from seed sales, and Syngenta, the third-largest seed company and one of the top pesticide manufacturers, which saw a jump in profits of 28% in the first quarter of 2008.

In 2008, over 400 experts from around the globe submitted the findings of four years of research on the state of agriculture in the world. Entitled *Agriculture at a Crossroads*, the report of the International Assessment of Agricultural Knowledge, Science and Technology for Development (IAASTD)⁶ declared that 'business as usual is not an option',⁷ referring to the current toxic corporate model of agriculture introduced by the Green Revolution and citing compelling evidence of its ill effects on human health

and the environment.

Agri-business displaces agri-culture

Traditional agriculture consists of small biodiverse farms which provide families and communities with different varieties of their staple food (rice, corn, potatoes etc.), vegetables, legumes, nuts, fish, crabs, birds, poultry, eggs, milk, meat, fruits, medicines, herbs, wild edibles, flowers, fodder, fuel, housing material and even material to make clothing (e.g., cotton). Organic materials were used to fertilise the soil and pests were managed by eco-friendly traditional methods. For generations, this was the face of agri-culture, which was the bedrock of world food production by small farming communities especially in the

Global South.

With the Industrial Revolution and the discovery of oil, the face of development and the world's political economy changed drastically. Neoliberal globalisation widened the divide between the rich and technologically superior countries and the poor ones, against the backdrop of a sharply rising global population.

In the 1950s, the so-called Green Revolution in agriculture was launched, spearheaded primarily by the United States. It focused on the world's leading staple crops: wheat, corn and rice. In Asia, the US established the International Rice Research Institute (IRRI) in the Philippines in 1960, funded by the Ford and Rockefeller Foundations. The publicly declared objectives were to eradicate hunger and poverty in rural Asia, which had a large population of small-scale rice farmers. The hidden motives, however, were to open up markets for the US agrochemical industry and to establish US control over Asia through its food production.⁸

The Green Revolution came with a 'package' of what were called 'high-yielding varieties' (HYVs), mechanised irrigation, mechanisation, and synthetic fertilisers and pesticides manufactured by foreign agro-chemical companies. Monocultures of these HYVs became the face of farming. Governments were urged to encourage their farmers to adopt high-input technologies with free or subsidised start-up supplies of HYVs and synthetic chemicals. This was the birth of industrial agriculture or rather 'agri-business', since the *culture* of small-scale farming was no longer the order of the day.

The HYVs were heavily dependent on chemical fertilisers and pesticides and irrigation to produce the desired yields. Funds became avail-



The International Rice Research Institute (IRRI) was established in the Philippines in 1960 as part of the Green Revolution spearheaded by the US.

able to developing countries to build irrigation facilities and loans were offered to farmers who grew the recommended HYVs. Such subsidies continued for decades in many countries in Asia and still exist in some to this day. By the 1990s, an estimated 40% of farmers in the Global South, led by Asia, were using Green Revolution seeds.⁹

A bitter harvest

The Green Revolution dealt the single most destructive blow to *agriculture* and is responsible for the widespread destruction of the traditional farming culture, community wisdom and richness of biodiversity of small rice farms which had sustained the people for centuries before the Green Revolution. It is aptly described as the 'colonisation of indigenous agriculture'.¹⁰

Biodiversity gave way to monocropping. Thousands of traditional local crop varieties have been lost in the last five decades of the Green Revolution, sometimes up to 95% as in Andhra Pradesh, India,¹¹ replaced by a small number of HYVs. From over 100,000 traditional rice varieties prior to the Green Revolution, 30 years later, only five HYVs

accounted for 90% of rice fields in Malaysia and Pakistan, nearly 50% of the rice acreage in Thailand and Myanmar, and about 25% of rice farms in China and Indonesia.¹² One IRRI variety accounts for 84% of Cambodia's dry season crop.¹³ From 1970 to the 1990s, the land area in Asia under HYVs rose from 30% to 70%.¹⁴

In effect, the Green Revolution reduced total farm productivity and biodiversity in the field and diminished nutrition on the table, leading to an increase in micronutrient deficiency which affects some two billion people worldwide.¹⁵ GRAIN described this as 'a trade-off between quantity and quality in peoples' diets, especially amongst the poor'.¹⁶

While HYVs initially led to increased yields, the persistent use of chemical pesticides and fertilisers gradually caused land/soil degradation, which led to yields levelling off and then falling.¹⁷ Annual rice growth rates in Asia dropped from an average of 3.4% in 1977 to 1.5% in 1997,¹⁸ trailing off to an average of 0.8% by 2004.¹⁹

The constant use of chemical pesticides increased pest resistance and the HYVs became susceptible to more pest outbreaks. In 1975, Indonesian

rice farmers lost half a million acres of rice to the brown plant hopper, while the Philippines lost almost its whole rice harvest in 1973-74 to tungro, a virus carried by the rice hopper.²⁰ Most HYVs in India have been reported to be vulnerable to major pest attacks resulting in crop losses of 30-100%, requiring new varieties to be introduced every three years.²¹ In 2007, IRRI's rice varieties in Punjab, India, were found to be susceptible to about 40 insect pests and 12 diseases.²²

The Green Revolution was both capital- and fossil-fuel-intensive. IRRI's HYVs required vast amounts of chemical pesticides and fertilisers, pushing farm costs of production up and reducing farmers' net incomes to the point of debt, bankruptcy and even suicide in some places like India.²³ Fertiliser use in Asia increased almost threefold from 52 kg/ha in 1979 to 138 kg/ha in 1999.²⁴

Since the introduction of chemical pesticides, farming communities all over the world have suffered from acute and chronic pesticide poisoning. In 2004, the World Health Organisation (WHO) estimated that one to five million people a year suffered from acute pesticide poisoning, resulting in 20,000 fatalities among agricultural workers.²⁵ The World Bank cited 355,000 deaths annually due to unintentional poisoning, with about half occurring in agriculture,²⁶ with 41 million people suffering from health effects.²⁷ Hoffman et al., however, put the number of cases of pesticide poisoning at around 25 million a year.²⁸

IRRI itself used toxic pesticides such as endrin and paraquat (made by Syngenta), endosulfan (Bayer), glyphosate (Monsanto), benomyl (DuPont) and chlorpyrifos (Dow Chemical) in its experimental fields in Laguna, Philippines.²⁹ A study in 2000 found that about 70% of former IRRI workers exposed to these pesticides were suffering from cancer, diabetes, lymphoma, Parkinson's disease or thyroid, liver and kidney diseases;³⁰ many of them have since died.³¹

In 2008, FAO itself admitted that the Green Revolution 'has not necessarily translated into benefits for the lower strata of the rural poor in terms

of greater food security or greater economic opportunity and well-being'.³² IAASTD researchers reported in the same year that 1.9 billion hectares (involving 2.6 billion people) had been affected by land degradation, the abuse of fertilisers had led to the formation of large dead zones, the abuse of (chemical) pesticides had led to groundwater pollution and loss of biodiversity, and 70% of the world's freshwater was withdrawn globally for irrigation, which in turn caused salinisation in some areas.³³ Their main conclusions were that the emphasis on increasing yields and productivity had had negative consequences on environmental sustainability, the paradigm of industrial energy-intensive and pesticide-dependent agriculture was an outdated concept, and small-scale farmers and agroecological methods provided the way forward.³⁴

The industrial food system provides only 30% of all food consumed but uses 70-80% of the world's arable land.

A consolidated report by ETC Group in 2014 declared that the industrial food system provides only 30% of all food consumed but uses 70-80% of the world's arable land to grow 30-40% of crop-derived food; accounts for more than 80% of fossil fuel and 70% of water used in agriculture; is responsible for 44-57% of greenhouse gases emitted annually; deforests 13 million hectares; destroys 75 billion tonnes of topsoil every year; and dominates the \$7 trillion commercial grocery market, while leaving almost 3.4 billion either undernourished or overweight.³⁵ In sharp contrast, the peasant food web supplies 70% of the world's food with only 30% of its agricultural resources, and using only 20% of the fossil fuel and 30% of the water in agriculture.³⁶

Conclusion

The 2008-09 food crisis was a structural collapse that had been waiting to happen. It showed the world just how perverse and fundamentally flawed the industrialised global food production and distribution system truly was and pinpointed the root cause: the corporatisation of the food chain. In 2013, Olivier De Schutter, the then UN Special Rapporteur on the right to food, declared that the new global target set at the 1996 World Food Summit to halve the absolute number of hungry people by 2015 (rather than the percentage) was 'today out of reach by far'.³⁷ The industrialised global food and agriculture system set in place by the first Green Revolution, which was supposed to feed the world, has in effect undermined the very basis for realising this aim. In spite of this, corporations together with international institutions like IRRI are pushing ahead with the 'Second Green Revolution', with genetically engineered seeds taking centrestage in what is simply a 'more of the same' formula as the first fiasco (see following article). Thus, the hijack and ruin of our food chain continue.... ♦

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Endnotes

- 1 Food and Agriculture Organisation (FAO) of the United Nations. 2009. '1.02 billion people hungry'. <http://www.fao.org/news/story/en/item/20568/icode/>
- 2 Food and Agriculture Organisation (FAO) of the United Nations. 2015. *The State of Food Insecurity in the World 2014*. FAO. Rome. <http://www.fao.org/publications/sofi/2014/en/>
- 3 Lappe, F.M. et al. 2013. 'How We Count Hunger Matters'. *Ethics & International Affairs*. Doi 10.1017/S0892679412000191
- 4 Food and Agriculture Organisation (FAO) of the United Nations. Undated. 'Preventing micronutrient malnutrition: a guide to food-based approaches'. <http://www.fao.org/docrep/x0245e/x0245e01.htm>

- 5 GRAIN. 2008. 'Making a Killing from Hunger'. <http://www.grain.org/article/entries/178-making-a-killing-from-hunger>
- 6 The IAASTD was a study initiated by the World Bank and launched as an intergovernmental process under the co-sponsorship of FAO, GEF, UNDP, UNEP, UNESCO, the World Bank and WHO. More than 400 experts from all continents and across a broad range of disciplines worked together for four years with the aim of answering the following question: 'How can we reduce hunger and poverty, improve rural livelihoods and facilitate equitable, environmentally, socially and economically sustainable development through the generation of, access to, and use of agricultural knowledge, science and technology?'
- 7 International Assessment of Agricultural Knowledge, Science and Technology for Development (IAASTD). 2008. *Agriculture at a Crossroads. Synthesis Report*. http://apps.unep.org/publications/pmtdocuments/-Agriculture%20at%20a%20crossroads%20-%20Synthesis%20report-2009Agriculture_at_Crossroads_Synthesis_Report.pdf
- 8 Pesticide Action Network Asia and the Pacific (PANAP). 2007. *The Great Rice Robbery – A Handbook on the Impact of IRRI in Asia*. PANAP. Penang, Malaysia.
- 9 Kerssen, T. 2009. 'Alliance for the Green Revolution in Africa (AGRA)'. Fact Sheet. Food First, Institute for Food and Development Policy.
- 10 Paul, H. and R. Steinbrecher. 2003. *Hungry Corporations – Transnational Biotech Companies Colonise the Food Chain*. Zed Books. London.
- 11 Pesticide Action Network Asia and the Pacific (PANAP). 2011. 'Indictment of the Permanent People's Tribunal on Agrochemical TNCs'.
- 12 Pesticide Action Network Asia and the Pacific (PANAP). 2007. *The Great Rice Robbery – A Handbook on the Impact of IRRI in Asia*. PANAP. Penang, Malaysia.
- 13 Ibid.
- 14 Ibid.
- 15 GRAIN. 2000. 'Engineering Solutions to Malnutrition'. *Seedling*. <http://www.grain.org/fr/article/entries/281-engineering-solutions-to-malnutrition>
- 16 Ibid.
- 17 Paul, H. and R. Steinbrecher. 2003. *Hungry Corporations – Transnational Biotech Companies Colonise the Food Chain*. Zed Books. London.
- 18 International Fund for Agricultural Development. 2001. 'Declining Agricultural Productivity: The Role of Biotechnology, Organic and Regenerative Agriculture'. In *Regional Assessment of Rural Poverty in Asia and the Pacific* (Chapter V). Retrieved from http://www.ifad.org/poverty/region/pi/PI_part2.pdf
- 19 FAO Regional Office for Asia and the Pacific. 2005. 'Selected indicators in food and agriculture development in Asia Pacific region 1994-2004'. http://s3.amazonaws.com/zanran_storage/www.fao.org/apcas.org/ContentPages/16800657.pdf#page=52
- 20 Addison, K. 1983. 'Nutrient starved soils lead to nutrient starved people'. *Asian Business*. http://journeytoforever.org/keith_phsoil.html
- 21 Shiva, V. 2001. *The Violence of the Green Revolution*. Zed Books. Cited in Pesticide Action Network Asia and the Pacific (PANAP). 2007. *The Great Rice Robbery – A Handbook on the Impact of IRRI in Asia*. PANAP. Penang, Malaysia.
- 22 Acharya, K. 2007. 'Impact of IRRI on India's Rice Agriculture'. In Pesticide Action Network Asia and the Pacific (PANAP). 2007. *The Great Rice Robbery – A Handbook on the Impact of IRRI in Asia*. PANAP. Penang, Malaysia.
- 23 BBC News. 2011. 'Report Sought on India Farm Suicides'. 21 December 2011. Retrieved from <http://www.bbc.co.uk/news/world-asia-india-16281063>
- 24 Fertilizer Advisory, Development and Information Network for Asia and the Pacific. 2000. Fertilizer Consumption Per Arable and Permanently Cropped Land, kg/ha. Retrieved from http://www.fadinap.org/statistics/fertilizer_use_per_ha.htm
- 25 United Nations Environment Programme (UNEP). 2004. 'Childhood Pesticide Poisoning: Information for Advocacy and Action'. <http://www.who.int/ceh/publications/pestpoisoning.pdf>
- 26 World Bank. 2008. *Agriculture for Development*. Retrieved from http://siteresources.worldbank.org/INTWDR2008/Resources/WDR_00_book.pdf
- 27 PAN International. 2007. 'A Position of Synthetic Pesticide Elimination'. PAN International Position Paper–Working Group 1.
- 28 Hoffman, R.S., N.A. Lewin, L.R. Goldfrank, M.A. Howland and N.E. Flomenbaum. 2007. *Goldfrank's Manual of Toxicologic Emergencies*. McGraw-Hill Professional.
- 29 Quijano, R. and S. Adapon. 2007. 'Pesticides and the Plight of Former IRRI Workers'. In Pesticide Action Network Asia and the Pacific (PANAP). 2007. *The Great Rice Robbery – A Handbook on the Impact of IRRI in Asia*. PANAP. Penang, Malaysia.
- 30 Ibid.
- 31 Pesticide Action Network Asia and the Pacific (PANAP). 2009. 'More Angry at IRRI'. <http://archive.panap.net/en/r/post/rice/208>
- 32 FAO. Undated. 'Women and the Green Revolution'. <http://www.fao.org/docrep/x0171e/x0171e04.htm>
- 33 International Assessment of Agricultural Knowledge, Science and Technology for Development (IAASTD). 2008. *Agriculture at a Crossroads. Synthesis Report*. http://apps.unep.org/publications/pmtdocuments/-Agriculture%20at%20a%20crossroads%20-%20Synthesis%20report-2009Agriculture_at_Crossroads_Synthesis_Report.pdf
- 34 Ibid.
- 35 ETC Group. 2014. 'With Climate Chaos, Who Will Feed Us? The Industrial Food Chain or The Peasant Food Web?' http://www.etcgroup.org/sites/www.etcgroup.org/files/web_who_will_feed_us_with_notes_0.pdf
- 36 Ibid.
- 37 De Schutter, O. 2013. 'Advancing women's rights in post-2015 development agenda and goals on food and nutrition security'. Expert paper prepared for Expert Group Meeting on 'Structural and policy constraints in achieving the MDGs for women and girls', Mexico City, 21-24 October 2013.

Agribusiness rules the food chain

The 'Second Green Revolution', which has resulted in the introduction of genetically engineered crops in the 1990s, has enabled agribusiness to further consolidate its grip on global agriculture. *Clare Westwood* elucidates.

The Second Green Revolution or Gene Revolution

More of the same formula

THE first Green Revolution was the main vehicle through which agri-corporations took control of the world's food and agriculture system. As it became increasingly apparent that the Green Revolution had failed to live up to its promises to feed the hungry, and in a bid to gain even greater control over the global agricultural market, agri-transnational corporations (TNCs) ventured into biotechnology or 'Second Green Revolution' or the 'Gene Revolution', with 'more of the same' formula as the first Green Revolution flying under the same banner of feeding the world. Already having a stronghold in the area of chemical inputs, they looked to expand and consolidate their control over seeds.

Genetically engineered (GE) crops first entered the agriculture scene in the 1990s, starting in the US. Today, around 16 million farmers across the world grow GE crops over some 160 million hectares in vast monocultures, with the highest acreage in the US, Argentina, Brazil, Canada and India.¹ The main commercial GE crops are soybean (more than 50%), cotton, maize and rapeseed.² Herbicide-resistant (HR) GE crops make up around 85% of the global acreage while insect-resistant GE crops comprise around 41%; 26% have both traits.³ Most of the HR GE crops are Monsanto's Roundup Ready (RR) varieties resistant to the herbicide glyphosate (sold by Monsanto under the brandname Roundup), while most of the insect-resistant crops are Bt varieties made resistant to selected insect pests using a gene from the bacterium *Bacillus thuringiensis*.

In the US alone, the adoption of Monsanto's RR crops increased the



Genetically engineered maize grown inside a research facility in the US. 'Industry claims that GE crops are needed to feed the world. But are they safe to eat in the first place?'

use of glyphosate on farms by more than 15-fold from 1994 to 2005.⁴ Herbicide use on GE corn, soybean and cotton increased by about 173.7 million kg in the first 13 years of their commercial release (1996-2008).⁵ RR soybean accounted for 92% of this increase. By 2012, the reported acreage infested with glyphosate-resistant weeds in the US stood at 61.2 million acres, almost double from the 32.6 million acres in 2010.⁶ These 'superweeds' are seen as a symptom of a broken industrial agricultural system.⁷

Agri-corporations have developed and are developing crops with more than one trait, called 'stacked' or 'pyramided' crops. For instance, after the first generation of RR crops, the second generation consists of crops genetically engineered to be resistant to both glyphosate and other herbicides such as 2,4-D, dicamba, glufosinate, imidazolinone, isoxaflutole and mesotrione.⁸ This has been described as the 'GE treadmill', similar to the 'pesticide treadmill' that agribusiness introduced with the first Green Revolution and which will only

reap even more resistant weeds and more harm from increased herbicide spraying. The active ingredient in 2,4-D, for instance, is linked to embryo maldevelopment,⁹ birth defects¹⁰ and endocrine disruption,¹¹ while dicamba has been linked to the increased incidence of cancer among farmers and birth defects in their male offspring.¹² Non-target terrestrial plant injury has been recorded at 75 to 400 times higher for dicamba and 2,4-D, respectively, than for glyphosate.¹³

A second bitter harvest

Industry claims that GE crops are needed to feed the world. But are they safe to eat in the first place? In 2009, the American Academy of Environmental Medicine, a US-based international association of physicians, called for an immediate moratorium on GE food, saying, 'Genetically modified foods pose a serious health risk in the areas of toxicology, allergy and immune function, reproductive health, and metabolic, physiologic and genetic health.'¹⁴

In October 2013, a statement released by the European Network of

Scientists for Social and Environmental Responsibility (ENSSER)¹⁵ unequivocally agreed that there was *no scientific consensus* on the safety of GE foods and crops, calling claims that these were safe for humans, animals and the environment ‘misleading’. In fact, it stated that many cited studies showed evidence of toxic effects. The statement has since been signed by more than 300 scientists and published in the journal *Environmental Sciences Europe*.¹⁶

Bt cotton is grown extensively in India and China. Monsanto controls over 95% of the Indian cotton seed market. Bt cotton makes up 90% of cotton fields in some areas, but pests not previously known for cotton (e.g., mealy bugs) have spread, causing farmers significant economic losses.¹⁷ After 10 years of Bt cotton cultivation in the country, the Indian Parliamentary Standing Committee on Agriculture released a report in August 2012 stating that ‘there have been no significant socio-economic benefits to the farmers because of the introduction of Bt cotton. On the contrary, being a capital-intensive agricultural practice, investments of the farmers have increased manifold, thus exposing them to far greater risks due to massive indebtedness, which a vast majority of them can ill afford ... The experience of the last decade has conclusively shown that while [GE agriculture] has extensively benefited the industry, as far as the lot of poor farmers is concerned, even the trickle down is not visible.’¹⁸ In China, seven years after commercialisation of (the more expensive) Bt cotton seeds, farmers’ expenditure on pesticides was more or less the same as for non-GE growers mainly due to the emergence of secondary pests.¹⁹

GE crops are also a threat to non-GE crop varieties. There have been many known cases in different countries where transgenes from GE crops have crossed with local crop varieties and wild relatives and spread beyond their areas of cultivation.²⁰ One example is the GE rice called LibertyLink rice which was field-tested by Bayer in the US. In 2006-07, it was found to have contaminated rice and rice

products in 32 countries.²¹ Greenpeace estimated the economic cost of the contamination to the US rice industry to be in the region of \$1.2 billion from food product recalls as well as actual and expected export losses.²²

In 2014, a scientific analysis called ‘GMO [Genetically Modified Organism] Myths and Truths’ debunked 34 ‘myths’ relating to GE, finding that claims for the safety and efficacy of GE crops were often based on dubious or non-existent evidence.²³

Agribusiness TNCs: Growing cancers in society

Rooted in destruction

The Green Revolution turned agri-culture into agri-business, creating a whole generation of farmers trapped in a cycle of dependency on corporate inputs and technologies. Corporate control over agriculture is an indisputable fact, evidenced by the non-governmental ETC Group’s report in 2013 showing that four companies controlled 58.2% of the seed market; 61.9% of agrochemicals; 24.3% of fertilisers; 53.4% of animal pharmaceuticals; and for livestock genetics, 97% of poultry and 67% of swine and cattle research.²⁴ Ten companies control 52% of the global animal feed market.²⁵

In 2011, the size of the global pesticide market was estimated at \$44 billion, with the top 11 companies controlling an almost 98% market share.²⁶ Six TNCs – Syngenta, Bayer CropScience, BASF, Dow AgroSciences, Monsanto and DuPont – control 76% of global agrochemical sales, 60% of the commercial seed market and 75% of all private sector plant breeding research.²⁷ How did these companies come to acquire such power?

Consider the case of the pesticide industry, a business which dates back to World War II. Lethal gases were developed and manufactured by the German chemical company IG Farbenindustrie AG as a chemical weapon and used on concentration camp prisoners in Germany during the war. IG Farben later split into six com-

panies, including BASF, Bayer and Hoechst. Bayer marketed/markets organophosphates²⁸ which are descendants of nerve gases like sarin (created by IG Farben) and are some of the most toxic chemicals used in agriculture. Bayer also manufactured the infamous endosulfan, which has been linked to birth defects, cancers and mental retardation among other diseases,²⁹ and neonicotinoids, which have been linked to the death of bees in Europe.³⁰

Monsanto and Dow, among others, manufactured and supplied to the US government millions of litres of ‘Agent Orange’ for use in the Vietnam War with devastating effects on the Vietnamese people and the environment. Agent Orange was a unique combination of the herbicides 2,4-D and 2,4,5-T, contaminated by dioxin.³¹ Monsanto’s Agent Orange had a dioxin concentration 1,000 times higher than other formulations.³² Monsanto is now promoting its second generation of herbicide-resistant GE crops resistant to 2,4-D to replace its first generation of Roundup Ready crops. Meanwhile, Syngenta’s top-selling pesticide, atrazine, is a known potent endocrine disruptor^{33, 34} which can lead to birth defects,³⁵ infertility³⁶ and cancer.^{37, 38} The US Department of Agriculture (USDA) reported finding atrazine in 94% of the drinking water tested in 2008.³⁹

Corporate attempts to control seeds date back to the 1920s when the US seed industry initiated a programme on hybrid maize. Hybrid seeds breed true only in the first generation, with low and unstable yields in subsequent generations, forcing farmers to buy new seeds every planting season. The extension of patents to cover living organisms from 1980, as a result of historic judicial decisions in the US, has enabled the biotech industry to construct systems of exclusive monopoly control over genetic resources via intellectual property rights (IPRs).⁴⁰

Monsanto’s GE seeds/traits comprise around 87% of the world’s total acreage under GE crops.⁴¹ TNCs have patented more than 900 rice genes.⁴² In the US alone, by 2012, Monsanto

had sued farmers and farm businesses for \$23.5 million for alleged patent infringements.⁴³

The statistics above provide a clear and disturbing snapshot of how the world's food and agricultural system is dominated by a handful of powerful TNCs which have driven the industrial model of food production since the first Green Revolution.

Collusion and complicity

The neoliberal global economy has created an enabling environment for agri-TNCs to thrive. International financial institutions such as the World Bank, International Monetary Fund (IMF) and World Trade Organisation (WTO) have imposed their trade liberalisation policies on developing countries. International laws and conventions like the WTO's Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) have served to create a global IPR regime of bio-colonialism that benefits TNCs at the expense of farmers.

Other international and regional bodies as well as governments similarly collude with industry to perpetuate the corporate stranglehold over agricultural resources and production.⁴⁴ Even public research has been co-opted to serve private interests by being funded by TNCs. Bilateral and multilateral trade agreements on food and agriculture push IPR protection even beyond TRIPS requirements, increasing corporate autonomy and protection.

Take Africa as a case in point. In 1999, the Rockefeller Foundation launched the New Green Revolution for Africa. In 2006, it was joined by the Bill and Melinda Gates Foundation to form the Alliance for a Green Revolution in Africa (AGRA). Forty African governments committed themselves to lifting cross-border taxes and tariffs on chemical fertilisers. A 2014 report by the African Centre for Biosafety (ACB)⁴⁵ analyses the current aggressive fertiliser push in Africa. According to the report, the global synthetic NPK (nitrogen-phosphorous-potassium) market was worth over \$200 billion in 2012, and

Africa is the latest target for further expansion. A key driver in the fertiliser push has been the 2006 Abuja Declaration on Fertiliser, which called for average fertiliser use in Africa to increase from 8kg/ha to 50kg/ha by 2015. Many players including those from the fertiliser industry, AGRA and the G8 New Alliance on Food Security and Nutrition have been prime movers in this process.⁴⁶

Another compelling example of the pro-corporate drive is provided by a recent analysis of the impact of international investment treaties on local land governance, which found that over 3,200 such treaties have been inked in the last two decades, mostly in the form of bilateral investment treaties (BITs).⁴⁷ The analysis describes these treaties as the backbone of a corporate rights regime that protects the \$20 trillion of foreign direct investment (FDI) globally. FDI, usually packaged as large-scale 'investments for rural development', often captures land, water and associated resources of the host country.

BITs typically have an 'investor-state dispute settlement' (ISDS) clause which gives large-scale investors far-reaching protection, curtailing or threatening to curtail governments' ability to put in place progressive agrarian and agricultural policies including addressing violations like land and water grabbing by the investors. ISDS allows foreign investors to sue host governments in private international arbitration tribunals outside the regular national court system; such actions have increased by more than 400% in recent years.⁴⁸ Corporate use of international investment law has seriously undermined the people's struggle for land and food sovereignty, including efforts to reverse unjust land and water deals.

Apart from enjoying extensive protection in host countries, agrochemical TNCs also wield much influence in their home countries.⁴⁹ In September 2014 and January 2015, the USDA approved Dow's and Monsanto's GE 2,4-D-resistant corn and soybeans, respectively. This was in spite of thousands of comments in opposition from farmers and

other concerned citizens.⁵⁰ The Center for Food Safety has warned that the deregulation 'violate[s] all applicable statutes, is arbitrary and capricious, is not supported by sound science, and otherwise is not in accordance with the law ... The proposed approval will likely cause significant environmental, agronomic, and socioeconomic harm'.⁵¹ Yet the authorities blithely ignore such protests along with the scientific evidence presented.

There is often an interchange of personnel between regulatory bodies and agri-TNCs. This 'revolving door' practice has created a symbiotic relationship between the regulators and the regulated, minimising the likelihood of ensuring the latter's compliance with regulations and facilitating approvals for them.⁵²

Human rights violations

In the process of gaining control over the global food and agricultural system, TNCs have violated and continue to violate human rights with impunity. In 2011, the Permanent People's Tribunal against Agrochemical TNCs⁵³ found Syngenta, Bayer CropScience, BASF, Dow AgroSciences, Monsanto and DuPont 'prima facie responsible for gross, widespread and systematic violations of the right to health and life, economic, social and cultural rights, as well as of civil and political rights, and women and children's rights'.⁵⁴ The Tribunal jury further found that the six companies' 'systematic acts of corporate governance have caused avoidable catastrophic risks, increasing the prospects of extinction of biodiversity, including species whose continued existence is necessary for reproduction of human life'.⁵⁵

Not only have agrochemical TNCs marketed their highly hazardous brand of agriculture with impunity, they have acquired tremendous power and wealth along the way, taking advantage of legal loopholes and safe havens to evade accountability. Although the obligations of states are addressed in most current international human rights laws, international legal redress can only come into play when there are failures by states to

recognise the rights of their citizens under specific human rights conventions. This does not cover violations by corporations or other legal persons.

Currently, there is no platform to administer international human rights law with respect to violations committed by TNCs for actions brought directly by individual victims or groups of victims of such violations. The International Court of Justice has jurisdiction only over disputes between member states while the International Criminal Court has jurisdiction only over natural persons, not legal persons. Underlying this situation is the lack of political will among states and international bodies to hold TNCs accountable for their crimes and to check their unbridled greed. They can thus be said to be complicit in human rights violations perpetrated by these corporations.

The real disaster

Agribusiness has proven to be not just untenable but dangerous as well. Not only has it failed to deliver on its many lofty promises, it has also ruined the lives and livelihoods of millions of rural communities, poisoned people and the environment, and exacerbated hunger and poverty, all with impunity. The evidence is overwhelming. As ETC Group aptly asserts: 'The real disaster is the corporate-controlled agro-industrial food system.'⁵⁶ That truly says it all. ♦

Endnotes

- James, C. 2011. 'Global status of commercialized biotech/GM crops: 2011'. ISAAA Brief No. 43. ISAAA, Ithaca, NY.
- Jacobsen, S-E., M. Sorensen, S.M. Pedersen and J. Weiner. 2013. 'Feeding the world: genetically modified crops versus agricultural biodiversity'. *Agron. Sustain. Dev.* DOI 10.1007/s13593-013-0138-9. <http://link.springer.com/article/10.1007/s13593-013-0138-9>.
- International Service for Acquisition of Agri-biotech Applications (ISAAA). 2011. 'Global Status of Commercialized Biotech/GM Crops: 2011. Executive Summary'. ISAAA Brief 43-2011. See section entitled 'Adoption by trait – herbicide tolerance remains the dominant trait.' Total herbicide-resistant (HR) and insect-resistant (IR) acreage = HR + stacked and IR + stacked, respectively. <http://www.isaaa.org/resources/publications/briefs/43/executivesummary/default.asp>
- Friends of the Earth International. 2008. 'Who benefits from GM crops? The rise in pesticide use. Executive Summary'.
- Benbrook, C. 2009. 'Impacts of Genetically Engineered Crops on Pesticide Use: The First Thirteen Years'. The Organic Center. organic-center.org/reportfiles/GE13YearsReportExecSummary.pdf
- Mortensen, D.A., J.F. Egan, B.D. Maxwell, M.R. Ryan and R.G. Smith. 2012. 'Navigating a Critical Juncture for Sustainable Weed Management'. *Bioscience* 62(1):75-84. <http://www.jstor.org/stable/10.1525/bio.2012.62.1.12>.
- Gurian-Sherman, D. 2013. 'Tackling the Epidemic of Herbicide-Resistant Weeds with Sustainable Solutions'. <http://blog.ucsusa.org/tackling-the-epidemic-of-herbicide-resistant-weeds-with-sustainable-solutions-340>
- Testbiotech. 2014. 'The risks of the herbicide 2,4-D'. www.testbiotech.org/sites/.../Risks%20of%20herbicide%202,4-D_0.pdf.
- Greenlee, A.R., T.M. Ellis and R.L. Berg. 2004. 'Low-dose agrochemicals and lawn-care pesticides induce developmental toxicity in murine preimplantation embryos'. *Environmental Health Perspectives* 112(6):703-709.
- Schreinemachers, D.M. 2003. 'Birth malformations and other adverse perinatal outcomes in four US wheat-producing states'. *Environmental Health Perspectives* 111(9):1259-1264.
- LaChapelle, A.M., M.L. Ruygrok, M. Toomer, J.J. Oost, M.L. Monnie, J.A. Swenson, A.A. Compton and B. Stebbins-Boaz. 2007. 'The hormonal herbicide, 2, 4-dichlorophenoxyacetic acid, inhibits *Xenopus* oocyte maturation by targeting translational and post-translational mechanisms'. *Reproductive Toxicology* 23(1):20-31.
- Center for Food Safety. 2015. 'USDA Approves New Pesticide Promoting Genetically Engineered (GE) Crops'. <http://www.centerforfoodsafety.org/press-releases/3700/usda-approves-new-pesticide-promoting-genetically-engineered-ge-crops#>
- Mortensen, D.A., J.F. Egan, B.D. Maxwell, M.R. Ryan and R.G. Smith. 2012. 'Navigating a Critical Juncture for Sustainable Weed Management'. *Bioscience* 62(1):75-84. <http://www.jstor.org/stable/10.1525/bio.2012.62.1.12>.
- Leahy, S. 2009. 'Monsanto, Dow Stacking the Deck, Critics Say'. <http://www.ipsnews.net/2009/07/environment-monsanto-dow-stacking-the-deck-critics-say/>
- <http://www.ensser.org/increasing-public-information/no-scientific-consensus-on-gmo-safety/>
- <http://www.enveurope.com/content/27/1/4/abstract>
- GM Watch. 2010. 'Bt cotton boosting pesticide use'. <http://www.gmwatch.org/index.php/news/archive/2010/11944-bt-cotton-boosting-pesticide-use>
- Indian Parliamentary Standing Committee. 2012. 'Cultivation of Genetically Modified Food Crops – Prospects and Effects'. 164.100.47.134/lsscommittee/Agriculture/GM_Report.pdf
- Wang, S., D.R. Just and P. Pinstrup-Andersen. 2006. 'Tarnishing Silver Bullets: Bt Technology Adoption, Bounded Rationality and the Outbreak of Secondary Pest Infestations in China'. Paper prepared for presentation at the American Agricultural Economics Association Annual Meeting, Long Beach, CA.
- Bauer-Panskus, A., B. Breckling, S. Hamberger and C. Then. 2013. 'Cultivation-independent establishment of genetically engineered plants in natural populations: current evidence and implications for EU regulation'. *Environmental Sciences Europe* 25(1):34.
- TWN Biosafety Info. 2007. 'Unapproved GE Rice from US Found in China'. 23 November. <http://www.biosafety-info.net/bioart.php?bid=484>
- Reuters. 2007. 'US GMO rice caused \$1.2 billion in damages'. 5 November. <http://www.reuters.com/article/asiaTopNews/idUSIndia-30351820071106>
- Fagan, J., M. Antoniou and C. Robinson. 2014. *GMO Myths and Truths*. 2nd edition. Earth Open Source.
- ETC Group. 2013. 'Putting the Cartel Before the Horse ... and Farm, Seeds, Soil, Peasants, etc. Who Will Control

- Agricultural Inputs, 2013?' http://www.etcgroup.org/putting_the_cartel_before_the_horse_2013
- 25 ETC Group. 2011. 'Who Will Control the Green Economy?' http://www.etcgroup.org/sites/www.etcgroup.org/files/publicationpdf_file/ETC_wwtge_4web_Dec2011.pdf
 - 26 ETC Group. 2013. 'Putting the Cartel Before the Horse ... and Farm, Seeds, Soil, Peasants, etc. Who Will Control Agricultural Inputs, 2013?' http://www.etcgroup.org/putting_the_cartel_before_the_horse_2013
 - 27 Ibid.
 - 28 For instance, methyl parathion and monocrotophos are classified as extremely and highly hazardous (respectively) by the World Health Organisation (WHO). Source: Kishi, M. 2002. 'Initial Summary of the Main Factors Contributing to Incidents of Acute Pesticide Poisoning'. <http://www.who.int/heli/risks/toxics/bibliographykishi.pdf>
 - 29 Embrandiri, A., R.P. Singh, H.M. Ibrahim and A.B. Khan. 2012. 'An Epidemiological Study on the Health Effects of Endosulfan Spraying on Cashew Plantations in Kasaragod District, Kerala, India'. *Asian Journal of Epidemiology* 5:22-31. <http://scialert.net/fulltext/?doi=aje.2012.22.31&org=11>
 - 30 Schwartz, J. 2014. 'Bees: Study Points to Key Cause of Colony Collapse Disorder'. <http://greenpeaceblogs.org/2014/05/23/bees-study-points-key-cause-colony-collapse-disorder/>
 - 31 Dioxin was a byproduct of the deliberately accelerated production of the herbicide 2,4,5-T, one of the components of Agent Orange. The dioxin in Agent Orange was 2,3,7,8-Tetrachlorodibenzodioxin (TCDD), which is the most toxic of all the dioxins and dioxin-like compounds. The US National Toxicology Program and the International Agency for Research on Cancer list TCDD as a known human carcinogen. Dioxin has been found to be an endocrine disrupter, and it can cause chloracne, certain cancers, and reproductive and developmental effects (at least in animals). Source: http://www.agentorangerecord.com/information/what_is_dioxin/
 - 32 Tran Dinh, T.L. 2004. 'Vietnamese fight back on Agent Orange'. Asia Times (Online). 27 February.
 - 33 Cragin, L.A., J.S. Kesner, A.M. Bachand, D.B. Barr, J.W. Meadows, E.F. Krieg and J.S. Reif. 2011. 'Menstrual cycle characteristics and reproductive hormone levels in women exposed to atrazine in drinking water'. *Environmental Research* 111(8):1293-1301.
 - 34 Hayes, T.B., A. Collins, M. Lee, M. Mendoza, N. Noriega, A.A. Stuart and A. Vonk. 2002. 'Hermaphroditic, demasculinized frogs after exposure to the herbicide atrazine at low ecologically relevant doses'. *Proc Natl Acad Sci.* 99(8): 5476-5480.
 - 35 Villanueva, C.M., G. Durand, M-B. Coutte, C. Chevrier and S. Cordier. 2005. 'Atrazine in municipal drinking water and risk of low birth weight, preterm delivery, and small-for-gestational-age status'. *Occup Environ Med.* 62:400-405.
 - 36 Chevrier, C., G. Limon, C. Monfort, F. Rouget, R. Garlantezec, C. Petit et al. 2011. 'Urinary Biomarkers of Prenatal Atrazine Exposure and Adverse Birth Outcomes in the PELAGIE Birth Cohort'. *Environmental Health Perspectives* 119:1034-1041.
 - 37 Reuben, S.H. 2010. 'Reducing environmental risk: What we can do now'. For the President's Cancer Panel, 2008-2009 Annual Report. US Department of Health and Human Services, National Institutes of Health, National Cancer Institute.
 - 38 For more effects of atrazine, see PANNA. 2011. 'Health Effects of Atrazine'. Fact Sheet. PAN North America.
 - 39 USDA. 2009. 'Pesticide Data Program: Annual Summary, Calendar Year 2008'. Science and Technology Programs, Agricultural Marketing Service.
 - 40 Paul, H. and R. Steinbrecher. 2003. *Hungry Corporations – Transnational Biotech Companies Colonise the Food Chain*. Zed Books. London.
 - 41 ETC Group. 2008. 'Who Owns Nature?' <http://www.etcgroup.org/content/who-owns-nature>
 - 42 Choudry, A. 2007. 'Intellectual Property Rights and Rice'. Rice Sheets. PAN AP. Penang, Malaysia.
 - 43 Center for Food Safety. 2013. 'Seed Giants vs. US Farmers'. http://www.centerforfoodsafety.org/files/seed-giants_final_04424.pdf
 - 44 Paul, H. and R. Steinbrecher. 2003. *Hungry Corporations – Transnational Biotech Companies Colonise the Food Chain*. Zed Books. London.
 - 45 African Centre for Biosafety. 2014. 'The Political Economy of Africa's Burgeoning Chemical Fertiliser Rush'. <http://www.acbio.org.za/images/stories/dmdocuments/Fertilizer-report-20140915.pdf>
 - 46 Ibid.
 - 47 Transnational Institute. 2015. 'Licensed to grab – How international investment rules undermine agrarian justice'. <http://www.tni.org/briefing/licensed-grab>
 - 48 Ibid.
 - 49 Monsanto, DuPont and Dow – USA. Bayer and BASF – Germany. Syngenta – Switzerland.
 - 50 Pesticide Action Network North America (PANNA). 2015. 'USDA Ignores Farmer Opposition, Approves Monsanto's Dicamba-Resistant Seed'. <http://www.panna.org/usda-ignores-farmer-opposition-approves-monsantos-dicamba-resistant-seed>
 - 51 Center for Food Safety. 2015. 'USDA Approves New Pesticide Promoting Genetically Engineered (GE) Crops'. <http://www.centerforfoodsafety.org/press-releases/3700/usda-approves-new-pesticide-promoting-genetically-engineered-ge-crops#>
 - 52 For example, Michael R. Taylor, former Vice-President for Public Policy at Monsanto, was appointed Deputy Commissioner for Foods at the US Food and Drug Administration (FDA) in January 2010. For more information, see http://www.sourcewatch.org/index.php?title=Labeling_Issues,_Revolving_Doors,_rBGH,_Bribery_and_Monsanto
 - 53 The Permanent People's Tribunal (PPT) is an international opinion tribunal founded in 1979 in Italy based on a 'Universal Declaration of the Rights of Peoples'. It looks into complaints of human rights abuses submitted by the communities facing the abuses. It uses the rigorous conventional court format. The PPT issues indictments, names relevant laws and documents findings. While its verdicts are not legally binding, these can set precedent for future legal actions against, in this case, agrochemical companies.
 - 54 Pesticide Action Network International. 2011. 'Verdict – Permanent People's Tribunal Session on Agrochemical Transnational Corporations (Bangalore, 3-6 December 2011)'. <http://www.agricorporateaccountability.net/en/Page/Ppt/167>
 - 55 Ibid.
 - 56 ETC Group. 2008. 'Who Owns Nature?' http://www.etcgroup.org/files/publication/70701/etc_won_report_final_color.pdf

Herbicides and antibiotic resistance

A recent two-year study of the sub-lethal effects of three of the most commonly used herbicides has revealed some disturbing findings with regard to antibiotic resistance. One of the co-authors of the study, *Jack Heinemann*, explains.

A WEED is any plant growing where it is not wanted. Commercial herbicides are sold to kill weeds. That sounds simple, but it isn't.

Herbicides are composed of a variety of different chemicals. The most often named is the so-called 'active ingredient'. This compound is the key to the efficacy of the herbicide. However, it does not act alone. The active ingredient must be able to both be delivered to the target plants and gain access to targets within the plant. This requires surfactants and other adjuvants to make the herbicide practical to use.

Each of the ingredients used in herbicides has the potential to cause harm to organisms that are not the herbicides' intended targets. Full knowledge of these harms informs government regulators who then issue decisions on if, how and for what purpose a herbicide can be used. But have they been operating with complete knowledge?

Probably not. Only this year we released results of a two-year study on the sub-lethal effects of three commercial herbicide formulations on bacteria (Kurenbach et al., 2015). All three formulations caused a previously unsuspected effect on both species of bacteria that were tested. The effect was that the bacteria uniformly responded by demonstrating a change in their ability to survive exposure to other kinds of toxins – those we use in clinical and veterinary medicine and which we call antibiotics.

The three herbicides were Roundup, Kamba and 2,4-D. The active ingredients of these herbicides are glyphosate, dicamba and 2,4-dichlorophenoxyacetic acid, respectively. These three herbicides are among the most used in the world, with



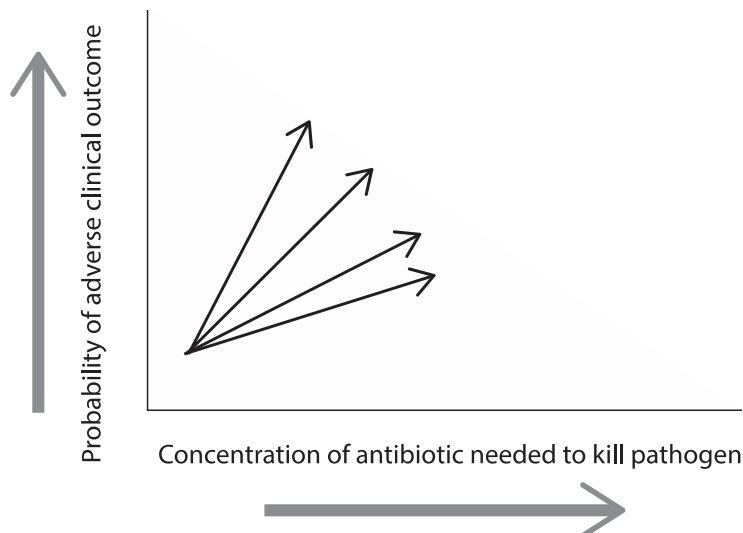
Spraying of herbicide at a farm. A study has found that herbicide exposure can cause an increase in antibiotic resistance among bacteria.

glyphosate-based herbicides clearly No. 1. They are used in agriculture, but also in public spaces, sports fields and in home gardens.

The bacteria we used belong to species that cause disease in people and animals. They were *Salmonella enterica* and *Escherichia coli*. The bacteria responded according to some

species-specific differences to the different herbicides and antibiotics. Frequently, they demonstrated an increase in resistance to the antibiotics we tested. Occasionally there was no response or an increase in sensitivity to the antibiotic. It would be premature to assume that an increase in sensitivity would have a beneficial effect;

Figure 1: Stylised image of the relevance of small and large increments in resistance



we are testing that now.

An increase in resistance is an observation to take seriously because the effectiveness of antibiotics is declining. Even relatively small increments in resistance can undermine treatment (Figure 1). For example, one study found that a two-fold change in resistance of infecting bacteria was enough to cause 21% of patients to get a lower-than-target dose of the recommended antibiotic. And when the resistance reached a four-fold increase, 75% of patients failed to receive the target dose (Haeseke et al., 2013). The effect we measured caused changes between two- and six-fold.

The effect required exposure to a more concentrated source of herbicide than is generally legally allowed on food, e.g., the 'maximum residue limits' set by Codex Alimentarius. However, much less herbicide than is allowed to be applied to plants causes the effect. Therefore, potentially farmers but especially farm animals exposed through spray drift or feed they consume on-farm could have these levels of herbicide. Insects such as pollinators can be exposed to these levels. In cities, children and pets may be exposed as they unwittingly walk in or play on treated lawns and gardens. All of these unintended exposures are in people and animals that routinely receive antibiotics to control disease.

Even when people and animals are not directly exposed to the herbicide, people and animals may be exposed to bacteria after they were directly exposed. For example, in some countries antibiotic use in farm animals is so high that the antibiotics are detected in manure. This manure is also spread on fields as fertiliser, where it may also come into contact with herbicide. This is the mix that results in the resistance response. Other research has shown that insects such as flies that visit the manure can acquire the bacteria, potentially transferring them (Zurek and Ghosh, 2014).

Exposure to herbicides via the mouth, called ingestion exposure, is not limited to eating food. There can



Even relatively small increments in resistance to antibiotics can undermine treatment.

be non-dietary ingestion of herbicide. For example, our hands may be exposed to multiples of the residue found on different products through handling food during harvest or preparation. This may cause a 'from hand to mouth' pathway for exposures to higher levels of herbicide. We are uncertain about how high skin concentrations can be. That is why we imagine that pets would be an important potential vector to study. They conceivably are exposed to application rate concentrations of herbicide when they roam through recently treated lawns or gardens and then may transfer the herbicide to the hands or face of those who stroke the pet.

Our study also found that combinations of different products (e.g., Kamba + aspirin) had an additive effect. It is likely that other chemical exposures can also combine with herbicides to cause the effect. This effectively lowers how much herbicide is needed to cause the effect.

The additive effect of aspirin has some irony. Aspirin is acetylsalicylic acid, or more generally a salicylate. These compounds have long been used in some kinds of agriculture as 'safeners', compounds added to desirable plants to lessen the toxicity of herbicides. Daniel Goldstein¹ of Monsanto referred to glyphosate (although not Roundup) as no more toxic than aspirin.² Others have also made this particular comparison (Duke and Powles, 2008).

Why is this ironic? In effect, the herbicide is also a safener. However, the effect of the herbicide is to reduce

the toxicity of some antibiotics to bacteria. ♦

Prof Jack Heinemann is with the Centre for Integrated Research in Biosafety (INBI) and the School of Biological Sciences at the University of Canterbury in New Zealand.

Endnotes

1. <http://monsantoblog.com/2013/07/03/a-pediatricians-inside-monsanto/>
2. See 'dagtox' comment under this article: <http://www.scientificamerican.com/article/weed-whacking-herbicide-p/>

References

- Duke, S.O. and S.B. Powles. 2008. 'Glyphosate: a once-in-a-century herbicide'. *Pest Manag Sci* 64, 319-325.
- Haeseke, M., L. Stolk, F. Nieman, C. Hoebe, C. Neef, C. Bruggeman and A. Verbon. 2013. 'The ciprofloxacin target AUC : MIC ratio is not reached in hospitalized patients with the recommended dosing regimens'. *Br J Clin Pharm* 75, 180-185.
- Kurenbach, B., D. Marjoshi, C. Amabile-Cuevas, G.C. Ferguson, W. Godsoe, P. Gibson and J.A. Heinemann. 2015. 'Sub-lethal exposure to commercial formulations of the herbicides dicamba, 2,4-D and glyphosate cause changes in antibiotic susceptibility in *Escherichia coli* and *Salmonella enterica* serovar Typhimurium'. *mBio* in press, 9-15. DOI 10.1128/mBio.00009-15
- Zurek, L. and A. Ghosh. 2014. 'Insects represent a link between food animal farms and the urban environment for antibiotic resistance traits'. *Appl Environ Microbiol* 80, 3562-3567.

The dilemma of soy

Since 1996, when Argentina began planting genetically modified soy, its expansion has resulted in the displacement of local farmers and has thus compromised the country's food security. *Fabiana Frayssinet* reports on these and other adverse effects of industrial soy production.



Land that has been deforested in the Argentine province of Cordoba as a result of the expansion of transgenic soy production.

INDUSTRIAL soy production continues to expand in Argentina, pushing small farmers out of the countryside and replacing other crops and cattle.

It presents a challenge in a country where 70% of the food consumed comes from family farms, but which also needs the foreign exchange brought in by what has been dubbed 'green gold'.

In 2013, exports of soybeans, soybean meal and soybean oil brought in \$23.2 billion, representing 26% of the country's total sales abroad, according to the business chamber that represents producers of grains and cereals, the Camara de la Industria Aceitera-Centro de Exportadores de Cereales. That makes transgenic soybeans Argentina's main source of foreign currency. And the soybean production chain accounts for 5.5% of GDP and 10% of tax revenue.

'Above and beyond the questions of taxes or added value, without a doubt soy is the biggest contributor in the chain of oilseed production, in exports and in the surplus of dollars

that it brings the economy,' economist Luciano Cohan told Inter Press Service (IPS).

'Without the dollars brought in by soy, the economy of the country would have to make a tremendous adjustment,' added the author of 'El aporte de la cadena de soja a la economia argentina' ('The soybean chain's contribution to the Argentine economy').

Soy, which covers 31 million hectares, is Argentina's leading crop. In 1990, there were only 4.8 million hectares of soy, according to the Asociacion de la Cadena de la Soja (ACSOJA), the soy industry association.

Cohan said the expansion began in 1996, when genetically modified soy began to be planted, and it picked up speed in 2008, when producers began to grow soy to the detriment of other crops like wheat, after a crisis in rural areas due to a conflict between agribusiness and the centre-left government.

'Due to several reasons, [geneti-

cally modified] soy can be seen as a less risky crop than other activities,' he said. 'For example, it is much cheaper to produce soy than maize, beef or dairy products, and it is a crop that has fewer regulatory risks.'

"Soyisation" in terms of monoculture is not a positive thing,' agronomist and academic Carlos Toledo told IPS.

'But if producers don't see better conditions for planting other crops, and if soy brings in the best tax revenue for the state, we find ourselves in a vicious circle that is very dangerous for the sustainability of our production systems.'

Impact on farming

'The growth in the surface area covered by soy and by transgenic commodities in general has meant the displacement of local farmers and an increase in cattle raised in feedlots,' Carlos Vicente, a member of GRAIN, a Barcelona-based international organisation dedicated to global agricultural issues, told IPS.

As an example of the impact, he said, thousands of small dairy farms had closed down. 'In the [eastern] province of Buenos Aires alone, 300 shut down,' he said. 'This means production is stagnant and concentrated in the hands of large producers, who are now acting as an oligopoly.'

A study by Miguel Teubal, a researcher at Argentina's National Scientific and Technical Research Council (CONICET), reports that between 1997 and 2005, soy production rose by nearly 20 million tons, while the sunflower harvest fell by two million tons and rice fell by 0.5 million.

In the central province of Cordoba alone, the increase in soy production led to a shrinking of the

Fabiana Frayssinet/IPS



In 2013, Argentina's exports of soybeans, soybean meal and soybean oil brought in \$23.2 billion, representing 26% of the country's total sales abroad.

number of head of cattle by 17%. The production of fruit and vegetables around the big cities also went down, 'driving up the prices of widely-consumed basic products like tomatoes and potatoes', the report said.

Soybean production has also led to greater concentration of land ownership, while driving up the value of land, GRAIN said. In 2010, more than 50% of soybean cultivation was controlled by just 3% of producers.

'That led to an unprecedented rural exodus: by 2007, more than 200,000 small farmers and rural workers and their families had left the countryside,' Vicente said.

'Soy is important as a source of income to finance social plans,' he said. 'But the big paradox is that those plans will have to cover the basic needs of those who have been driven out of the countryside by this model of production.'

Toledo, the agronomist, said: 'I have seen the exodus of many farmers from the dairy and beef-producing area, who did not necessarily first shift to "the soy model"'. They moved to cities because their productive activities were not supporting them and they saw no future for their families.'

According to the United Nations Food and Agriculture Organisation (FAO), 14.4% of the territory in Argentina – nearly one hectare per capita – is still available for cultivation.

For that reason, Toledo said, food security and soy production 'run on

different tracks'. The question, he stated, is whether 'small and medium-sized farmers are being provided with better conditions for diversifying their production'.

Food security

To strengthen family farms, in 2008, the government of President Cristina Fernandez created what is now called the Secretariat of Family Agriculture and Rural Development.

And on 20 January, a law was passed on 'historic reparations for family agriculture to build a new rural reality in Argentina', which says family farms are 'of public interest' due to their contribution to food security and sovereignty.

Figures from the government's National Registry of Family Agriculture indicate that the sector represents 20% of agricultural GDP, 20% of the country's farmland, 65% of farmers and 53% of rural employment. It also provides 70% of the food consumed in this country of 42 million people.

But 66% of farming families live in poverty, FAO reported.

The aims of the Secretariat include curbing the rural exodus, creating one million farms for some five million people.

'We need 50 years of investment in the agricultural sector to recover what has been destroyed,' said the head of the Secretariat, Emilio Persico. But Persico added: 'The is-

sue is not soy, it's agribusiness.'

'The most important conflicts we have aren't with soy,' he said. 'In Santiago [del Estero], we have problems with cattle farmers, in Rio Negro with alfalfa producers, in Misiones with pine exporters, and in Mendoza with wine producers.'

Miguel Fernandez, the head of the Foro Nacional de Agricultura Familiar, the family farmers' association, mentioned other causes of the exodus, such as deforestation (partially fuelled by soy cultivation), climate change (floods and harsh droughts have hit poor farmers hard), and large-scale business developments in real estate deals, tourism and agribusiness.

'The possibilities of producing more or of owning our own land are disappearing ... small farmers have been driven away by the rich, as if we were dogs; they have us cornered,' he told IPS.

To turn that process around, Vicente said, efforts are needed to combat other critical problems, such as the monopoly exercised by the multinational agrochemical corporations that produce genetically modified seeds, and the way they are 'displacing and contaminating other crops'.

'These agrochemicals and transgenic seeds destroy the soil,' Fernandez said. 'We are worried that even though we have land, in the future we won't be able to grow anything.' – IPS

Land and seed laws under attack as Africa is groomed for corporate recolonisation

Across Africa, laws are being rewritten to open farming up to an agribusiness invasion – displacing the millions of small cultivators that now feed the continent, and replacing them with a new model of profit-oriented agriculture using patented seeds and varieties. The agencies effecting the transformation are legion, but they are all marching to a single drum.

A BATTLE is raging for control of resources in Africa – land, water, seeds, minerals, ores, forests, oil, renewable energy sources.

Agriculture is one of the most important theatres of this battle. Governments, corporations, foundations and development agencies are pushing hard to commercialise and industrialise African farming.

Many of the key players are well known. They include the World Bank, the African Development Bank, the United Nations Food and Agriculture Organisation (FAO), the G8, the African Union, the Bill Gates-funded Alliance for a Green Revolution in Africa (AGRA), the International Fund for Agricultural Development (IFAD) and the International Fertiliser Development Centre (IFDC).

Together they are committed to helping agribusiness become the continent's primary food commodity producer. To do this, they are not only pouring money into projects to transform farming operations on the ground – they are also changing African laws to accommodate the agribusiness agenda.

Privatising both land and seeds is essential for the corporate model to flourish in Africa. With regard to agricultural land, this means pushing for the official demarcation, registration and titling of farms. It also means making it possible for foreign investors to lease or own farmland on a long-term basis.

With regard to seeds, it means having governments require that seeds be registered in an official catalogue in order to be traded. It also means

introducing intellectual property rights over plant varieties and criminalising farmers who ignore them. In all cases, the goal is to turn what has long been a commons into something that corporates can control and profit from.

Lifting the veil of secrecy

The report 'Land and seed laws under attack: who is pushing changes in Africa?', drawn up jointly by the Alliance for Food Sovereignty in Africa (AFSA) and GRAIN, aims to provide an overview of just who is pushing for which specific changes in these areas – looking not at the plans and projects, but at the actual texts that will define the new rules.

We at AFSA and GRAIN did not find it easy to get information about this. Many phone calls to the World Bank and Millennium Challenge Corporation (MCC) offices went unanswered. The US Agency for International Development (USAID) brushed us off. Even African Union officials did not want to answer questions from – and be accountable to – African citizens doing this inventory.

This made the task of coming up with an accurate, detailed picture of what is going on quite difficult. We did learn a few things though.

While there is a lot of civil society attention focused on the G8's New Alliance for Food Security and Nutrition, there are many more actors doing many similar things across Africa. Our limited review makes it clear that the greatest pressure to change land and seed laws comes from Wash-

ington DC – home to the World Bank, USAID and the MCC.

'Land reform' is to benefit investors, not farmers

Land certificates – which should be seen as a stepping stone to formal land titles – are being promoted as an appropriate way to 'securitise' poor peoples' rights to land. But how do we define the term 'land securitisation'?

As the objective claimed by most of the initiatives dealt with in our report, it could be understood as strengthening land rights. Many small food producers might conclude that their historic cultural rights to land – however they may be expressed – will be better recognised, thus protecting them from expropriation.

But for many governments and corporations, it means the creation of Western-type land markets based on formal instruments like titles and leases that can be traded. In fact, many initiatives such as the G8 New Alliance explicitly refer to securitisation of 'investors' rights to land.

So this is not about recording and safeguarding historic or cultural rights, but about creating market mechanisms. In a world of grossly unequal players, 'security' is shorthand for the power of the market, private property and creditors.

Most of today's initiatives to address land laws, including those emanating from Africa, are overtly designed to accommodate, support and strengthen investments in land and large-scale land deals, rather than

achieve equity or recognise longstanding or historical community rights over land at a time of rising conflicts over land and land resources.

Most of the initiatives to change current land laws come from outside Africa. Yes, African structures like the African Union and the Pan-African Parliament are deeply engaged in facilitating changes to legislation in African states, but many people question how ‘indigenous’ these processes really are.

It is clear that strings are being pulled, by Washington and Europe in particular, in a well-orchestrated campaign to alter land governance in Africa.

Seed laws based on neoliberal ideologies

When it comes to seed laws, the picture is reversed. Subregional African bodies – SADC, COMESA, OAPI and the like – are working to create new rules for the exchange and trade of seeds. But the recipes they are applying – seed marketing restrictions and plant variety protection schemes – are borrowed directly from the US and Europe.

And the changes to seed policy being promoted by the G8 New Alliance, the World Bank and others refer to neither farmer-based seed systems nor farmers’ rights. They make no effort to strengthen farming systems that are already functioning. Rather, the proposed solutions are simplified, but unworkable, solutions to complex situations that will not work – though an elite category of farmers may enjoy some small short-term benefits.

With seeds, which represent a rich cultural heritage of Africa’s local communities, the push to transform them into income-generating private property, and marginalise traditional varieties, is still making more headway on paper than in practice. This is due to many complexities, one of which is the growing awareness of and popular resistance to the seed industry agenda.

But the resolve of those who intend to turn Africa into a new market

for global agro-input suppliers is not to be underestimated, and a notable consolidation of seed suppliers under foreign corporate ownership is under way. The path chosen will have profound implications for the capacity of African farmers to adapt to climate change.

Interconnectedness between different initiatives is significant, although these relationships are not always clear for groups on the ground. Our attempt to show these connections gives a picture of how very narrow agendas are being pushed by a small elite in the service of globalised corporate interests intent on taking over agriculture in Africa.

New Alliance for Food Security and Nutrition

‘The 50 million people that the G8 New Alliance for Food Security and Nutrition claims to be lifting out of poverty will only be allowed to escape poverty and hunger if they abandon their traditional rights and practices and buy their life saving seeds every year from the corporations lined up behind the G8,’ warned the Tanzania Organic Agriculture Movement in September 2014.

Launched in 2012 by the G8 industrialised countries – Canada, France, Germany, Italy, Japan, Russia, the UK and the US – the grandly titled New Alliance for Food Security and Nutrition is in fact aimed at mobilising private capital for investment in African agriculture.

To be accepted into the programme, African governments are required to make important changes to their land and seed policies. The New Alliance prioritises granting national and transnational corporations new forms of access to and control of the participating countries’ resources, and gives them a seat at the same table as aid donors and recipient governments.

As of July 2014, 10 African countries had signed Cooperative Framework Agreements to implement the New Alliance programme: Benin, Burkina Faso, Cote d’Ivoire, Ethiopia, Ghana, Malawi, Mozambique,

Nigeria, Senegal and Tanzania. Under these agreements, these governments committed themselves to 213 policy changes. Some 43 of these changes target land laws, with the overall stated objective of establishing ‘clear, secure and negotiable rights to land’ – tradeable property titles.

The New Alliance for Food Security and Nutrition prioritises granting national and transnational corporations new forms of access to and control of the participating countries’ resources.

The New Alliance also aims to implement both the Voluntary Guidelines on Responsible Land Tenure adopted by the Committee on World Food Security in 2012, and the Principles for Responsible Agriculture Investment drawn up by the World Bank, FAO, IFAD and UN Conference on Trade and Development. This is considered especially important since the New Alliance directly facilitates access to farmland in Africa for investors.

As for seeds, all of the participating states, with the exception of Benin, agreed to adopt plant variety protection (PVP) laws and rules for marketing seeds that better support the private sector.

Despite the fact that more than 80% of all seed in Africa is still produced and disseminated through ‘informal’ seed systems (on-farm seed saving and unregulated distribution between farmers), there is no recognition in the New Alliance programme of the importance of farmer-based systems of saving, sharing, exchanging and selling seeds.

African governments are being co-opted into reviewing their seed trade laws and supporting the implementation of PVP laws, as has been

seen in Ghana where farmers have risen up against the changes.

The strategy is to first harmonise seed trade laws such as border control measures, phytosanitary control, variety release systems and certification standards at the regional level, and then move on to harmonising PVP laws.

The effect is to create larger unified seed markets, in which the types of seeds on offer are restricted to commercially protected varieties. The age-old rights of farmers to replant saved seed are curtailed and the marketing of traditional varieties of seed is strictly prohibited.

Concerns have been raised about how this agenda privatises seeds and the potential impacts this could have on small-scale farmers. Farmers will lose control of seeds regulated by a commercial system, while crop biodiversity may be eroded due to the focus on commercial varieties.

Making these processes hard to combat is the multiplicity of programmes and initiatives carried out by different countries and both national and transnational entities in different parts of Africa, all offering short-term benefits to governments but all directed towards a single objective – the neoliberal transformation of land, seed and plant variety governance to open the continent up for full-scale agribusiness invasion. ◆

This article is reproduced from theEcologist.org. It is based on the report 'Land and seed laws under attack: who is pushing changes in Africa?' (January 2015) drawn up jointly by the Alliance for Food Sovereignty in Africa (AFSA) and GRAIN. Researched and initially drafted by Mohamed Coulibaly, an independent legal expert in Mali, with support from AFSA members and GRAIN staff, the report is meant to serve as a resource for groups and organisations wanting to become more involved in struggles for land and seed justice across Africa or for those who just want to learn more about who is pushing what kind of changes in these areas right now.

AFSA is a pan-African platform comprising networks and farmer organisations championing small African family farming based on agroecological and indigenous approaches that sustain food sovereignty and the livelihoods of communities. GRAIN is a small international organisation that aims to support small farmers and social movements in their struggles for community-controlled and biodiversity-based food systems.

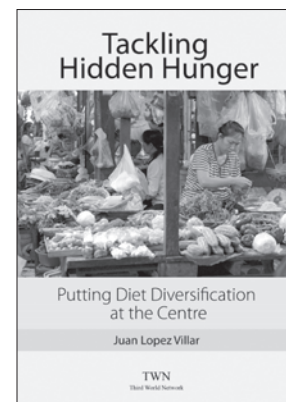
TACKLING HIDDEN HUNGER

Putting Diet Diversification at the Centre

By Juan Lopez Villar

The scourge of “hidden hunger” or micronutrient deficiency affects around two billion people worldwide who lack adequate intake of vitamins and minerals in their diet. While several international and regional initiatives are underway to combat malnutrition, and specifically micronutrient deficiency, these have largely focused on the approaches of nutrient supplementation and food fortification at the expense of dietary diversification, considered the most durable solution to hidden hunger. The development of nutritionally enhanced genetically engineered crops, such as “Golden Rice”, has further attracted controversy and raises serious biosafety concerns.

For a global strategy on nutrition to be successful, this book argues, it must place central emphasis on diversifying diets.



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Who controls our food?

Nick Dearden argues that the debate on an alternative to the current intensive corporate agriculture is not merely about a set of farming techniques but about who controls our food supply and how that power is used.

SYMPATHY with organic food production is at an all-time high. 'It's a nice idea, when you can afford it' perhaps sums up the approach of many people. But extending these principles of production to the whole food system? It just doesn't seem practical. There are an awful lot of people to feed in the world and if you're hungry, you don't care much about the niceties of how the food was produced.

A new report from Global Justice Now, 'From the Roots Up', shows that not only can small-scale organically produced food feed the world, but it can do so better than intensive, corporate-controlled agriculture. As a matter of fact, it already is feeding millions of people.

In Tigray, Ethiopia, farmers have seen grain yields double, with increased biodiversity and fertility, not to mention less debt. In Senegal, agroecological pest management techniques have allowed farmers to produce 25% more rice than conventional farmers. In southern Africa, more than 50,000 farmers practising agroecology have increased maize yields by 3-4 metric tons per hectare.

But what we're talking about isn't a set of farming techniques. We're talking about who controls our food supply and how that power is used.

How we produce food is a deeply political issue that affects the lives and livelihoods of billions of people. For in our global economy, it is not the amount of food produced which dictates whether people eat or starve. If it was, we would not see the inhumane but common spectacle of people malnourished while surrounded by food. Rather, it is the increasing grip which big business exerts over our food system, in accordance with a near-religious faith in the power of the market.

So agroecology does not simply

say 'we can grow more'. It says, we can give people control over their food. It goes beyond a simple notion of 'food security' because, as writer Raj Patel points out, 'it's possible to be food secure in prison'. By shifting the way food systems are controlled, agroecology can play a part in challenging the patriarchal forms of organisation that exist in farming.

Agroecology poses a challenge to the dogma of the free market, in whose name so many millions have starved over two centuries. It posits a system of production and distribution which treats people as deserving of control over their lives, and nature as deserving of our respect. It says that if we want a just and sustainable food system, we need a paradigm shift in how food is produced and distributed.

Agroecology does not simply say 'we can grow more'. It says, we can give people control over their food.

In Africa, an all-out offensive is taking place against smallholder farming. Under the guise of a 'new green revolution', food is being removed from the control of those who farm it, and land from those who till it. There's a good reason: while 75% of all seeds planted across the world are owned by 1 of 10 companies, in Africa 80% of all seeds still come from systems managed by farmers. That's a lot to play for.

Look at Malawi, where under the British-supported New Alliance for Food Security and Nutrition the government is being told to eliminate export bans, make life easier for corpo-

rate 'investors', implement new intellectual property laws over seeds, and sell land for large-scale commercial agriculture. This is nothing to do with helping Africa feed itself; it is about further empowering an already very powerful and bloated agribusiness sector.

This needs to be challenged – to bring an end to the latest crusade for Africa's resources. But we can go further and, by supporting agroecology in Africa, begin to glimpse what a more democratic food system would look like for the whole world. This also means supporting women farmers, who have least control over the food system, in claiming their rights to land and food.

The Global Justice Now report provides a policy framework for foreign governments that really want to help African farmers and compensate for some of the terrible resource theft which has been committed over the centuries. This means a radical reform of the aid system, which is currently doing more to entrench, than to break, corporate control. It means standing up against a number of trade agreements currently being negotiated which will give corporations new powers to grab land, monopolise seed distribution and benefit from an export-to-the-West model of growth.

The British government must stop imposing our own broken food model on Africa, see that Africa's first priority must be justice for Africa's people, and commit to promoting the principles of agroecology and food sovereignty. ♦

Nick Dearden is Director of Global Justice Now. Find out more about Global Justice Now's Food Campaign at www.globaljustice.org.uk/campaigns/food. The above article first appeared on the website of New Internationalist (www.newint.org). Reprinted by kind permission of New Internationalist. Copyright New Internationalist.

‘Agroecology offers us a collective path forward’

Agroecology offers a viable alternative to the current system of agriculture. The following Declaration of the International Forum for Agroecology held in Nyeleni, Mali, on 24-27 February explains why.

WE are delegates representing diverse organisations and international movements of small-scale food producers and consumers, including peasants, indigenous peoples and communities (together with hunters and gatherers), family farmers, rural workers, herders and pastoralists, fisherfolk and urban people. Together, the diverse constituencies our organisations represent produce some 70% of the food consumed by humanity. They are the primary global investors in agriculture, as well as the primary providers of jobs and livelihoods in the world.

We gathered here at the Nyeleni Center in Selingue, Mali, from 24 to 27 of February, 2015, to come to a common understanding of agroecology as a key element in the construction of Food Sovereignty, and to develop joint strategies to promote Agroecology and defend it from co-optation. We are grateful to the people of Mali who have welcomed us in this beautiful land. They have taught us through their example, that the dialogue of our various forms of knowledge is based on respectful listening and on the collective construction of shared decisions. We stand in solidarity with our Malian sisters and brothers who struggle – sometimes sacrificing their lives – to defend their territories from the latest wave of land grabbing that affects so many of our countries. Agroecology means that we stand together in the circle of life, and this implies that we must also stand together in the circle of struggle against land grabbing and the criminalisation of our movements.

Building on the past, looking to the future

Our peoples, constituencies, or-

ganisations and communities have already come very far in defining Food Sovereignty as a banner of joint struggle for justice, and as the larger framework for Agroecology. Our ancestral production systems have been developed over millennia, and during the past 30 to 40 years this has come to be called agroecology. Our agroecology includes successful practices and production, involves farmer-to-farmer and territorial processes, training schools, and we have developed sophisticated theoretical, technical and political constructions.

In 2007 many of us gathered here at Nyeleni, at the Forum for Food Sovereignty, to strengthen our alliances and to expand and deepen our understanding of Food Sovereignty, through a collective construction between our diverse constituencies. Similarly, we gather here at the Agroecology Forum 2015 to enrich Agroecology through dialogue between diverse food producing peoples, as well as with consumers, urban communities, women, youth, and others. Today our movements, organised globally and regionally in the International Planning Committee for Food Sovereignty (IPC), have taken a new and historic step.

Our diverse forms of smallholder food production based on agroecology generate local knowledge, promote social justice, nurture identity and culture, and strengthen the economic viability of rural areas. Smallholders defend our dignity when we choose to produce in an agroecological way.

Overcoming multiple crises

Agroecology is the answer to how to transform and repair our material reality in a food system and ru-

ral world that has been devastated by industrial food production and its so-called Green and Blue Revolutions. We see agroecology as a key form of resistance to an economic system that puts profit before life.

The corporate model over-produces food that poisons us, destroys soil fertility, is responsible for the deforestation of rural areas, the contamination of water and the acidification of oceans and killing of fisheries. Essential natural resources have been commodified, and rising production costs are driving us off the land. Farmers' seeds are being stolen and sold back to us at exorbitant prices, bred as varieties that depend on costly, contaminating agrochemicals. The industrial food system is a key driver of the multiple crises of climate, food, environment, public health and others. Free trade and corporate investment agreements, investor-state dispute settlement agreements, and false solutions such as carbon markets, and the growing financialisation of land and food, etc., all further aggravate these crises. Agroecology within a food sovereignty framework offers us a collective path forward from these crises.

Agroecology at a crossroads

The industrial food system is beginning to exhaust its productive and profit potential because of its internal contradictions – such as soil degradation, herbicide-tolerant weeds, depleted fisheries, pest- and disease-ravaged monocultural plantations – and its increasingly obvious negative consequences of greenhouse gas emissions, and the health crisis of malnutrition, obesity, diabetes, colon disease and cancer caused by diets heavy in

industrial and junk food.

Popular pressure has caused many multilateral institutions, governments, universities and research centres, some NGOs, corporations and others to finally recognise 'agroecology'. However, they have tried to redefine it as a narrow set of technologies, to offer some tools that appear to ease the sustainability crisis of industrial food production, while the existing structures of power remain unchallenged. This co-optation of agroecology to fine-tune the industrial food system, while paying lip service to the environmental discourse, has various names, including 'climate smart agriculture', 'sustainable-' or 'ecological-intensification', industrial monoculture production of 'organic' food, etc. For us, these are not agroecology: we reject them, and we will fight to expose and block this insidious appropriation of agroecology.

The real solutions to the crises of the climate, malnutrition, etc. will not come from conforming to the industrial model. We must transform it and build our own local food systems that create new rural-urban links, based on truly agroecological food production by peasants, artisanal fishers, pastoralists, indigenous peoples, urban farmers, etc. We cannot allow agroecology to be a tool of the industrial food production model: we see it as the essential alternative to that model, and as the means of transforming how we produce and consume food into something better for humanity and our Mother Earth.

Our common pillars and principles of agroecology

Agroecology is a way of life and the language of Nature, that we learn as her children. It is not a mere set of technologies or production practices. It cannot be implemented the same way in all territories. Rather it is based on principles that, while they may be similar across the diversity of our territories, can and are practised in many different ways, with each sector contributing their own colours of their local reality and culture, while always

respecting Mother Earth and our common, shared values.

The production practices of agroecology (such as intercropping, traditional fishing and mobile pastoralism, integrating crops, trees, livestock and fish, manuring, compost, local seeds and animal breeds, etc.) are based on ecological principles like building life in the soil, recycling nutrients, the dynamic management of biodiversity and energy conservation at all scales. Agroecology drastically reduces our use of externally-purchased inputs that must be bought from industry. There is no use of agrotoxics, artificial hormones, GMOs or other dangerous new technologies in agroecology.

Territories are a fundamental pillar of agroecology. Peoples and communities have the right to maintain their own spiritual and material relationships to their lands. They are entitled to secure, develop, control, and reconstruct their customary social structures and to administer their lands and territories, including fishing grounds, both politically and socially. This implies the full recognition of their laws, traditions, customs, tenure systems, and institutions, and constitutes the recognition of the self-determination and autonomy of peoples.

Collective rights and access to the commons are a fundamental pillar of agroecology. We share access to territories that are the home to many different peer groups, and we have sophisticated customary systems for regulating access and avoiding conflicts that we want to preserve and to strengthen.

The diverse knowledge and ways of knowing of our peoples are fundamental to agroecology. We develop our ways of knowing through dialogue among them (*dialogo de saberes*). Our learning processes are horizontal and peer-to-peer, based on popular education. They take place in our own training centres and territories (farmers teach farmers, fishers teach fishers, etc.), and are also intergenerational, with exchange of knowledge between youth and elders. Agroecology is developed through

our own innovation, research, and crop and livestock selection and breeding.

The core of our cosmovisions is the necessary equilibrium between nature, the cosmos and human beings. We recognise that as humans we are but a part of nature and the cosmos. We share a spiritual connection with our lands and with the web of life. We love our lands and our peoples, and without that, we cannot defend our agroecology, fight for our rights, or feed the world. We reject the commodification of all forms of life.

Families, communities, collectives, organisations and movements are the fertile soil in which agroecology flourishes. Collective self-organisation and action are what make it possible to scale-up agroecology, build local food systems, and challenge corporate control of our food system. Solidarity between peoples, between rural and urban populations, is a critical ingredient.

The autonomy of agroecology displaces the control of global markets and generates self-governance by communities. It means we minimise the use of purchased inputs that come from outside. It requires the re-shaping of markets so that they are based on the principles of solidarity economy and the ethics of responsible production and consumption. It promotes direct and fair short distribution chains. It implies a transparent relationship between producers and consumers, and is based on the solidarity of shared risks and benefits.

Agroecology is political; it requires us to challenge and transform structures of power in society. We need to put the control of seeds, biodiversity, land and territories, waters, knowledge, culture and the commons in the hands of the peoples who feed the world.

Women and their knowledge, values, vision and leadership are critical for moving forward. Migration and globalisation mean that women's work is increasing, yet women have far less access to resources than men. All too often, their work is neither

recognised nor valued. For agroecology to achieve its full potential, there must be equal distribution of power, tasks, decision-making and remuneration.

Youth, together with women, provide one of the two principal social bases for the evolution of agroecology. Agroecology can provide a radical space for young people to contribute to the social and ecological transformation that is underway in many of our societies. Youth bear the responsibility to carry forward the collective knowledge learned from their parents, elders and ancestors into the future. They are the stewards of agroecology for future generations. Agroecology must create a territorial and social dynamic that creates opportunities for rural youth and values women's leadership.

Strategies

I. Promote agroecological production through policies that...

1. Are territorial and holistic in their approach to social, economic and natural resources issues.
2. Secure access to land and resources in order to encourage long-term investment by small-scale food producers.
3. Ensure an inclusive and accountable approach to the stewardship of resources, food production, public procurement policies, urban and rural infrastructure, and urban planning.
4. Promote decentralised and truly democratised planning processes in conjunction with relevant local governments and authorities.
5. Promote appropriate health and sanitation regulations that do not discriminate against small-scale food producers and processors who practise agroecology.
6. Promote policy to integrate the health and nutrition aspects of agroecology and of traditional medicines.
7. Ensure pastoralists' access to pastures, migration routes and sources of water as well as mobile services such as health, education and veterinary services that

are based on and compatible with traditional practice.

8. Ensure customary rights to the commons. Ensure seed policies that guarantee the collective rights of peasants and indigenous peoples to use, exchange, breed, select and sell their own seeds.
9. Attract and support young people to join agroecological food production through strengthening access to land and natural resources, ensuring fair income, knowledge exchange and transmission.
10. Support urban and peri-urban agroecological production.
11. Protect the rights of communities that practise wild capture, hunting and gathering in their traditional areas – and encourage the ecological and cultural restoration of territories to their former abundance.
12. Implement policies that ensure the rights of fishing communities.
13. Implement the Tenure Guidelines of the Committee on World Food Security and the Small-scale Fisheries Guidelines of the FAO.
14. Develop and implement policies and programmes that guarantee the right to a dignified life for rural workers, including true agrarian reform, and agroecology training.

II. Knowledge sharing

1. Horizontal exchanges (peasant-to-peasant, fisher-to-fisher, pastoralist-to-pastoralist, consumer-and-producer, etc.) and intergenerational exchanges between generations and across different traditions, including new ideas. Women and youth must be prioritised.
2. Peoples' control of the research agenda, objectives and methodology.
3. Systemise experience to learn from and build on historical memory.

III. Recognition of the central role of women

1. Fight for equal women's rights in every sphere of agroecology, in-

cluding workers' and labour rights, access to the commons, direct access to markets, and control of income.

2. Programmes and projects must fully include women at all stages, from the earliest formulation through planning and application, with decision-making roles.

IV. Build local economies

1. Promote local markets for local products.
2. Support the development of alternative financial infrastructure, institutions and mechanisms to support both producers and consumers.
3. Reshape food markets through new relationships of solidarity between producers and consumers.
4. Develop links with the experience of solidarity economy and participatory guarantee systems, when appropriate.

V. Further develop and disseminate our vision of agroecology

1. Develop a communications plan for our vision of agroecology.
2. Promote the health care and nutritional aspects of agroecology.
3. Promote the territorial approach of agroecology.
4. Promote practices that allow youth to carry forward the permanent regeneration of our agroecological vision.
5. Promote agroecology as a key tool to reduce food waste and loss across the food system.

VI. Build alliances

1. Consolidate and strengthen existing alliances such as with the International Planning Committee for Food Sovereignty (IPC).
2. Expand our alliance to other social movements and public research organisations and institutions.

VII. Protect biodiversity and genetic resources

1. Protect, respect and ensure the stewardship of biodiversity.
2. Take back control of seeds and

reproductive material and implement producers' rights to use, sell and exchange their own seeds and animal breeds.

3. Ensure that fishing communities play the most central role in controlling marine and inland waterways.

VIII. Cool the planet and adapt to climate change

1. Ensure international institutions and governments recognise agroecology as defined in this document as a primary solution for tackling and adapting to climate change, and not 'climate smart agriculture' or other false versions of agroecology.
2. Identify, document and share good experiences of local initiatives on agroecology that address climate change.

IX. Denounce and fight corporate and institutional capture of agroecology

1. Fight corporate and institutional attempts to grab agroecology as a means to promote GMOs and other false solutions and dangerous new technologies.
2. Expose the corporate vested interests behind technical fixes such as climate-smart agriculture, sustainable intensification and 'fine-tuning' of industrial aquaculture.
3. Fight the commodification and financialisation of the ecological benefits of agroecology.

We have built agroecology through many initiatives and struggles. We have the legitimacy to lead it into the future. Policy makers cannot move forward on agroecology without us. They must respect and support our agroecological processes rather than continuing to support the forces that destroy us. We call on our fellow peoples to join us in the collective task of collectively constructing agroecology as part of our popular struggles to build a better world, a world based on mutual respect, social justice, equity, solidarity and harmony with our Mother Earth. ♦

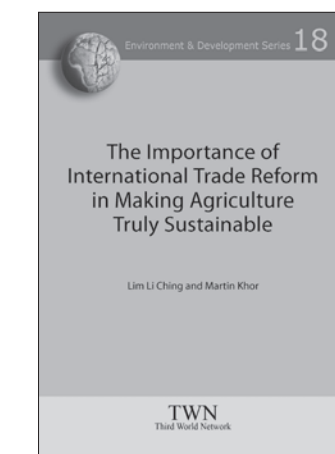
The Importance of International Trade Reform in Making Agriculture Truly Sustainable

Lim Li Ching and Martin Khor

Reforms of the international trade regime require a significant reduction or removal of harmful subsidies currently provided mainly by developed countries, while at the same time allowing special treatment and safeguard mechanisms for developing countries in order to promote their smallholder farmers' livelihoods. Such reforms, coupled with policies in support of sustainable small-scale agriculture in developing countries, would improve local production for enhancing food security.

There is also a need for regulatory measures aimed at reorganizing the prevailing market structure of the agricultural value chain, which is dominated by a few multinational corporations and marginalizes smallholder farmers and sustainable production systems. Policies that increase the choices of smallholders to sell their products on local or global markets at a decent price would complement efforts to rectify the imbalances.

In addition, a shift to more sustainable and ecological agricultural practices would benefit smallholder farmers by increasing



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productivity while strengthening their resilience to shocks, such as climate change, and reducing the adverse impacts of conventional agricultural practices on the environment and health. The trade policy framework should therefore support such a shift.

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How Evo Morales's third term will challenge Bolivia's social movements

Evo Morales of Bolivia is the longest-serving head of state in a country once notorious for political instability. As he enters his third term, it remains to be seen whether his strategy of coopting elite sectors formerly opposed to him into his party of essentially popular social movements will succeed in ensuring continued support.

Emily Achtenberg

ON 22 January, with officials from 40 countries in attendance, Evo Morales – Bolivia's first indigenous president – was sworn in to begin his historic third term. Set to govern until 2020 with the ruling MAS (Movement Towards Socialism) party, Morales is now the longest-serving head of state in a country once famous for its frequent military coups and political turmoil. By some accounts, he is the most popular head of state in Latin America.

'Aquí no mandan los gringos, aquí mandan los indios (here native people, not foreigners, govern),' Morales reminded the assembled multitudes. The previous day, at the prehispanic ruins of Tiwanaku, thousands of indigenous, campesino (peasant) and international observers witnessed Morales receiving the blessing of Andean priests in a highly ritualised traditional ceremony.

While these symbolic gestures help to reaffirm the indigenous and insurgent roots of Morales's political project, much about Bolivia and the MAS has profoundly changed since Morales first came to power. Back in 2005, Morales was elected (with 54% of the vote) by an alliance of indigenous, campesino and other popular movements on a radical platform to redistribute land, reassert state control over the country's natural resources, and refound Bolivia as a plurinational state. He was fiercely opposed by conservative elites in the



Evo Morales being sworn in to his third term as Bolivian President on 22 January. Much about Bolivia has profoundly changed since Morales first came to power in 2005.

eastern lowlands departments (the '*media luna*' or half-moon), whose secessionist threats subsequently brought the country to the brink of civil war.

By contrast, in last October's election Morales carried eight of Bolivia's nine departments, including three of four in the eastern lowlands. He won with 61% of the vote, close to 40 points ahead of his nearest opponent (representing a badly fractured opposition). On Morales's coattails, the MAS gained a two-thirds majority in both legislative chambers, assuring the 'super-majority' needed for some laws and for potential constitutional changes.

The MAS achieved these victories, in part, by incorporating into its ranks significant elements of the lowlands agribusiness and ranching elite, as well as former conservative neoliberal party militants. Today, the MAS is a powerful corporative or-

ganisation rooted in entrepreneurial as well as popular sectors in every region of the country, with a more centrist political agenda.

What explains this transformation of the MAS from a party (and government) of the social movements to a 'big tent' hegemonic power, and what does it portend for Morales's third term and for ongoing popular struggles in Bolivia? Morales, in his victory speech, was quick to proclaim the 'defeat' of the political right and the replacement of the '*media luna*' by the '*luna llena*' (full moon) of a 'united Bolivia'. Still, what political analyst Pablo Stefanoni has characterised as the new 'post-polarised' Bolivia appears to be far from unified, presenting a new landscape of contradictions and challenges.

The new nationalist-plurinational state

Evidence of the MAS party's political realignment can be seen in the new five-year programme outlined by Morales at his inauguration. In addition to broad social goals (such as poverty reduction), the new MAS agenda is heavily focused on nationalist themes (regaining the seacoast from Chile) and development goals associated with technological advancement (industrialisation of natural resources, high-tech hospitals, international airports and the transformation of cities into urban 'citadels of knowledge').

Similarly, Morales's recent elec-

toral campaign showcased projects like the spectacular La Paz-El Alto aerial cable car system – financed entirely with national savings – and the Tupac Katari satellite, which brings the Internet to schoolchildren in remote corners of Bolivia. Developmentalist themes that evoke national pride appear to have virtually supplanted more radical notions of plurinationalism, indigenism, redistribution and communitarian socialism in the MAS political discourse.

While Stefanoni notes that the plurinational state may be the most nationalist in Bolivian history, on the economic front there has been a shift towards greater pragmatism. Soon after declaring his victory to be a ‘triumph of nationalisation over privatisation’, Morales announced that there would be no further nationalisations. Instead, he has adopted what Stefanoni calls a ‘more market-friendly approach to decolonisation’, along with a ‘neo-developmental’ perspective emphasising technological innovation fuelled by a robust extractivist economy.

The changing face of Bolivia

While the new MAS worldview may be seen as a betrayal of radical indigenous and socialist ideals, it also reflects a pragmatic response to Bolivia’s changing economic, social and political realities.

Thanks to Morales’s successful state-led economic strategies and prudent fiscal management (combined with the global commodities boom), Bolivia’s once lacklustre economy has lately experienced unprecedented prosperity. This includes annual growth rates averaging more than 5%, a vast expansion of the country’s international reserves, and a huge increase in the value of hydrocarbons and mineral exports which has largely been recaptured by the state and redistributed to benefit the country’s poor and indigenous majority.

Popular cash transfer programmes for the elderly, schoolchildren and pregnant women, and widespread infrastructure improvements –

such as schools, hospitals and domestic gas connections – have reduced poverty rates and markedly improved the living standards of ordinary Bolivians. In turn, increased purchasing power and domestic demand have fuelled an unprecedented expansion of consumerism and the emergence of an indigenous entrepreneurial bourgeoisie – whose new-found wealth is symbolised by the colourful ‘neo-Andean’ mini-mansions of El Alto. According to Economic Minister Luis Arce, this shows that ‘everyone has the opportunity to get rich in Bolivia, because today’s economy is for everybody’.

Anthropologists have struggled to explain a seemingly paradoxical identity shift revealed by the 2012 census, where only 42% of Bolivians self-identified as indigenous (compared to 62% in 2001). Stefanoni theorises that this reflects a more fluid concept of identity in an increasingly urbanised, ethnically mixed and upwardly mobile population, as well as a decline in the social significance of indigeneity – once a badge of resistance, but now the official rhetoric of the state. The aspirations of Bolivians today, he argues, have less to do with ethno-cultural values than with education, entrepreneurship and access to the more material aspects of decolonisation.

The strong economy has also made possible the integration of substantial sectors of the eastern lowlands agribusiness and political elite into the MAS project, with the opportunistic recognition by these groups that they have more to gain as beneficiaries of the ‘Evo-boom’ than as Morales’s political adversaries. This has led to an implicit pact with ‘productive’ elite sectors (including soy, timber and cattle-ranching interests) who have agreed to recognise the legitimacy of the MAS government in exchange for concessions to advance their business model. The alliance has been consolidated around a nationalist programme for ‘food security’ and expansion of the agricultural frontier, with a commitment by Morales to quadruple the areas of agricultural production in Bolivia over the next 10 years.

Popular struggles, constraints and challenges

The MAS party’s national-popular, neo-developmental perspective appears to reflect a more centrist drift of the electorate, and has been strongly ratified at the polls. Still, it presents new contradictions and challenges for both popular movements and government in Morales’s third term.

Notwithstanding recent improvements in living standards, Bolivia still has one of the highest rates (58%) of ‘multidimensional poverty’ in the hemisphere, after Nicaragua, Honduras and Guatemala (taking into account social indicators such as housing and health, as well as income). The Morales government’s excessive reliance on extractive industry to finance programmes to address these needs represents a continuing contradiction.

On the one hand, as Kathryn Ledebur of Bolivia’s Andean Information Network has commented, the temptation to generate revenues quickly is not difficult to understand in this context. ‘People who have had their basic needs postponed for centuries, you can’t say to them, “Wait till we get the windmill farm up and running”’, she notes.

Still, within the past year, the Morales government has expanded hydrocarbons exploration into the national parks (which overlap heavily with indigenous territories), adopted a new mining law that permits water diversion from peasant farming communities to mining operators, and begun studies to identify shale gas deposits in the Bolivian Chaco for potential fracking. Such controversial projects are increasingly resisted by indigenous, environmental and human rights organisations, furthering a rift with the Morales government that was precipitated by the proposed construction of the on-again, off-again TIPNIS highway in 2011-12.

These popular sectors that were critical to Morales’s original victory in 2005 have been increasingly marginalised by the MAS government

as obstacles to the new productive economy. Even more resistance will likely be generated by proposed new projects that seek to advance the vision of Bolivia as a regional energy power: a controversial nuclear plant in the earthquake-prone La Paz department, and two hydroelectric dams on the flood-prone Brazilian border that are strongly contested by local farming communities and environmental activists.

On the agricultural frontier, a slowdown in the Morales government's once-vibrant land reform programme has aggravated traditional conflicts between peasant farmers migrating from the highlands in search of more productive land and lowland indigenous peoples staking claims to their ancestral territories. Further concessions to large-scale agribusiness and timber interests, now incorporated under the MAS umbrella, will come at the expense of both campesino and indigenous groups and deepen the divisions between them.

Pressures from organised informal sector workers who have been traditional bastions of MAS support, and their conflicts with other MAS-affiliated sectors, will continue to shape the political landscape. Independent 'cooperative' miners, who have resisted nationalisation, won important concessions in last year's mining law to protect their privileged status relative to their state and private-sector counterparts. Independent minibus drivers in La Paz and El Alto have mobilised against new municipal bus systems – and even, initially, against Morales's flagship aerial cable cars – which they perceive as threatening their livelihoods, provoking fierce opposition from pro-transit neighbourhood organisations that have also traditionally supported the MAS.

While a substratum of these sectors has risen to the ranks of Bolivia's new entrepreneurial middle class, the majority of informal workers are left with insecure, low-paying, no-benefit jobs that they struggle to defend at any cost. As Nicole Fabricant and Bret Gustafson have noted, few

dignified jobs are being created by the extractive economy, and the percentage of labour in Bolivia's informal sector has remained at around 65% for the past decade.

Conflicts around gender issues and patriarchal practices that are deeply rooted in Bolivian culture have recently intensified in the political arena, and within the MAS party. The Morales government has promoted important advances for women, including electoral gender parity laws that have resulted in almost 50% female representation in the Plurinational Legislative Assembly, and a new law that criminalises femicide.

Still, Bolivia has one of the highest rates of violence against women in Latin America. The national elections spawned a new feminist movement, *Machista Fuera de La Lista!* (Male Chauvinists Off the Ballot!), that forced two candidates accused of domestic violence – including a prospective MAS senator – to withdraw. Other women-led movements, both within and outside the MAS umbrella, are mobilising around abortion and LGBTQ rights, domestic violence and femicide, and the general demand for 'depatriarchalisation' of Bolivian institutions and society.

Internal struggles

Internal factional struggles within the MAS 'big tent' have been on display during the run-up to the 29 March subnational elections – the first political contest since Morales's resounding October victory. Local resentment towards unpopular candidates imposed by the MAS leadership (and by Morales himself) could be a significant factor in determining the outcome of several important contests.

Polls show the MAS losing mayoral races in seven of the country's 10 largest municipalities, including La Paz, El Alto, Santa Cruz and Cochabamba. Several governorships are also up for grabs, including La Paz. At a minimum, less-than-favourable election results could complicate the administration of Morales's third

term.

[Editors' note: The 29 March elections eventually saw the MAS win four out of nine gubernatorial races and lose three (including La Paz), with run-offs to be held for the remaining two. It will control the departmental assemblies in all but Santa Cruz. However, in the mayoral vote, the party was defeated in eight of the 10 largest cities, including La Paz, El Alto, Santa Cruz and Cochabamba.]

Economic constraints

Another major complicating factor is the recent drop in global commodities prices, especially crude oil (which impacts gas exports) and minerals. According to Arce, Bolivia can rely on its international reserves – now approaching \$15 billion or 50% of GDP, the highest ratio in Latin America – to protect its economy. Still, if these trends continue, they could significantly curtail Morales's ambitious social welfare, public investment and development programmes.

Until now, the rapidly growing economy has made it possible for the Morales government to placate the demands of diverse social sectors while preserving, for the most part, the wealth of powerful landholding and economic elites. In a more economically constrained future, this strategy may no longer be viable. But, with elite sectors now firmly integrated into the MAS, policies that challenge their interests may be impractical as well.

As popular movements continue to struggle for land, economic security, environmental justice, true gender equality, and the rights of peasant, indigenous and urban communities, the viability of the MAS's political strategy for 'defeating' the right through fragmentation and cooptation could well be put to the test – along with Morales's political credibility. ♦

Emily Achtenberg is an urban planner and the author of the Rebel Currents blog on the North American Congress on Latin America (NACLA) website (nacla.org/blog/rebel-currents) covering Latin American social movements and progressive governments. This article is reproduced from Rebel Currents.

How multinational companies keep avoiding the threat of regulation

For nearly 40 years, all attempts at the United Nations to draft a legally binding document to address human rights violations by transnational corporations have floundered. *Flor Gonzalez Correa* comments.

BOLIVIA, Cuba, Ecuador, South Africa and Venezuela proposed a treaty to regulate transnational corporations last year. You'd be forgiven for feeling a sense of déjà vu. It has been a long and complicated road to tightening the leash on the giant global corporations which can dominate our lives. The United Nations has had it on the agenda for around 40 years.

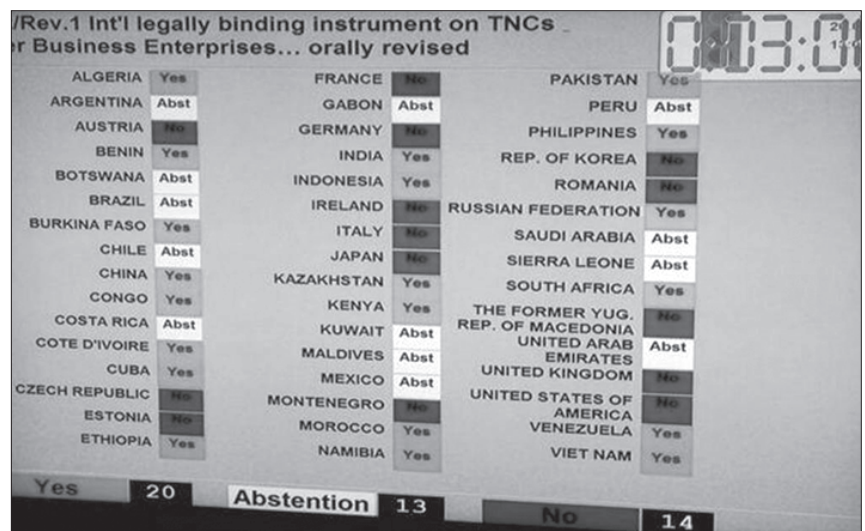
The first attempt, the Draft Code of Conduct on Transnational Corporations, was never finalised due to disagreement between developing and developed countries. The second attempt, the draft Norms on the Responsibilities of Transnational Corporations and Other Business Enterprises with Regard to Human Rights (it is fertile ground for catchy titles), was also too divisive.

When the norms were presented for approval in 2004, they received a fatal blow: the UN Commission on Human Rights said that it had never requested such a document and that the norms had 'no legal standing'.

Norms are dead, long live principles

Shortly after, the Human Rights Commission appointed Harvard professor John Ruggie to write a replacement for the norms. After several years of consultations, he produced the Protect, Respect and Remedy Framework for Business and Human Rights and followed it up in 2011 with the Guiding Principles for its implementation. These require business to respect human rights and hand states the responsibility of protecting them and providing access to effective remedy when they are violated.

The UN Human Rights Council



The tally of votes at the UN Human Rights Council on 26 June 2014 for the resolution proposing a treaty to regulate transnational corporations. The resolution provides for the establishment of an open-ended working group to elaborate such a treaty.

unanimously endorsed both documents and, in contrast to previous efforts, the business community received them relatively enthusiastically. However, some prominent human rights organisations were less optimistic and continued to push for the creation of a binding treaty.

But let's be clear here. Neither Ruggie's principles nor a treaty on business and human rights will fix corporate misbehaviour.

Principles vs treaty

According to the guiding principles, the state has the responsibility to create and enforce national regulations to protect the human rights of its citizens against corporate abuses. That all sounds very good, but we have to remember that states are not always willing or able to create and enforce such regulations.

To be fair, Ruggie's documents

were intended to be an interpretation of existing international human rights instruments, codes of conduct and best practices. They were not aimed at creating new regulations or filling any legal gaps. That is why a treaty could be useful: to create new regulations to cope with current challenges.

The treaty route, however, also depends on the will of states. To be of any use, a treaty on transnational corporations should have to count with the support of most states, especially those that are home to the majority of these companies. So far, most of them have refused to even entertain the idea of a treaty. Fourteen countries, including France, Germany, Japan, the UK and the US, voted against Ecuador's resolution and another 13 abstained.

At the moment, the only thing we have is a resolution that asks for an open-ended working group on a legally binding document. We don't

even know what this treaty would look like, but many states – and business groups – are not interested in finding out and insist on building upon the guiding principles, which you suspect they are aware can only take us so far.

The principles certainly have political and diplomatic merit. They made explicit the human rights responsibilities of corporations and by securing the approval of the business community, they have made it much harder for at least the largest and most visible companies to claim ignorance when human rights are violated along their supply chains. They also serve as a tool for non-governmental organisations (NGOs) to demand governments to hold companies accountable and to denounce any behaviour that goes against the principles.

Business links

However, the fact that these are non-legally binding agreements creates an ever-present risk that signatories could back off with few consequences beyond a bruised public image.

A treaty, if supported by most states, could force companies and states to put human rights considerations above monetary profits and could help clarify what needs to be done when a state is unwilling or unable to create and enforce norms to regulate corporate behaviour.

In truth, what we are likely to see in the near future is the same story we have witnessed for 40 years. Business keeps opposing any prospect of binding international rules, however necessary. We cannot expect a credible commitment to better rules if the governments who are supposed to create and enforce them have such a close relationship with the business sector.

As long as countries place the economic interests of their companies well before human rights, then efforts like that proposed by Bolivia, Cuba, Ecuador, South Africa and Venezuela will continue to be overshadowed. ♦

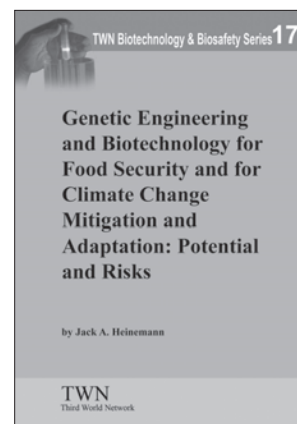
Flor Gonzalez Correa is a Teaching Associate in Sociology and Public Policy at Aston University in the UK. This article is reproduced from TheConversation.com under a Creative Commons licence.

Genetic Engineering and Biotechnology for Food Security and for Climate Change Mitigation and Adaptation: Potential and Risks

By Jack A Heinemann

World hunger is a multifaceted problem that cannot be solved by technological changes alone. Meanwhile industrial agriculture is unsustainable, and technological adjustments based on genetic engineering have not been able to achieve the relevant Millennium Development Goals; instead, they have introduced products that restrict farmer-based innovation, *in situ* conservation and access to the best locally adapted germplasm.

Alternative agricultural models, such as agroecology, demonstrate potential to reduce poverty, increase food security and reduce agriculture's environmental footprint because they increase agroecosystem resilience, lower external inputs, boost farmers' incomes and are based on technologies that, for the most part, can be understood, implemented and further modified by poor and subsistence farmers.



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By girls, for girls – Nepal's teenagers say no to child marriage

The tide appears to be turning at last in the fight against child marriage in Nepal.

Naresh Newar reports.

Naresh Newar/IPS



Rashmi Hamal, the 16-year-old president of the Jyalpa Child Club, campaigns actively against child marriages in Nepal's Far-Western Region.

IF not for a group of her school friends coming to her rescue, Shradha Nepali would have become a bride at the tender age of 14.

Hailing from the remote village of Pinalekh in the Bajura District of Nepal's Far-Western Region, 900 km from the capital, Kathmandu, the teenager was a likely candidate for child marriage.

Her family of six survive on an income of less than a dollar a day – subsisting largely off the produce grown on their tiny farm and scraping together a few extra coins working as underpaid daily labourers.

Mahesh Joshi, coordinator of the local non-governmental organisation PeaceWin, tells Inter Press Service (IPS) that such abject poverty is one of the primary drivers of early marriage in Nepal, a choice taken by many adolescent girls with few prospects beyond a lifetime of hard work and hunger.

Nepali herself tells IPS she was

'unaware of the consequences' of her decision at the time.

Had her friends not intervened, she would have joined the already swollen ranks of Nepal's child brides. According to a 2013 study by Plan Asia and the International Centre for Research on Women (ICRW), 41% of Nepali women between the ages of 20 and 24 were married before the legal age of 18.

The United Nations Children's Fund (UNICEF) has classified Nepal as one of the world's top 10 countries with the highest rates of child marriage. But now, thanks to an all-girls-led initiative around the country, the tide may be about to turn.

Poverty turning kids into brides

South Asia is home to an estimated 42% of the world's child brides, with Nepal ranked third – behind Bangladesh and India – according to

a study by the United Nations Population Fund (UNFPA).

A myriad of causes fuels child marriage in Nepal, home to an estimated 27.8 million people, of whom 24% live below the poverty line, says the World Bank.

Nepal's National Women's Commission believes economic, social and religious factors all play a role. In the country's southern Tarai belt, for instance, continuation of the dowry system keeps the practice of child marriage alive. The younger the girl, the less her parents are expected to pay the groom, forcing many to part with their daughters at an ever-younger age. Others simply choose to marry off their

daughters so they have one less mouth to feed.

And while girls' education is gaining more importance, it is still not considered a priority among rural, impoverished communities – UNICEF says the basic literacy rate among women aged 15-24 is 77.5%, a number that falls to 66% for secondary school enrolment.

Early marriages have been recognised, internationally and domestically in Nepal, as a violation of girls' basic human rights, and a practice that has hugely negative repercussions across the board.

'Young girls who are underage when they marry are likely to suffer from a series of health and psychological problems,' explains UNFPA Nepal Deputy Representative Kristine Blokhuis. 'There is a real risk of death during delivery, and even if a young girl survives, she may face life-long health problems.'

Child marriage severely limits a

girl's future prospects, often sealing her access to labour markets and condemning her to a lifetime of dependence on her husband or his family. Experts say this is the beginning of a cycle of disempowerment, wherein a girl with few choices becomes trapped in a situation where limited options dwindle ever further.

By girls, for girls: A grassroots approach

When initiatives to fight against the practice gain ground, it is cause for celebration among activists, policymakers and families who opt for child marriage as a last resort in the face of extreme hardship.

The district of Bajura, where Shradha Nepali and her friends live, is leading the way on these efforts, with communities across the district competing to declare their respective villages 'child marriage-free zones': a bold statement against an age-old practice.

Bajura is located in the Far-Western Region of Nepal, home to some of the country's most remote and developmentally challenged villages; incomes here are low and the number of child marriages correspondingly high.

Changing attitudes here is not easy, but that hasn't stopped girls like 16-year-old Rashmi Hamal, president of the Jyalpa Child Club in the remote Badi Mallika Municipality, from trying.

'We are not afraid anymore because a majority of our community members now want to fight against child marriages,' Hamal tells IPS.

She is one of 10 girls who came together in 2014 with the help of PeaceWin and a youth-led agency called Restless Development, with support from UNICEF, to strategise on how best to stem the practice once and for all.

'These girls are local heroes; they



Shradha Nepali would have become a bride at 14 had her friends not intervened.

have really proven themselves [in their] persistent educational campaigns, and by inspiring their parents to join their cause,' says Hira Karki, a local social mobiliser from PeaceWin.

It was this club that rescued Nepali from her marriage, shortly after she ran away from home. Although the girl's mother doesn't fault her for wanting to flee, she is visibly relieved to have her daughter back, and determined to make her stay.

'I cannot blame her [for running away] because she wanted to escape hardship at home. I [now] hope to support her in every way possible,' the 35-year-old mother tells IPS.

Today, Nepali is one of the club's most active campaigners against child brides. Their success is tangible: over 84 schools in Bajura and the neighbouring districts of Kalikot, Accham and Mugu have launched similar initiatives in the last year.

'The best part of anti-child marriage activism here is that we have campaigners from our own community who live here and get the chance to educate their own adult members without antagonising them,' a local school principal, Jahar Sing Thapa, tells IPS.

Though small, each club is contributing to the country's overall efforts to stem the practice. In the past five years, UNFPA says, the rate of

child marriage has declined by 20%.

Beyond activism: towards a policy of 'zero prevalence'

While independent, local efforts are praiseworthy, they alone will not be adequate to tackle the problem at a national scale.

'We have learnt from our own experience that simply raising awareness against underage marriages is not enough,' UNICEF Nepal's Deputy Representative Rownak Khan tells IPS in Kathmandu, adding that a multi-sector approach involving financial literacy, life-skills training and income-generation support for adolescent girls will all need to become part of the country's arsenal against early marriages.

All these services are now core components of the government's national-level 'Adolescent Development Programme', initiated in 1998.

Kiran Rupakhetee, chief of the government's Child Protection Section, tells IPS that a variety of government ministries are now working together, resulting in the drafting of the government's first national strategy document against child marriage.

Combined with some 20,000 child-run clubs across the country, this multi-pronged approach promises to bring real changes across the country, and move Nepal closer to the day when it can call child marriage a thing of the past. — IPS

The irony of colonial apologetics

Tommy Raskin wields the cudgels against those who respond to sub-Saharan Africa's current woes by whitewashing colonialism's sordid record in the region.

AS some formerly colonised countries in sub-Saharan Africa still grapple with resource disputes and sectarian violence, it is hardly unusual to hear people wonder aloud whether 19th- and 20th-century colonialism was actually a solution, not a problem, for the non-Western world. Revelling in their contrarianism, some pontificators eventually conclude that, yes, 'almost all of sub-Saharan Africa ... [was] better governed by Europeans' and that formerly colonised countries are themselves to blame for favouring an anti-market 'grievance culture' over colonialism's free-market values.

Gladly promulgating this view, Daniel Kruger writes that 'Africa's problem today is not the after-effects of colonialism' but rather that many Western universities' African alumni returned home in the mid-20th century committed to 'nationalisation and big government'. And lest we worry that colonialism indefensibly violated the rights of the colonised and punctured the sanity of entire nations, Keith Windschuttle tells us to take comfort in the fact that colonialism actually imparted to colonised people another valuable gift: ideas of 'liberal democratic government' and 'British concepts of sovereignty and the rule of law'.

These colonial apologetics are not merely wrongheaded and borderline sadistic – they are painfully ironic. For while they praise colonialism's diffusion of liberal values throughout sub-Saharan Africa, they wilfully ignore the fact that colonial precepts, when actually enacted, wreaked illiberal havoc most places they went. Moreover, when laissez-faire capitalists like Kruger contend that the West has applied 'the values of liberty ... most successfully, and grown rich on the proceeds', they forget that Western colonialism was chock-full of generous government



Chained slaves on a rubber plantation in the Belgian Congo. 'The actual colonial values of racism, greed and violence were great detriments to sub-Saharan Africa, destroying civilian families, psychology and infrastructure.'

benefits for European settlers, stratospheric militarisation and slavery, and governmental subversion of native African economies.

These economic points are worth repeating because, for one, they discredit the idea that sub-Saharan Africans were simply waiting around for European empires to save them from destitution. In reality, groups like the Khoi were already herding Nguni cattle and making use of their land when 17th-century Europeans settled the Cape. West Africans produced and sold palm oil in the 1800s, and the Herero of Namibia, widely renowned for their animal husbandry, economically outpaced their German occupiers in South-West Africa all throughout the 1880s. In contrast, the French, British and German colonists often made their mark in sub-Saharan Africa by using 'scorched earth' to incinerate civilian villages and agricultural resources.

Colonialism's economic realities are also worth noting when colonialists are today remembered as self-reliant individualists. In truth, colonial enterprises were welfare cesspools replete with military protection, relocation subsidies and ex-

ceedingly cheap land for European settlers. The German government, for instance, paid for German women's tickets to South-West Africa. The British violently expropriated hundreds of acres of Kenyan land and then gave it to European farmers for free. The Portuguese bestowed tens of thousands of acres to families like the Paiva, a clan whose sugar plantation spanned over 45,000 acres in Mozambique. The Belgians' breathtakingly lazy and barbaric king, Leopold II, established vast swaths of the Congo as his own private property.

But all of these unearned goodies pale in comparison to the colonialists' indolent exploitation of native slave labour to build settler communities. The erection of Windhoek's extant parliament building, an ostensible 'gift' from the Western world, was one such project foisted on the backs of German-owned African slaves. Private German companies' construction of Namibian railways, settler homes and renovated docks in Lüderitz was also slave-based. The colonial Belgians and French both had similar ideas, enlisting more than 68,000 colonised

Africans to build railroads in the Belgian Congo and well over 18,000 more to 'modernise' the French colonies. The Portuguese put forced labourers to work on cocoa plantations in the 1920s, and even the 'anti-slavery' British compelled natives to work in Kenya. Needless to say, these colonial markets were many things – unfair, oppressive, lethal, coercive – but 'free' they were not.

The irony does not end there though; colonial apologists who evangelise for classical liberalism lament the demise of a settler movement premised not only on statist economics but also on distinctly illiberal conceptions of human rights. When Captain Curt von Francois ventured to South-West Africa in 1889 to secure German control of the region, he initiated a horrific massacre bearing no signs whatever of human rights awareness. Impoverished and indebted, the Herero began sparring en masse with their German overseers in 1904 and were eventually forced into the Omaheke desert to die of thirst. After the government in Berlin ordered the new General Lothar Von Trotha to end his onslaught against the natives, the Germans took the Herero out of the desert and forced them into concentration camps. By the end of it all, the German colonialists had exterminated more than 60,000 Herero and 10,000 Nama in order to expand the German homeland.

The French, the Portuguese, the Belgians and the oft-cited British were not much better. As mainstream colonial apologists like Dennis Prager painstakingly assemble laudations for the British Empire's global dispersal of Lockean values, they avoid the fact that the British interned hundreds of thousands of Kikuyu Kenyans in the 1950s, raped innocent prisoners and 'cut off inmates' ears and fingers and gouged out their eyes. They dragged people behind Land Rovers until their bodies disintegrated.' The British authorities were by that point masters of the internment business, having led over 20,000 incarcerated Boers and approximately 13,000 black civilians to their deaths during the Second Boer



The British interned hundreds of thousands of Kikuyu Kenyans in the 1950s. Picture shows Kikuyu children held in a prison camp during the Mau Mau uprising in Kenya in 1952.

War.

When colonial apologists acknowledge that these facts are facts, they frequently reply that colonialism, however inhumane, was nonetheless preferable to the non-colonial alternatives of despotism, slavery and savage warfare. If the colonialists had stayed in business longer, their logic goes, sub-Saharan African tribes would not have reverted to their inferior, pre-colonial doctrines of authoritarianism.

But reality tells a distinctly different story. Authoritarian mechanisms like concentration camps did not exist in sub-Saharan Africa until the British brought them to South Africa, nor did African genocide exist until the Germans initiated it in Namibia. The Herero leadership, revealing a human rights doctrine miles more evolved than that of Namibia's colonisers, condemned Germany's indiscriminate attacks and took great pains to avoid killing women, children and other civilians during the anti-German rebellion. Nama Chief Hendrik Witbooi similarly took issue with German military tactics, writing that it did not behoove a purportedly 'civilised nation' to kill noncombatants so recklessly. Tyranny and slavery certainly existed in Africa before colonisation, but the colonialists, however rhetorically committed to

emancipation, hardly improved anything when they themselves mutilated people's bodies and commandeered African slaves to build lavish communities. Though an excuse for colonisation, humanitarianism usually was not a colonial product.

Sub-Saharan Africa faces a wide set of issues in many different places for many different reasons, but at least one thing can be said of the aggregate region: its problem is not that the 'liberal, free market' values of European colonialism have abated. In the first place, colonialism was a statist movement, meaning that there never were any liberal or free-market colonial values to abate; in the second place, the actual colonial values of racism, greed and violence were great detriments to sub-Saharan Africa, destroying civilian families, psychology and infrastructure.

All of which is to say that colonial apologists, blissfully unaware of their ideology's sick irony, should take a closer look at their own values and history before insinuating that an extension of illiberal colonialism would have done wonders for the rest of the world. ♦

Tommy Raskin has contributed to The Nation online, the Good Men Project, the Humanist, and Amherst magazine. He has also appeared on HuffPost Live and co-hosts The Angle radio show. This article is reproduced from the Foreign Policy In Focus website (fpif.org) under a Creative Commons licence.

Like many of his contemporaries, the Vietnamese poet *Che Lan Vien* (1920-1989) participated in the country's struggle against foreign rule. While his early poems reflected his nationalist passions, his later poems, like the one below, took on a darker hue.

Graves

Che Lan Vien

Bury it deep, the smile on your red lips,
and choke it dead, the song inside your throat.
Stop looking for the fresh, bright hues of flowers
and listening for the silver tones of birds,

Because each joy now only brings to mind
those crazy dreams once smouldering in the soul,
those sorrows festering in the heart's dark jail;
inside sad eyes, all images of youth.

The past is one long row of tomb on tomb.
The future is a row of graves unfilled.
And do you know, my friend? The present, too,
is silently interring all our days.

In summer heat the lush, green leaves grow dim
to set the stage for autumn soon to come.
And one by one our days of youth fade out
to weave the graveclothes that will shroud our soul.

Translated by Huynh Sanh Thong

Third World Gallery

Rush hour in Bangladesh.

Credit: GMB Akash