The perilous dependence on cheap food imports and a different path forward

Tony Weis

The free market approach to food security

Decades of heavy debt service, structural adjustment, deepening global market integration, and the disciplines of the World Trade Organization reconstituted the nature of food security across much of the Global South. Debt and adjustment policies dramatically reduced the role of the state in agriculture, forcing extensive cuts to government expenditures on research, extension services, small farm oriented credit, and rural and domestic marketing infrastructure. It also diffused energy for state-led redistributive land reforms and frequently replaced it with market-led land reforms, which have tended towards highly uneven outcomes. At the same time, increased agro-export production was promoted in order to maximize foreign exchange earnings, and domestic markets were liberalized, first bilaterally through adjustment policies and next multilaterally through the WTO. This approach has been characterized as the 'free market approach to food security', with the basic promise being that increased foreign exchange would enhance a country's capacity to access the bounty of global food markets, bringing lower prices and more stable supplies.

However, for many countries of the Global South, the net long-term result has been deepening dependence upon cheap food imports, while agro-export earnings of tropical commodities have been subject to protracted declines in terms of trade. Rising food imports have served to erode the viability of many small farm livelihoods, commodified food security, and fostered unsustainable levels of urbanization. The great vulnerability laden in this course was partially masked as long as cheap industrial surpluses flowed, but has been increasingly exposed amidst the dramatic volatility in world food markets since 2006, as the human costs have become apparent in low income, net food importing developing countries and the poor within them, from small farms to *favelas*.

Still, the free market approach to food security continues to pervade powerful narratives about globalization and world agriculture. For champions of global market integration, the problems associated with world food price volatility were not related to too much trade liberalization but too little, along with excessive state interference in markets (e.g. agro-fuel subsidies, export restraints, blocking the spread of genetically modified organisms). Such claims have, in turn, been translated into calls to reinvigorate the Doha Round of the WTO for the sake of the world's poor. At the same time, the celebration of agro-export expansion as the basis for agricultural development is now being used to justify the new wave of land grabbing across the Global South. As land is alienated from local control, sometimes with long term concessions, strong echoes of adjustment policies can be heard in assurances that the large-scale foreign investments in land can fortify the fiscal position of indebted states, and that improved foreign exchange earnings can increase the capacity of countries to purchase food supplies on international markets.

Such echoes are even more worrying given how they hinge on the false promise that world markets will perpetually abound with cheap food surpluses. This promise has continuously ignored the biophysical contradictions of the industrial grain-oilseed-livestock complex, and the long-term resource constraints and climatic burden associated with tying food security strategies to vast, permanent material flows over great distances.

The illusory efficiency of industrial monocultures

The competitiveness of industrial monocultures relative to lower input and more biodiverse farming systems has been defined by a particular definition of efficiency: superior yield and productivity per worker. In this narrative, little attention has been given to the impact of the massive agro-subsidy regimes across the industrialized world, particularly in the US and EU. Even less attention has been given to how industrial monocultures systematically undermine the biological and physical foundations of agriculture, depend on the unsustainable use of non-renewable resources (particularly fossil energy), and generate large pollution loads and greenhouse gas emissions (GHGs) – an array of hidden and externalized costs that might be seen as a set of implicit subsidies buttressing cheap industrial food.

The industrialization of agriculture creates or exacerbates many biological and physical problems. Soil degradation is accelerated by mechanization and repeated cycles of tillage and compaction, the removal of animals from land, and the greatly reduced vegetative ground-cover in monocultures. Moreover the biological simplification needed for industrial scale increases both the definition of ‘pests’ and the conditions for them to spread (e.g. homogenized landscapes, impoverished soils). External energy demands increase radically with mechanization as inputs and outputs must be moved over greater distances, while enhanced seeds, drier soils, and reduced ground-cover greatly expands irrigation demands and the need for freshwater diversions. The huge volumes of ‘virtual’ or embedded freshwater are an under-appreciated aspect of high-yield monocultures.

These biological and physical problems have been overpowered with a series of external inputs, or ‘biophysical overrides’. These include: inorganic fertilizers to replace depleted nitrogen, phosphorous, and potassium; chemical pesticides to control problems posed by weeds, insects, fungi, and plant disease (engenders new threats over time as natural controls are

eliminated, soil health declines, and resistance develops); and increased engineering of watercourses and pumping of underground aquifers at unsustainable levels. These overrides must then be understood in the context of their resource budgets and pollution burdens, at the centre of which is an intractable dependence upon fossil energy – from the running of farm machinery, to the production, transport, and application of industrial fertilizers and agro-chemicals, to the long-distance movement of outputs.

This fossil energy budget translates into a large volume of carbon dioxide emissions, which are compounded by other GHG emissions, including the nitrous oxide emissions from synthetic nitrogen fertilizer and the methane emissions from growing ruminant populations. The atmospheric impact of industrial monocultures grows further in light of how the reduced biomass (both above and below the soil) diminishes the capacity for carbon sequestration over a given area of land relative to both natural ecosystems and more biodiverse farms. Industrial monocultures are also implicated in a range of other environmental problems, with some of the most damaging being: the runoff of excess nutrients from industrial fertilizers, which causes widespread eutrophication and damage to freshwater and coastal ecosystems; the persistent toxins that stem from the pesticide treadmill, which pose complex and diffuse risks for ecosystems, animal life, and human health; and the land degradation caused by prolonged irrigation and waterlogging, nutrient leaching, and salinization.

In short, high-yield industrial monocultures contain an unsustainable resource budget and are responsible for a wide-ranging pollution load, including a large atmospheric footprint (which grows further when the inefficiencies of cycling so much grains and oilseeds through industrial livestock is considered). These chronic biophysical contradictions are now accelerating with the problems posed by peak oil and climate change.

Accelerating instabilities: risks and regressivity

Fossil energy is responsible for more than 90 percent of the world's net primary energy consumption, with oil being both the largest and the most crucial source of fossil energy, accounting for virtually all of the liquid fuel that powers world transportation systems and global trade, and facing more proximate limits than natural gas or coal. The near-term horizon of 'peak oil' is now generally accepted, meaning that all of the world's easiest-to-produce, lowest-cost oilfields have already been discovered and that extraction will become ever more difficult, costly, and energy intensive as they decline. Peak oil is pulling industrial grain and oilseed production in two basic and opposing ways.

First, the interrelation between oil prices and the costs of transportation and agro-inputs means that the volatility due to peak oil is bound to influence prices of key food staples in world markets (similarly, the approaching scarcity in the

world supply of phosphorous is also bound to reverberate in world food markets). Thus, even if other environmental burdens continue to be externalized, the inevitable limits to the world's fossil energy supply present inescapable long-term problems for productivity, and will break down some of the large implicit subsidies which have underpinned cheap food.

Second, the desperate search for new sources of liquid energy is driving the global boom in agro-fuel production, with the hope of generating renewable stores of photosynthesized solar energy that can be converted into liquid forms. This boom is being propelled by both economic and extra-economic motivations: it involves a nexus of large agro-chemical companies (e.g. BASF), grain-processors and traders (e.g. ADM, Bunge), energy (e.g. Chevron, BP), and automobile corporations, and is an important aspect of rising land acquisitions on a world scale. It is also heavily subsidized by a number of governments seeking to enhance national energy security.

But in contrast to the effusive green marketing, the potential of agro-fuels to substitute for oil is limited by the low or negative energy return on investment (EROI) in industrial monocultures (given the large fossil energy budgets embedded in industrial monocultures) and the incredibly large land areas needed to produce agro-fuels on any scale. The low output per land area together with the fact that virtually all of the world's best arable land is in cultivation or pasture means that the agro-fuel boom has become an important factor in international pressure to purchase or lease land, as well as influencing markets for basic food staples, both in terms of direct competition (e.g. corn) and in the spillover of land diverted by subsidies to agro-fuel crops. Given the biophysical impulses and powerful entities driving the agro-fuel boom, it looms as an extremely powerful and regressive pressure driving land investment and competition in world food markets in the coming decades, and magnifying the atmospheric impact of industrial monocultures on a world scale.

As discussed earlier, industrial agriculture is a major cause of climate change. World agriculture is also at the forefront of vulnerability to climate change. While some have raised hopes that warmer temperatures and longer growing seasons might expand productivity in the world's temperate regions, there is also rising evidence suggesting that potential gains could be cancelled out by new dynamics, including the movement of pests, pathogens, and invasive species and increased plant stress from heightened temperatures and aridity. The dangers associated with the latter can be seen in the recent major droughts which have hit some of the world's grain and

oilseed heartlands over the past five years, including Australia, Argentina, Canada, Russia, Ukraine, and the US.

While no country is immune from risks, many of the world's poorest countries (with the smallest atmospheric footprints) face the first and worst threats from climatic changes, such as hotter and drier average temperatures, more severe weather events, more variable rains, long-term declines in the annual discharge from shrinking mid-latitude glaciers, and coastal vulnerability to rising sea-levels. Reflecting this, the FAO recently warned that slow-onset climate changes threaten "potentially catastrophic" impacts on agriculture across the Global South. The greatest risks to agriculture are in the semi-arid tropics, which are already home to large numbers of poor and chronically malnourished people.

The mitigation imperative

As Olivier De Schutter has emphasized, from this point forward it is essential to think "about climate change and agricultural development in combination." In this, climate change mitigation is paramount, which essentially means taking urgent efforts to lessen the scale of change, through drastic emissions cuts and by enhancing the capacity of ecosystems to sequester GHGs. Action on mitigation will set the parameters of what adaptation is possible.

The mitigation imperative challenges industrial monocultures to their core. An appreciation of the fossil energy budget and atmospheric burden alone demolishes the illusion of industrial efficiency in agriculture, and the related promises which underpin the free market approach to food security – most basically, that there can be perpetual long distance flows of cheap food. Instead of yield and labour-input efficiency, where large, mechanized farms are far superior, the mitigation imperative demands considering land efficiency and material flows in a more comprehensive way, where efficiency involves minimizing external inputs, soil loss, and GHG emissions, and enhancing nutrient cycles, soil formation, and carbon sequestration.

In this conception of environmental efficiency, low-input, biodiverse, and more labour intensive small farms, embedded within more localized food economies, can be seen as far superior to industrial monocultures which are tied to global flows of inputs and outputs. The farmers' movement, Vía Campesina encapsulates this perspective in its claim that small farming can 'cool the earth'. Furthermore, low-input, biodiverse farms also have the potential to increase resilience in adapting to the climatic change the world is already committed to, and in responding to the approaching limits of fossil energy.

The mitigation imperative also points to the need to stop further conversion of forests to agriculture, in light of the net carbon loss (that is, emissions in clearance and lost sequestration capacity). In a warming world, containing

agricultural frontiers and enhancing long-term prospects for food security are bound together. This means paying great heed to the current conditions which are driving land clearances, and recognizing how the expansion of large-scale plantations is bound to increase pressures to convert non-agricultural or more marginal lands into more labour-dense farming systems. It also means situating the actions of the rural poor within their contexts of poverty and inequality, and considering the potential environmental, social, and economic gains which redistributive land reform could unleash.

In sum, the free market approach to food security has sown a perilous dependence upon cheap food imports, and provides no defence for the new land grabs. On the contrary, the biophysical basis of this faith is cracking, which land grabbing will only exacerbate. Amidst food price volatility, the pressures of peak oil, and the tremendous and uneven risks associated with climate change, the path for rebuilding world food security must focus on environmentally efficient small farms, and involve major public investments in agro-ecological research, training, and extension.

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