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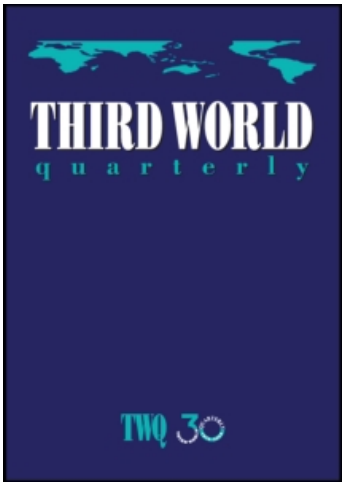

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Contemporary Contradictions of the Global Development Project: geopolitics, global ecology and the 'development climate'

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Contemporary Contradictions of the Global Development Project: geopolitics, global ecology and the 'development climate'

PHILIP MCMICHAEL

ABSTRACT *The global development project faces newly evident challenges in the combination of energy, climate and food crises. Their interrelationships create a powerful moment in world history in which analysts and practitioners grope for solutions, limited by the narrow market episteme. This contribution argues that official development, in advocating green market solutions, recycles the problem as solution—a problem rooted in the geopolitics of an unsustainable global 'metabolic rift' and a discourse of global ecology reinforcing international power relations through monetary valuation, and deepening the North's 'ecological debt'.*

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The 'development climate' is a market product, in so many ways. The earth's atmosphere is heating up as a consequence of a global market infrastructure based on fossil fuel consumption. Since the market has become synonymous with development, the response is to frame solutions to climate change in market terms. This leads to commodification of the ecological commons through green market solutions such as carbon trading, emissions offsets and biofuels, to sustain, rather than question, current trajectories of accumulation and consumption. Because the world is finite, deeply unequal, and already warming at rates faster than the Inter-Governmental Panel on Climate Change's (IPCC) conservative estimates predict, the notion of 'green accumulation' is an oxymoron.

From the 'development' perspective current market ontology includes a politics of Northern security, first expressed as a 'global ecology' at the 1992 Earth Summit. Global ecology appropriates and/or manages environmental knowledge to protect planetary carbon sinks and natural resources for a global development project. The USA's participation in this conference included a telling caveat, namely that it did not 'change its long-standing opposition to the so-called ''right to development''. Development is not a

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right. On the contrary, development is a goal.'[1] The goal of the global development project has been to sustain energy, capital and commodity flows for purposes of military and political security, as 'the environmental consequences of worldwide industrialization threaten[ed] to destabilize the Northern way of life.'[2] It has deepened the global 'ecological footprint' of the North through the 'export of sustainability' from the South, and its consequences are now represented phenomenally as a huge 'carbon debt', whereby the North accounts for about 80% percent of CO_2 build-up in the atmosphere. Thus, for example, 'in just 11 days, the average UK citizen will generate as much CO_2 as the average person in Bangladesh will during a whole year', and it has been calculated that a single British power station in West Yorkshire 'emits more CO_2 annually than the 139 million people in Uganda, Kenya, Tanzania, Malawi, Zambia, and Mozambique combined.'[3]

The 'development climate', then, combines an ecological footprint that defines North–South relations with a market trajectory that exploits those relations in the name of 'green accumulation'. Known as 'market environmentalism', this project has so far had the effect of generating further greenhouse gases (GHG), which, given naturalistic conceptions of the market, legitimises new cycles of green accumulation. The consequences are a rise in carbon emissions and a deepening of human displacement, which, in turn, renews the legitimacy of the project of global development and its market crusade at the expense of alternative pathways to sustainability.[4] In short, the recycling of the neoliberal market truth, as a convenience for the development establishment and its corporate partners, represents a deeply inconvenient truth for humankind and its ecological foundations.

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Development's climate

In the haze of promises of market prosperity the impact of development on the climate has taken a long time to be taken seriously,[5] let alone to be recognised for the catastrophe that it already is,[6] and will remain so long as market solutions prevail. The 2007/2008 *Human Development Report* declares 'Climate change is the defining human development issue of our generation',[7] and the development literature is only now catching up to this issue. At the eighth Conference of Parties (COP8) of the United Nations Framework Convention on Climate Change (UNFCCC) in Delhi a threshold report on 'Poverty and Climate Change' declared that 'climate change is a serious risk to poverty reduction and threatens to undo decades of development efforts'.[8] Within the practitioner and policy community the response is to incorporate 'climate proofing' into development programmes, as key to adaptation. While important to address vulnerabilities (water access, disease patterns, natural disasters), climate proofing deepens tendencies to override local knowledge and solutions.[9] The World Bank's Global Environmental Facility finances only projects that focus on adaptation, generating National Adaptation Programs of Action (NAPAs) analogous to the (structural adjustment) Poverty Reduction Strategy Papers, in which market solutions remain paramount, encouraging disaster relief business,[10] and reproducing

neo-colonial initiatives. The North–South asymmetry is a significant source of stalemate in climate negotiations, represented in such rebukes as Argentinian President Kirchner's charge that the North should meet its 'environmental debts' just as it demands the South meet its 'financial debts'.[11] In fact, Akhil Gupta traces such asymmetry back to the 1992 Earth Summit: 'of the two themes that the conference was trying to bring together, environment and development, the North focused on the former while ignoring the latter, whereas the South focused on the interrelationship between the two', given exploitation of the South's raw materials 'as essential inputs into goods manufactured, and largely consumed, in the North'.[12]

Roberts and Parks argue that climate policy will not succeed without proceeding from the fact of North–South inequality. Their thesis is as follows:

> When powerful states disregard weaker states' position in the international division of labor in areas where they possess structural power, they run a high risk of weaker states 'reciprocating' in policy areas where they possess more bargaining leverage. The issue of global climate change—which itself is characterized by tremendous inequality in vulnerability, responsibility, and mitigation—can therefore not be viewed, analyzed, or responded to in isolation from the larger crisis of global inequality.[13]

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The strength of this perspective is that it identifies the asymmetries of the state system as a major stumbling block to climate policy, whose 'resolution will most likely require unconventional, perhaps even heterodox, policy interventions'. The authors argue that a climate of mistrust derives from three widely held perceptions: 1) climate change is the result of 'profligate Northern consumption'; 2) national capacity for environmental reform is a function of a state's position in the international division of labour; and 3) the North's approach to environmental issues thwarts Southern economic development.[14] From Malaysian Prime Minister Mahathir Mohamad's charge of 'environmental colonialism' at the 1992 Earth Summit, to Brazilian President Lula's comment in February 2007 that the 'wealthy countries are very smart, approving protocols, holding big speeches on the need to avoid deforestation, but they already deforested everything',[15] the standoff has continued, even as it is expressed in terms that invoke uneven development.

Roberts and Parks observe that the South perceives 'that the rules are continually being rewritten unilaterally by the rich, industrialized countries in order to enrich themselves at the expense of the South, and that the structure of the world system is largely to blame for their grinding poverty and chronic vulnerability'.[16] In addition to the ideological flourish of the last clause, it is the case that material-intensive production has shifted from North to South, as the former has moved towards a post-industrial, service economy. However, importing material-intensive goods to sustain Northern lifestyles is 'clearly no less materialist and no more sustainable' than when manufacturing concentrated in the North'.[17] Further, recent studies suggest that manufacturing unit values are declining, and so the export of manufacturing

will only intensify in the South, rather than follow the post-industrial development trajectory of Northern countries.[18]

The point here is that the state system is premised on competitive accumulation—as a function of government legitimacy, military security and maintaining national currency stability through mechanisms such as trade, debt financing and debt repayment, and liberalisation of economic laws. In addition to the structural inequalities overlaying export intensification, and converting the South into a 'world factory' and a 'world farm', normalising the (neoclassical economic) impulse to 'export or die' endangers the planet. Roberts and Parks' message is that the climate issue is so profoundly rooted in the North–South asymmetries that 'strict rationalist and institutionalist ideas that climate change can be addressed solely by designing better treaties, giving aid more strategically, or building capacity in poor nations' will fall short.[19] Yet these remain the dominant perspectives—because of a deeply embedded episteme that is unable to think of the world in other than state-centred and Eurocentric terms. Thus John Rapley claims:

> first-world countries will probably have to bear the expense of environmental adjustment. If they do not, then poor countries will continue to exploit the advantages of cheap but polluting technologies, with deleterious effects on the global environment ... The rich countries therefore find themselves between a rock and a hard place: either bear the economic cost of third-world development or bear the political—greater instability—and environmental costs of third-world underdevelopment. The choice is not easy, but it probably has to be made.[20]

This conclusion contains significant assumptions about the development climate: first, conceptualising it as one between countries, omitting the role of TNCs in exploiting 'the advantages of cheap but polluting technologies' located in the 'poor countries', enabled by the Kyoto Protocol's Clean Development Mechanism (CDM); second, locating 'deleterious effects on the global environment' in the global South; third, implying that political instability is an attribute alone of underdevelopment; fourth, implying that choices about environmental adjustment will be made by the first world; fifth, implying that the first world can act responsibly; and sixth, framing the solution in 'adjustment' (adaptation) terms—rather than reformulating the paradigm of development itself. Such assumptions reappear in various guises, reaffirming the development paradigm even as they attempt to 'green' it.

A recent report for the UN Committee for Development Policy, entitled 'Climate change and sustainable development', by Tariq Banuri and Hans Opschoor, is an exemplar. The report's focus on the de-carbonisation of economic development leads beyond the Kyoto Protocol to advocacy for a massive, globally funded public investment programme, like the Manhattan Project, to deploy renewable energy technologies in developing countries. The argument is that Kyoto separated climate policy and development, focusing on the global North, leaving the global South unimpeded by emission targets. In addition, the authors note that the climate debate has hitherto been dominated by climate scientists, despite its serious implications

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for development, declaring: '*any successful solution to the climate problem will have to come from within the development process*; it will need to *begin*, rather than end, with developing countries, and be based on a deep understanding of how development occurs'. It quotes the UNFCC principle that 'economic development is essential for adopting measures to address climate change'.[21]

The authors focus on the 'developing countries' because they 'now contribute roughly half and the most rapidly rising component of global emissions'. They argue that:

> [higher] growth rates in developing countries (especially in Asia) ... offer the genuine hope of narrowing the gap between rich and poor countries. As such, a serious threat to this momentum could also constitute a threat to global stability and mutual trust ... as the text of the UNFCCC bears witness, the economic growth of developing countries has increasingly come to be viewed as a global responsibility—because it is the only mechanism the world has found thus far to address the vast inequality in incomes, wealth, and access to basic needs, human rights, and political participation.[22]

They note that Kyoto's CDM established 'a minimal link between climate and development' by encouraging Northern countries to meet emission reduction targets by investing in cost-effective solutions in the South,[23] arguing that the CDM, in enabling Northern access to cheap options of emissions reductions in the South, pre-empts future Southern options to 'undertake emissions reducing activities themselves'.[24]

In combining climate change and development, Banuri and Opschoor use an analogy with the debt crisis, namely that overspending leading to internal budgetary imbalances in indebted countries is analogous to overuse of fossil fuel resources, which 'has also insinuated itself into economic behaviour and institutions'.[25] A structural adjustment programme with respect to carbon emissions is therefore necessary. But the analogy, in locating responsibility at the point of 'arrival', where crisis is manifest, reproduces the heavy-handedness of the debt regime, which individualised the problem of debt, leaving its structural roots and outcomes unaddressed, and reproducing growing inequalities. This directional prescription is then repeated in an analogy with the Green Revolution, recalled as a successful mechanism of technology transfer to avert a catastrophe of hunger in the 1950s. Claiming that 'the world already has the technical knowledge to reduce emissions and shift to superior technologies',[26] the authors reproduce a technological path-dependence that ignores alternatives, invoking a technology that magnified emissions, and inequalities by exporting chemical-dependent agribusiness to the South.

In short, an attempt to integrate development into a climate perspective by targeting the South as the most cost-effective, and future-relevant, region of economic growth, for global public investment in de-carbonisation, seeks to reverse 'the current order of prioritization of action' by de-carbonising a developing South, facilitating 'technological learning that would reduce the costs of renewable technologies for the North'.[27] While the content of the proposal rests on the deployment of green technologies, the form of

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the proposal reproduces the development episteme. That is, it privileges Northern technological intervention, ignoring the possibility, indeed necessity, of technological learning from sustainable low-carbon livelihood methods in the South. In so doing, despite the attempt to legitimise public investment, the authors do not fundamentally challenge the ontology of the global development project.

In a more recent paper, a 2008 policy brief for the Commission on Climate Change and Development, Banuri and fellow authors note that adaptation, deemed a necessary and 'moral responsibility' by the North towards the South, is 'often similar to, and sometimes indistinguishable from, development'. From this perspective adaptation (insurance schemes, crop-rotations, irrigation systems, drought-resistant seeds, sea defences) reproduces development practice: 'development agencies and NGOs can use their decades of experience in poverty alleviation and sustainable development to assist the poorest countries to meet the adaptation challenge',[28] adapting, rather than reconfiguring. Thus 'mainstreaming adaptation' 'includes ''climate proofing,'' ie the protection of existing ODA projects and programs' and ensuring 'that future development plans and programs are actively designed to reduce the vulnerability to climate change'.[29]

Climate proofing is a new profit frontier, and agrochemical and biotechnology firms like BASF, Monsanto, Bayer, Syngenta, and Dupont have filed over 500 patent documents on so-called 'climate ready' genes. At a time when flexible seed selection by farming women in West Africa, for example, has managed recurring drought,[30] gene patents threaten farmer sovereignty, and shift resources away from farmer-based strategies for climate change survival and adaptation: 'After decades of seed industry mergers and acquisitions, accompanied by a steady decline in public sector plant breeding, the top 10 seed companies control 57% of the global seed market. As climate crisis deepens, there is a danger that governments will require farmers to adopt prescribed biotech traits that are deemed essential adaptation measures',[31] rather than support documented local initiatives based on adaptive practices, largely by women.[32] A spokesperson for Monsanto, in a strategic alliance with BASF and the Gates Foundation to develop drought-resistant corn, declared: 'I think everyone recognizes that the old traditional ways just aren't able to address these new challenges. The problems in Africa are pretty severe.'[33]

In general the multilateral agencies are geared up to 'marketise' development adaptation.[34] And so the Commission on Climate Change and Development notes that the UNFCCC's 2001 Adaptation Fund 'is the first example of the use of market-based options to generate substantial financial resources to address climate change. The carbon market ... has the potential to move huge financial flows to developing countries for mitigation and adaptation'.[35] Unsurprisingly, however, 'initial flows suggest that the money is narrowly targeting emission reductions in big countries like China and Brazil', as predicted by the Stern Review.[36] Even so, a Stanford University study found that the UN's offset fund has been 'routinely abused by chemical, wind, gas and hydro companies who are claiming emission

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reduction credits for [clean energy] projects that should not qualify', because they were scheduled for construction anyway, resulting in no change in emissions.[37]

Marketing development is embedded in the pores of the development agencies. While organisations like the Food and Agriculture Organisation (FAO) and the UN Development Programme (UNDP) represent popular constituencies, they view them through the market lens, where poverty is both naturalised and considered a liability. The UNDP claims that 'poverty and low levels of human development limit the capacity of poor households to manage climate risks'. This may be so, but 'poverty' has several faces, whether frugality (subsistence), destitution (frugality deprived of its material base) or scarcity (modernised poverty in a cash economy)[38]—and, unlike the Monsanto assumption above, subsistence may include local knowledge about managing the effects of climate change; for this reason it cannot simply be discounted through the lens of modernised poverty. The UNDP may qualify market environmentalism, claiming that the 'development of regulatory systems and public–private partnerships for a low-carbon transition are also priorities' and that social justice and human rights 'demand stronger commitment on adaptation', yet it argues that carbon markets 'are a necessary condition for the transition to a low-carbon economy', offering potential incentives to conserve forests and grasslands, and it proposes integrating adaptation into the Poverty Reduction Strategy Papers framework.[39] Even with regulation markets have a way of serving capital, sustaining inequality and reducing democracy, and disembedding social and ecological relationships.

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Global ecology

Ultimately, the 'development climate' perspective differs little from that shaping the 1992 Earth Summit, described by Wolfgang Sachs as 'global ecology'—a knowledge of domination. As he noted at the time:

> To put the outcome of UNCED in a nutshell: the governments at Rio came around to recognizing the decline of the environment, but insisted on relaunching development. As worn-out development talk prevailed, attention centered on the South and its natural treasures and not on the North and its industrial disorder. There were conventions on biodiversity, climate and forests, but no conventions on agri-business, automobiles or free trade. This indicates that UNCED attempted to secure the natural resources and waste sinks for economic growth in favour of the global middle class, rather than to embark upon a path towards industrial self-limitation and local regeneration.[40]

Invoking the Manhattan Project revisits a project of global ecology, which invokes the idea of 'environmental diplomacy'. Sachs continued:

> Far from 'protecting the earth,' environmental diplomacy which works within a developmentalist frame cannot but concentrate its efforts on rationing what is left of nature. To normalize, not eliminate global overuse and pollution of nature will be its unintended effect.[41]

Sachs' prescience resonates in current forms of 'market environmentalism', which sanctions the trading of 'carbon credits' as if processes of carbon emission can be commodified in commensurable units,[42] and also identifies biofuels (corn and sugar ethanol, palm oil, jatropha, soy, switch grass, and so on) as an alternative energy source. It is widely acknowledged now that agro-fuels[43] increase emissions through deforestation and draining peatlands, or remove land from agricultural production, driving up food prices and encouraging expansion of crop lands into pristine habitats, and so on.[44]

In an era of declining agricultural productivity, the competitive advantage of agro-fuels will not only intensify industrial agriculture, but also increase agflation—thus, at the end of 2007, the *Economist*'s food-price index reached its highest point since originating in 1845: food prices had risen by 75% since 2005, and world grain reserves were at their lowest.[45] The rush to agro-fuels is *manifestly* responding to an energy crisis, expressed in the rising cost of capital inputs (production, processing, transport) as the end of cheap oil reveals the inherent entropy of industrial agriculture. It is also responding to an ecological crisis, as declining soil fertility in the USA and Europe saps productivity increases, and agro-fuel production is outsourced, under the incentives of the Kyoto Clean Development Mechanism protocol, which caps emissions in the global North, but not in the global South. *Science* magazine claims that 'Converting rainforests, peatlands, savannas, or grasslands to produce food-based biofuels in Brazil, Southeast Asia, and the United States creates a ''biofuel carbon debt'' by releasing 17 to 420 times more CO_2 than the annual greenhouse gas (GHG) reductions these biofuels provide by displacing fossil fuels'.[46]

Global access to cheaper resources as a solution to peak oil and barren soil in the North compounds the problem by capitalising on Southern dependencies as a solution to Northern needs, and facilitating the 'export of sustainability' from South to North. Indebted states embrace carbon offset, and agro-fuel, projects as foreign-exchange sources to repay debt. Novel oil, auto, food and biotech industrial alliances, resulting in new investment in Southern land and agro-fuel infrastructures, and development of global agrofuels infrastructure, complement new private–public partnerships.[47] In the palm-oil complex, for example, the Indonesian palm oil trade is managed by a combination of Cargill (world's largest private company), an ADM–Kuck–Wilmar alliance (world's largest biofuels manufacturer), and Synergy Drive, the Malaysian government firm 'soon to become the world's biggest palm oil conglomerate'.[48] The public–private relationship also enlists governments, in the name of development, in the agro-fuels project—as in the unsuccessful (thanks to citizen resistance) bid by a subsidiary of ASX-listed Overseas & General Limited (OGL) to produce palm oil on New Guinea's Woodlark Island:

> OGL signed a plantation development agreement with a Quantum Logistics Limited for the development of 20 000 hectares of oil palm plantation on Woodlark. Benefits to the province would include the offering of 10 percent equity in the project to the Milne Bay provincial government and

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> its 15 local-level and urban governments as well as spin-off business opportunities for locals, new roads, jobs, provision of infrastructure through the tax credit scheme, and an expansion in the island's education and health care systems.[49]

Carbon accounting methods, working from an input–output market model, enable a false economy for the agro-fuels project, concealing subsidies, and omitting a full 'lifecycle analysis' of the impact of agrofuels: 'Much of the ''evidence'' presented for agrofuels to reduce greenhouse gas emissions ignores the larger picture of ''land use change'' (usually deforestation), soil erosion and nitrous oxide emissions'.[50] In these ways the agro-fuels project reproduces the 'global ecology' regime, viewing 'market environmentalism' as the solution, rather than the problem, turning agro-fuels, like food, into a global commodity, rather than encouraging local biofuels for local energy sovereignty (on the model of 'food sovereignty'). The problem with the global ecology regime is that it fractures the relationship between social and ecological sustainability.

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Capitalism's metabolic rift and climate change

The foundation of the global ecology regime is the 'metabolic rift', Marx's term for the separation of social production from its natural biological base.[51] Arguably this separation is the basis for the international division of labour (otherwise known as the 'ecological footprint'). Corporate accumulation, its development model and its accelerating emissions are deeply embedded in these ecological and spatio-political relations.

The metabolic rift expresses the subordination of agriculture to capitalist production relations, that is, the progressive transformation of agricultural inputs (organic resources to inorganic commodities), reducing nutrient recycling in and through the soil and water, and introducing new agronomic methods dependent upon chemicals and bioengineered seeds and genetic materials produced under industrial conditions. The metabolic rift underlies the historic spatial separation between countryside and city,[52] as agriculture industrialises. This, in turn, depends on manufacturing technologies, whose metabolic rift involves expanding inputs of energy and natural resources, and industrial wastes—recycled today, but largely outside of natural cycles.

The mediation of the urban–rural spatial relation by commodity circuits, rather than through cycles of waste and regeneration of natural processes, deepens the metabolic rift. Historically the world was reordered along these lines initially via the colonial division of labour, anchored in monocultures producing tropical products for metropolitan industrial and personal consumption. With the development of chemical agriculture and biotechnology, the growing abstraction of agriculture as an 'input–output process that has a beginning and an end'[53] means that, rather than a complex embedded in, and regenerating, local biological cycles, agriculture can in principle be relocated to specific locales anywhere on the planet as the 'intrinsic qualities of the land matter less'.[54] In effect, agro-industrialisation increasingly

replicates the spatial mobility of manufacturing systems, including the sub-division of constituent processes into global commodity chains (such as the animal protein complex).

Petro-farming deepens the metabolic rift by extending inputs of inorganic fertiliser, pesticides and herbicides, and through mechanisation, increasing farm demand for carbon-emitting fuels and inputs, at the same time releasing soil carbon into the atmosphere along with even more damaging nitrous oxide from fertiliser use, and from livestock waste in factory farming.[55] The neoliberal project universalises the agro-industrial model, via a second, private phase of the green revolution, targeting non-staple food crops such as livestock feed, shrimp, fruits and vegetables, and now agro-fuels. Represented as a development initiative to feed the world, and stimulate agro-export revenues in indebted states, agribusiness displaces those agro-ecological systems, including slow food systems, which could reverse the metabolic rift, as they use six to 10 times less energy than industrial agriculture, restore soils, and reduce emissions by up to 15%, not to mention sustaining small-scale producer livelihoods.[56]

Legitimised by the energy/food crisis, the Alliance for a Green Revolution in Africa (AGRA), established in 2006 with funding from the Rockefeller and Gates Foundations, is poised to combine with other multilateral and corporate funds generated at the Rome summit of June 2008 to restructure African farming, devastated by structural adjustment cutbacks in infra-structural supports. Genetically modified crops using 'no-till farming' (a less soil-disturbing technology that nevertheless favours GM seeds) are on the 'green' agenda, along with networks of fertilisr dealers. A British investment fund manager, noting his success in producing paprika peppers and birdseye chillies for the world market in Malawi, proclaimed:

> The whole basis of agricultural development has been: how do we help the small farmer? You will never solve Africa's problems like that. You need small and medium enterprises rotating around massive farms that will plug them into the global economy. Our outgrowers now get a piece of the world price and actually benefit from the food price crisis.[57]

This market episteme forgets that agriculture is about food production first, and that an overriding task for small farmers is to reproduce themselves, and their fellow citizens, with locally produced food, preferably with 'locally appropriate and democratically controlled agro-ecological methods'.[58]

Since the industrial food system expends 10–15 energy calories to produce one calorie of food,[59] it is not surprising that agriculture accounts for about 22% of global GHG, with livestock (including its feed and transport) accounting for nearly 80% of this.[60] Meat consumption is particularly problematic—since the intensive livestock complex is globally organised through a division of labour linking specialised feed crop regions with factory-farmed meat production:

> it takes up to 16 times more farmland to sustain people on a diet of animal protein than on a diet of plant protein ... The emerging meat-eaters of the

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> emerging economies—especially China—are driving industrial agriculture into the tropical forests of South America, sending greenhouse gases skyward in a dangerous new linkage between the palate and the warming of the planet.[61]

The metabolic rift is symbolised by the explosion of factory farming. Asia and Latin America are the growth areas, with the FAO reporting that factory farming in the global South 'has grown twice as fast as that from more traditional mixed farming systems and more than six times faster than from grazing systems'.[62] Per capita demand for beef, poultry and pigmeat in China will double by 2020.[63] Since Chinese intensive meat production is based on Brazilian soybeans and US corn, in particular, this single complex produces GHG emissions in multiple ways, from deforestation of the Amazon, fossil-fuel-based transport, fertiliser use on intensive grain production, to animal methane, and so on.[64]

The animal protein complex, as modernisation, is promoted by development agencies, foreign investors and governments seeking outlets for agri-exports and/or crop surpluses, new markets for intensive livestock-rearing equipment and for chemicals and pharmaceuticals. Climate scientists have called for reversing livestock production to arrest the GHG phenomenon, since methane and nitrous oxide, associated with livestock, contribute more than carbon dioxide to agriculture's warming effect.[65] Since available technologies for emission reduction would only affect non-CO_2 emissions by less than 20%, Northern reduction of meat consumption 'would then define the lower, common, ceiling to which low-income and middle-income countries could also converge'.[66] In short, meat consumption expresses key relations responsible for development-induced climate change, combining accelerating GHG emissions with the world-scale structuring of the metabolic rift.

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Development's climate

Fundamentally reformulating the development paradigm is the only sound solution to the climate crisis. All other solutions, notably market environmentalism, are partial at best, and at worst exacerbate the problem. From the science it is clear that keeping carbon in the ground—by not extracting fossil fuels, not clearing forests, grassland and peatlands, and by schemes of carbon sequestration—is essential to reducing GHG, and curbing the warming trends.[67] But this endeavour threatens powerful corporate interests and politicians with short-time horizons, governed by the exigencies of stabilising national currencies (trade concerns) and national populations (job and energy/food price concerns). Resistance to drastic solutions, involving stabilising GHG emissions at the 2% level, comes from a combination of profitability concerns of corporations, both green and non-green, of public officials who serve the market, and of a powerful discourse of neoliberalism that represents market solutions as commonsense.[68] This 'toxic' combination conditions the existing development paradigm, which I represent as follows.

First, the development paradigm externalises environmental concerns. The lineages of the development paradigm include the modernity narrative of

controlling nature, and classical political–economic thought, which abstracts social and environmental relations from market mechanisms such as price, efficiency and productivity.

Second, the global development project is anchored in the nation-state system, by which the UN System of National Accounts requires states and multilateral development agencies to define and pursue development as accumulation, in positive measures of output and/or income (eg GNP). Other measures of well-being or regeneration of social and ecological values remain unregistered and de-legitimised, with environmental impacts registered in terms of clean-up cost.

Third, while all states are equal, some are more equal than others—especially when it comes to framing the problem. A neoliberal frame is a northern business frame, where capital market integration is the *sine qua non* of globalisation,[69] and its episteme of market rule.

Fourth, uneven development among classes, and states, produces inertial delays in sustainable development because those least responsible for climate change are most vulnerable to its effects,[70] and Southern states claim sovereignty as leverage to resist emission reduction protocols, or demand (disputed) financial aid to conserve their environments.

Fifth, the relations of industrial (and military) technology—such as standardisation (monocultures, hybrid agriculture), petro-farming (mechanised agriculture, mass-produced livestock, chemical fertiliser, pesticides, herbicides etc), fossil-fuel-dependent transport, chemical processes and products, large-scale exploitation of resources—contribute in a multitude of ways to carbon dioxide, methane and nitrous oxide emissions.

And sixth, the hegemony of the US model of 'high mass consumption', canonised by Walt Rostow as the fifth and final stage of development,[71] intensifies climatic breakdown, as unsustainable consumption trends render this development stage increasingly *terminal*.

In short, the subordination of ecology to economic value in the development paradigm not only discounts its over-exploitation, but also removes it from democratic accountability and sustainability.[72] As Lohmann observes:

> a global carbon credit market divides communities from each other in a way that impedes, rather than helps, the search for common solutions. Villagers near a carbon project in Chile are unlikely ever to see firsthand how the project's credits might help perpetuate pollution in Japan, drown villages in Bangladesh, or keep motorways clogged in Canada. Well-off buyers of 'offsets' from wind farms in New Zealand are unlikely to investigate what might link their 'green' purchases to the havoc wreaked by pipelines pushed through Nigeria or Alaska.[73]

Conclusion: the contemporary crisis of the global development project

Central to the development paradigm, and institutionalised in the UN System of National Accounts, is economic standardisation premised on the

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paradox of (politicised) currency stabilisation via competitive market relations. Economism's categorical values, while posited as timeless and rational, are deeply historical. Commodification of the material, and the ecological, world is a product of European modernity, based as it was on an expanded reproduction of the metabolic rift. As above, this process informs the reproduction of a global ecology regime, as follows:

> integral local practices, particularly in the South, are to be broken down yet further in order to 'balance' a system whose goals remain determined mainly by the North. This time these goals are not simply to secure raw materials, cheap labour, markets and political control for the international economic system. They are also to supply environmental repair or caretaker services to mitigate the problems that system has itself created ... Thus tree farms are to replace peasants' fields and fallows, in order to absorb carbon dioxide emitted by the industrial system; tropical forests and the knowledge of their inhabitants are to provide services to Northern industry, researchers and tourists; local commons are to be taken apart and reassembled into a fictitious 'global commons' and population control efforts are to be redoubled as a way of taking pressure off Northern-controlled resources. The possibility of instituting the reverse process, that is, dissecting and cannibalizing the so-called 'global' system to provide repair or caretaker services for thousands of local systems, is seldom raised.[74]

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At present carbon debt is addressed through the mechanism of market environmentalism, whereby the North redresses its disproportionate carbon footprint by financing 'clean development' in the South, without fundamentally reducing that overuse. Lohmann likens this to 'demanding reparations for slavery without abolishing slavery'.[75] Converting the earth's carbon-cycling capacity into a commodity centralises (Northern) power, at the same time as it excludes access to the 'global commons' for the earth's majority low-input inhabitants.[76]

Accordingly, proposing a de-centred, political–ecological perspective represents an ontological break with the standardising market episteme of the development project, and its 'global ecology'. It restores recognition of the multi-functional and cultural values of social ecology across global space, generating possibilities for localised sustainable development practices. As Joan Martinez-Alier notes:

> The monetary values given by economists to negative externalities or to environmental services are a consequence of political decisions, patterns of property ownership and the distribution of income and power. There is thus no reliable common unit of measurement, but this does not mean that we cannot compare alternatives on a rational basis through multi-criteria evaluation. Or, in other terms, imposing the logic of monetary valuation ... is nothing more than an exercise in political power. Eliminating the spurious logic of monetary valuation, or rather relegating it to its proper place as just one more point of view, opens up a broad political space for environmental movements.[77]

In short, de-carbonisation of the material economy will require substantial de-commodification to establish sustainable development, which in turn means the development subject would no longer be the high-mass consumer, but a politically mobilised social and ecological steward.

Notes

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