

**Luce Sustainability Seminar
Readings for Feb. 15, 2007
Sustainability and Social Justice**

Excerpt from: Kai N. Lee, “An urbanizing world,” in *State of the World 2007: Our Urban Future* (Washington, DC: Worldwatch Institute, 2007), pp. 3-21.

Wealth and Environment

The environmental challenges of cities vary with their level of economic activity. To oversimplify, poor city dwellers face direct, everyday environmental problems, while the wealthiest urban residents cause environmental problems that they do not experience in their daily lives. A child in Soweto, South Africa, risks dying from waterborne illnesses that his distant cousin in Birmingham, England, will not be exposed to. A factory worker in Wuhan, China, may suffer from asthma triggered by air pollution, while her counterpart in Nagoya, Japan, is less likely to encounter pollutants in the air she breathes. The college student in Denver, Colorado, contributes more to global warming as he drives to the campus each day than does someone riding a bus to classes at the Universidad de los Andes in Bogotá, Colombia.

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[Public health statistics] illustrate a pattern of spatial, environmental, and economic variation. A low-income city like Accra faces direct threats to health: water contaminated with human waste, housing infested with insect and rodent pests, streets and neighborhoods that flood in the rainy season. Each person and family must cope with these environmental problems in daily life. An industrializing city like Tijuana may face additional environmental problems from polluting factories and toxins from manufacturing processes. The rapid rise of energy use during industrialization, often in inefficient foundries and furnaces, imposes a large burden of air pollution on workers and residents, with substantial public health consequences. But industrialization also generates earnings that can be invested in environmental controls and public health measures, as the data on Tijuana and Singapore indicate.

With the transition to economies dominated by service industries, high-income cities competed with one another on quality of life, seeking to attract the professional talent to staff service firms such as software engineering or finance. Good environmental conditions and amenities help create the clean, interesting places that draw and keep highly mobile people in cities like Singapore. The rising economies of wealthy cities also powered increasing energy consumption and exploitation of forests, oceans, and other natural resources—with effects that were often far removed from the comfortable offices and homes of those living there. High- and medium-income cities today are caught in the paradox of losing sight of nature just as they become more dependent on it through increasing consumption and the globalization of production. The paradox itself is a gift of markets of ever greater reach: if a coffee crop fails in Indonesia, the supply from Guatemala or Kenya will smoothly fill the cup in Rouen or Buenos Aires. A disaster for rural growers is an unnoticed blip for the urban coffee drinker. But there is another paradox of planetary-

scale markets. Cities are places. Yet as cities become wealthier, their residents buy goods from around the world and invest in global companies. The widening spatial range of urban economies has frequently eroded a city's distinctiveness. This process is accelerating. Industrialization took more than a century to unfold in Europe, the United States, and Japan. The spread of industrial production to the once-poor lands of Asia has transformed economies in a few decades. And the rise of the information-intensive service economy brings change measured in years.

The variations among low-, medium-, and high-income cities have been discussed in terms of a curious empirical pattern known as the environmental Kuznets curve, named for American Nobel laureate in economics Simon Kuznets. (See Figure 1–3.) Drawing together a wide array of data, analysts have framed a generalized scenario of urban environmental development: local environmental problems that pose an immediate threat, such as lack of sanitation, tend to improve with increasing wealth, while global ones such as carbon emissions worsen, slowly undermining large-scale life-support systems such as climate. And as a city industrializes, environmental problems at the scale of the city and metropolitan region first worsen, as pollution increases, and then improve, as resources for engineered controls and regulation became available. In some cases, those regulations, combined with economic changes, force polluting activities to other locations.

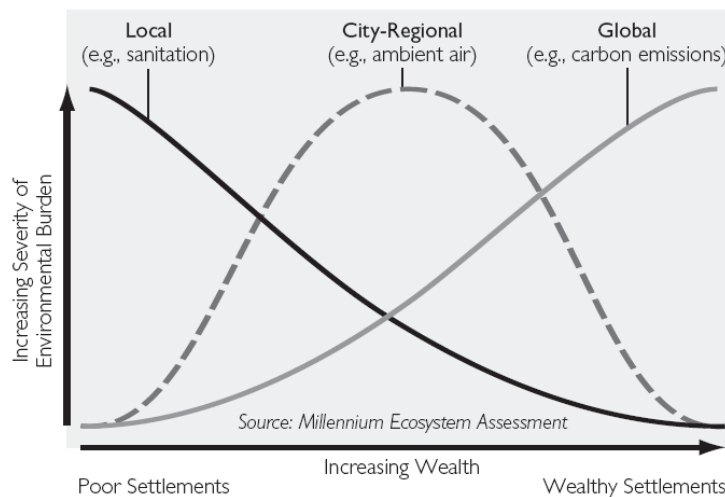


Figure 1-3: Challenges to Urban Sustainability in Relation to Wealth

This pattern does not mean that environmental problems automatically improve with greater wealth, as has sometimes been suggested. Yet the fact that there are different types of environmental challenges at different income levels does have significant implications for sustainable development. The idea of meeting the needs of the present has a sharply different meaning for someone living in a slum than for someone with a high-income lifestyle. Similarly, the obligation not to compromise the ability of future generations to meet their own needs has a different resonance for the poor and the rich. (pp. 13-14)

Excerpts from: Sir Nicholas Stern, *Stern Review: The Economics of Climate Change* (2006).

CO2 emissions per head have been strongly correlated with GDP per head. As a result, since 1850, North America and Europe have produced around 70% of all the CO2 emissions due to energy production, while developing countries have accounted for less than one quarter. (p. xi)

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Warming will have many severe impacts, often mediated through water:

- Melting glaciers will initially increase flood risks and then strongly reduce water supplies, eventually threatening one-sixth of the world's population, predominantly in the Indian sub-continent, parts of China, and the Andes in South America.
- Declining crops yields, especially in Africa, could leave hundreds of millions without the ability to produce and purchase sufficient food. At mid to high latitudes, crop yields may increase for moderate temperature rises (2-3 degrees C), but then decline with greater amounts of warming. At 4 degrees C and above, global food production is likely to be seriously affected.
- In higher latitudes, cold-related deaths will decrease. But climate change will increase worldwide deaths from malnutrition and heat stress. Vector-borne diseases such as malaria and dengue fever could become more widespread if effective control measures are not in place.
- Rising sea levels will result in tens to hundreds of millions more people flooded each year with warming of 3 or 4 degrees C. There will be serious risks and increasing pressures for coastal protection in South East Asia (Bangladesh and Vietnam), small islands in the Caribbean and the Pacific, and large coastal cities, such as Tokyo, New York, Cairo and London. According to one estimate, by the middle of the century, 200 million people may become permanently displaced due to rising seas levels, heavier floods, and more intense droughts.
- Ecosystems will be particularly vulnerable to climate change, with around 15-40% of species potentially facing extinction after only 2 degrees warming. And ocean acidification, a direct result of rising carbon dioxide levels, will have major effects on marine ecosystems, with possible adverse consequences on fish stocks.

The impacts of climate change are not evenly distributed – the poorest countries and people will suffer earliest and most. And if and when the damages appear it will be too late to reverse the process. Thus we are forced to look a long way ahead.

Climate change is a grave threat to the developing world and a major obstacle to continued poverty reduction across its many dimensions. First, developing regions are at a geographic disadvantage: they are already warmer, on average, than developed regions, and they also suffer from high rainfall variability. As a result, further warming will bring poor countries high costs and few benefits. Second, developing countries – in particular the poorest – are

heavily dependent on agriculture, the most climate-sensitive of all economic sectors, and suffer from inadequate health provision and low-quality public services. Third, their low incomes and vulnerabilities make adaptation to climate change particularly difficult.

Because of these vulnerabilities, climate change is likely to reduce further already low incomes and increase illness and death rates in developing countries. Falling farm incomes will increase poverty and reduce the ability of households to invest in a better future, forcing them to use up already meager savings just to survive. At a national level, climate change will cut revenues and raise spending needs, worsening public finances.

Many developing countries are already struggling to cope with their current climate. Climatic shocks cause setbacks to economic and social development in developing countries today even with temperature increases less than 1 degree C. The impacts of unabated climate change, - that is, increases of 3 or 4 degrees C and upwards – will be to increase the risks and costs of these events very powerfully.

Impacts on this scale could spill over national borders, exacerbating the damage further. Rising sea levels and other climate-driven changes could drive millions of people to migrate: more than a fifth of Bangladesh could be under water with a 1m rise in sea levels, which is a possibility by the end of the century. Climate-related shocks have sparked violent conflict in the past, and conflict is a serious risk in areas such as West Africa, the Nile Basin, and Central Asia. (*pp. vi-viii*)

Excerpts from: Jennifer Clapp, “The Distancing of Waste: Overconsumption in a Global Economy,” in T. Princen, M. Maniates, and K. Conca, eds. *Confronting Consumption*. (Cambridge, MA: MIT Press, 2002), pp. 155-176.

Most residents of North America are well aware of the growing mountain of waste plaguing the planet. Newspapers regularly report on the “landfill crisis,” and the local TV news seems fond of covering the politics of recycling and waste disposal. But most North Americans do not experience waste firsthand beyond their own garbage, which is conveniently taken away once a week. When they do think beyond the boundaries of their own trash can, they tend to associate the problem with industrial inefficiency, lack of recycling services, or population growth. This is not surprising, because these issues dominate both popular thinking and academic literature on waste. Yet looking at these issues alone misses key elements of the long-term sustainability of processes, products, and by-products. Looking at waste through a consumption lens helps identify those missing elements. Utilizing this lens helps us get at questions that confront consuming itself: What is that consumer link to the waste problem? Where is the “away” place to which waste is taken? Why does waste go there and not elsewhere? Who is affected in these “away” places? Can such practices continue on a finite planet?

An important dimension to the waste problem that becomes apparent when asking these questions is that of waste distancing. In today’s world, there is a growing distance, geographically as well as mentally, between consumers and their waste. A focus on waste distancing highlights two important components of the consumption angle on waste. First is

the fact that when decision makers have little knowledge of the ecological and social impacts of these wastes associated with goods they purchase or produce, they have little incentive or ability – as producers or consumers – to change their habits based on waste considerations. Second is the fact that such distancing consumes waste-sink capacity both the social capacity to deal with waste in a manner that minimizes harm and that is fair, and the ecological capacity to assimilate waste that avoids toxic contamination and intergenerational effects. (*pp. 155-156*)

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In highly distanced waste chains, some information is inevitably lost and accountability diminished. Part of the separation occurs along a geographic dimension. With economic globalization, especially, the physical distances between producers and consumers as well as between consumers and wastes expand. But part of distancing occurs along other dimensions as well. These include a cultural dimension (the ways consumers lack information about the specific environmental impacts of wastes), a bargaining-power dimension (asymmetries among decision makers and other stakeholders of the siting of waste disposal), and an agency dimension (the role of middle agents between consumption and waste-disposal decisions). All of these dimensions of “distance” create not just a geographic distance, but also a mental distance, what I will call an “understanding gap” – a gulf of information, awareness, and responsibility between consumers and wastes. (*p. 157-158*)

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A third factor promoting waste distancing is economic inequality. On both the local and global scale, inequality can lead to situations where some communities have little choice but to accept others’ wastes, despite the environmental and social problems such wastes create. These communities accept wastes because they are desperately poor; they cannot turn down jobs and financial remuneration offered. Economic inequalities both within and between countries have in fact become more pronounced over the past 30 to 40 years. Between 1960 and 1989, for example, the economies of countries with the richest 20 percent of the world’s population grew almost three times faster than the economies of the countries with the poorest 20 percent. The result is that over that same times period, the poorest 20 percent’s share of global income dropped from 2.3 percent to 1.4 percent, while the richest 20 percent’s share of global income rose from 70.2 percent to 82.7 percent. Indeed, some argue that economic globalization is a contributing factor to global inequality. Along with this growing inequality, waste brokers have increasingly sought out disadvantaged communities, people who are the least able to refuse the jobs and revenues. And the brokers use the channels of the global economy to get the wastes there. The Not in My Backyard (NIMBY) syndrome with respect to the siting of waste dumps has meant that some communities keep dump sites out of their neighborhoods while others are paid to take them. A number of studies have shown that such dumps tend to end up disproportionately in poor communities. This displacement of waste disposal from rich to poor occurs within local communities, within countries, and globally. (*pp 159-160*)

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Not only is waste distancing increasing, but the sheer amount of post-consumer waste generated is growing. Americans, for example, dispose of some 720 kg of garbage per person every year, more than people in any other country in the world. In 1998 this amounted to some 4.5 pounds per person per day, up from 2.7 pounds per person per day in 1960. The OECD country average for 1998 was 500 kg per person per year, a level some 30 percent higher than several decades ago. This contrasts with the 100 to 330 kg per person per year in developing countries (and, for example, the estimated 20 kg per person per year waste disposal in Nigeria) in the early 1990s. (p. 160)

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There is also a growing amount of waste generated *in* poor countries. These wastes stem from industries producing consumer items that serve global markets, such as electronics and chemicals. When wastes are both generated and disposed on in developing countries, the distance from consumers in rich countries is huge, largely because the information is even less available to them than is the case when those wastes are produced in rich countries. The developing world's share of toxic-waste production from manufacturing is in fact growing, a trend that has been increasingly recognized. Whether or not firms are moving to developing countries to take advantage of more lax environmental regulations, they do tend to take advantage of the low-cost conditions once they are there.

The *maquiladora* firms in Mexico are a stark example. These U.S.-owned industrial factories located just inside the U.S.-Mexico border in Mexico were set up in the 1960s to produce goods for export to the United States. In the early years these plants, concentrated in the garment-assembly sector, were not generators of large amounts of industrial wastes. By the 1980s, however, plants were being set up in the electronics, chemicals, and furniture sectors, all of which are large generators of hazardous wastes. By the 1990s, nearly four-fifths of *maquiladoras* were generators of toxic waste, while the number of such firms also climbed significantly. Technically this increased generation of toxic waste in Mexico among the *maquiladora* factories should not have affected that country's environment. The La Paz agreement, made between the United States and Mexico in 1983, as well as Mexican law, required the toxic waste generated by the *maquiladoras* to be returned to the United States, where the materials originated, for disposal. This agreement explicitly aimed to reduce waste distancing. In the 1990s, however, only 2 to 3 percent of firms were returning their waste. At that time, both the United States and Mexico admitted to not knowing the amount of toxic waste generated on the border. Improved monitoring and tracking of wastes were put into place following the adoption of the North American Free Trade Agreement (NAFTA) in 1994. Although recent figures show the return of hazardous wastes to the United States has risen to 25-30 percent with increased monitoring since NAFTA has come into effect, it is widely recognized that illegal dumping of toxic waste continues. Though the geographic distance to the U.S.-Mexican border may not be all that large for many in the United States, the understanding gap among Americans regarding the fate of toxic wastes associated with consumer items on the market there is significant. (pp. 171-172)

Excerpts from: Ken Conca, “Consumption and Environment in a Global Economy,” in T. Princen, M. Maniates, and K. Conca, eds. *Confronting Consumption*. (Cambridge, MA: MIT Press, 2002), pp. 133-154.

The Changing Balance of Power

A second important effect of globalization is that it shifts the balance of economic power. The most obvious and widely discussed dimension of this power shift is the eroding capacity of the regulatory nation-state in a globalized world economy. Simply put, transnational commodity chains resist the reach of national regulation. To be sure, state power has not played a purely defensive, catch-up role in the process of globalization; the application of that power has done much to accelerate globalization processes through trade liberalization, regional economic integration, the weakening of labor, and the gutting of environmental, health, and safety regulations. Moreover, the application of state power is not limited to framing the institutional architecture of economic globalization. Export-credit agencies in the OECD nations provide market-distorting guarantees by subsidizing foreign investment in the global South at levels that exceed the World Bank’s annual budget for development assistance. If for no other reason than to reign in these pushes from the state, the struggle for state power remains a critical arena.

But state power is not what it used to be. Greater capital mobility shifts bargaining leverage away from the regulatory state, flexible specialization facilitates the rapid shifting of activities among a transnationally dispersed myriad of potential suppliers, and the resulting competitive pressures undercut regulatory initiatives (environmental and otherwise). Reorienting state power to play a more constructive role in global environmental protection is problematic, because the bounded geographic spaces known as states too often cannot or will not control that space in isolation from broader development in the global production chains that pass through those spaces.

Globalization also alters the balance of power among key economic agents. The traditionally vertically integrated manufacturing multinational of the 1960s and 1970s enjoyed dominance through economies of scale, barriers to entry, and technological dominance concentrated at the manufacturing node of the commodity chain. But globalization exerts both an upstream and a downstream tug on that concentration of power. Upstream lies the explosion of global finance capitalism, shifting power from fixed industrial capital to institutional investors and well-heeled global speculators. Their choices increasingly dictate both national policy and long-term investment decisions. The instability of in global financial markets that generated the so-called Asian flu in late 1997 was symptomatic of the upstreaming of power; an entire array of East Asian industries previously lauded as models of international competitive efficiency found themselves plunged into crisis by choices made upstream.

Less obvious than the upstream power of institutional investors, but just as important, is the downstreaming of power in increasingly “buyer-driven” global commodity chains. Buyer-driven commodity chains include “industries in which large retailers, brand-name merchandisers, and trading companies play the pivotal role in setting up decentralized production networks in a variety of exporting countries, typically located in the Third World.” They are distinct from producer-driven chains, which involve “industries in which

transnational corporations or other large integrated industrial enterprises play the central role in controlling the production system (including its backward and forward linkages).”

As Gereffi points out, there is an obvious affinity between flexible specialization and the rise of buyer-driven chains. The decentralization and dispersal of the manufacturing node of the chain – a central element of the flexible specialization model – weakens the power of manufacturing vis-à-vis other nodes, for the simple reason that it becomes easier to substitute alternative suppliers. Profits tend to be highest, and power most concentrated in segments of the chain most readily monopolized through barriers to entry. In buyer-driven chains, power resides downstream from manufacturing, in the hands of retailers, brand-name firms, marketers, and advertisers who “add value” to what otherwise would be just a toy, a shoe, a grape, or a spark plug. Flexible specialization and the decentralization of suppliers have created new sources of power for these downstream nodes, which control “the means of consumption” through advertising, marketing, retailing, and brand-name product identification.

How far this trend extends and how quickly it may be at work remain unclear. The shift is particularly obvious in labor-intensive consumer goods industries. But to the extent that post-Fordism is a more generalizable trend, so too may be the downstreaming of power. The shift in global demand from materials-intensive to knowledge- and symbol-intensive industries as varied as telecommunications, media, fashion, and entertainment clearly strengthens the hand of downstream nodes.

These power shifts – privatizing, upstreaming and downstreaming – raise serious questions about traditional environmental tactics grounded in national regulations and technological approaches. Simply put, such approaches risk targeting the weakest nodes in the chain rather than the strongest. They focus on the application of public power in a world where power is more extensively privatized, and on the production point source of pollution or ecosystem degradation rather than the diffuse, societally based attitudes, ideologies, and consuming practices stimulated by increasingly influential upstream and downstream nodes.

Consider the example of the semiconductor industry in the United State, as documented in a carefully detailed study by Jan Mazurek. The American approach to toxic pollution in this industry and more generally has focused on the classic regulatory strategy of monitoring and enforcement at the firm and production-facility level. EPA’s Toxics Release Inventory showed slight emissions decrease from semiconductor manufacturers between 1988 and 1995. Touting this as evidence of an improving, self-policing industry that deserved regulatory relief to boost its competitiveness, the Clinton administration struck an agreement on “flexible” regulation with America’s largest chip manufacturer, Intel, in 1996. Under this deal, Intel was no longer required to seek prior EPA approval for “routine” changes in production processes, so long as a production facility’s overall emissions record was acceptable. This would allow for quicker adjustments to the constant stream of new chemicals used in semiconductor fabrication, often sited as a critical condition for international competitiveness.

Through the traditional lens of pollution control via technology-forcing regulation applied at the level of the firm and the factory, the case looks like a success story. Yet as Mazurek shows, even these modest gains seem illusory, in that they owe much to bookkeeping

artifacts, inadequate monitoring, and the reorganization of production. One decidedly new-economy feature of microchip manufacturing is that much of it has been outsourced. Intel and other Silicon Valley manufacturers have shifted much of their production to foreign facilities that lie beyond EPA's reach, or to smaller factories in the American Southwest that fly under the radar screen of EPA monitoring. Not surprisingly, the tracking devices at the chronically underfunded EPA have little hope of keeping pace with the hundreds of new chemicals now in widespread use or the small-scale, specialized fabricators in the United States and abroad to which Intel now farms out production.

This episode is not to suggest that Intel or the semiconductor industry cannot be regulated to promote environmental protection, or that tackling the consumption side of the equation is the only remaining option. On the contrary, one appropriate response would seem to be to move upstream from the factory to the boardroom, perhaps through the approach of "cradle-to-grave" corporate social responsibility. But the story does illustrate important aspects of the disconnect between traditional environmental approaches and new configurations of power in a globalizing economy. In particular, it shows the growing inability of state regulatory capacity to keep pace with a dynamic, increasingly globally dispersed industry, and the problems of production-focused solutions in a world of decentralized, flexibly specialized, "just-in-time" manufacturers.

The power shifts inherent in globalization should not be read as creating a world where power is so diffuse as to reside nowhere. On the contrary, power in many cases is being reconcentrated – but at new points along the commodity chain. The challenge is to identify and map the shifting locus and currency of power, rather than to fall back on simplistic assertions of its dispersion. (*pp. 146-149*)
