

CLIMATE CHANGE IN CITIES OF THE DEVELOPING WORLD

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Resumo: O presente estudo analisa alguns importantes problemas relativos às mudanças do clima mundial, a partir da perspectiva de algumas cidades de países em desenvolvimento, sua relação com o desenvolvimento e a pobreza, bem como, lastreada em uma *agenda política para mudança do clima*, oferece resoluções para mitigar os significantes impactos podem ser produzidos pelas mudanças do clima.

Abstract: The present article analyzes some important problems caused by global climate change, based on the perspective of some cities in the developing world, its relation with development and poverty, as well as, based on a *climate change policy agenda*, offers resolutions to mitigate the significant impacts that can be produced by the climate change.

Palavras-chaves: Mudanças do Clima Mundial – Desenvolvimento Social e Econômico – Agenda Política

Key words: Global Climate Change – Social and Economic Development - Policy Agenda

Sumário: I. A Policy Agenda – II. Politics and Administration – III. Donors and Potential Global Solutions – IV. The End as the Beginning

An economics Nobel Laureate, Paul Samuelson, cautions: “We don’t know enough to relieve global warming and ... we can’t do much about it.” He cites the International Energy Agency for the nation that, unless we freeze everyone’s consumption—including that of the global poor—greenhouse emissions will double by 2050. James Fleming (2007) adds that American and some other ‘experts’ look for technological or “Rube Goldberg” quick fixes to global warming, doubting that the international cooperation and lifestyle changes entailed by more conventional approaches—carbon taxes and other means to increase energy efficiency, alternate energy sources, etc.—will be forthcoming. (One well-financed “quick fix,” nuclear power threatens disasters which overwhelm even the risks of global warming.) Having just been rudely awakened to the demonstrable realities of climate change³, many policymakers are grumpily pessimistic about ‘our’ ability to

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³ Concerning the U.S., see Hanson (2006, 14): “The press and television, despite an overwhelming scientific consensus concerning global warming, give equal time to fringe “contrarians” supported by the fossil fuel industry. Special interest groups mount effective disinformation campaigns to sow doubt about the reality of global warming The public is confused or uninterested ... I used to spread the blame uniformly until, when I was about to appear on public television, the producer informed me that the program “must” also include a “contrarian” who would take issue with the claims of global warming. Presenting such a view, he told me, was a common practice in commercial television as well as radio and news papers.” Supporters of public TV or advertisers, with their own special interests, require “balance” as a price for their continued financial support.

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cope. This is sad for the poorest and most powerless citizens of developing countries (for those of a rather underdeveloped New Orleans, after hurricane Katrina), who will bear the brunt of the disasters and diminished opportunities associated with climate change.

Brief 15 (2007, emphasis deleted) describes an “increasing risk of storms [rain, cyclones and hurricanes], flooding, landslides, heat waves [exacerbated by “heat islands”—the most built-up, central-city locations] and draught, and by overloading water, drainage, and energy supply systems.” Common climate-change increases in diseases include diarrhea (from floods that overload poor sanitary arrangements; cardio-respiratory ailments, from pollutants interacting with hotter temperatures in a low-level ozone; and increases in “tropical” diseases like malaria and dengue fever, diseases now invading areas previously too cool to incubate them (Slatterthwaite, 2007). Effects are the greatest on the most vulnerable populations of urban areas: Kovats and Haines 1995, 168. De Sherbinin, *et al.* (2007) give us a model of “multiple, synergistic stresses and perturbations” combining with “multiple, interacting physical and social characteristics of the exposed human-environment system.” In other words, there are “few easy prescriptions” (*id.*), although the poor and powerless prove remarkably resilient if only their local governance and community organizations are competent (Brief 15, 2007; de Sherbinin, *et al.*, 2007; Slatterthwaite, *et al.*, 2007). These turn out to be demanding criteria, however, as the unnecessary deaths from the 1995 Chicago and the 2003 European heat waves, and the 2005 New Orleans hurricane, demonstrate (e.g., Menne, 2005; Semenza, *et al.*, 1995).

I. A POLICY AGENDA

One of us is familiar with some cities in the developing world, including two cities from each of the continents of the South: Caracas (Venezuela) and Rio (Brazil), Cairo (Egypt) and Nairobi (Kenya), and Jakarta (Indonesia) and Kuala Lumpur (Malaysia). In the Caracas of 1999, flooding and landslides killed 30,000 and affected 600,000. Less serious flooding in Jakarta killed hundreds in 2007 (Brief 15, 2007). Caracas, Rio and Jakarta are coastal cities, and thus vulnerable to rising sea waters (de Sherbinin, *et al.*, 2007). Even before 1999, Caracas began using an innovative, risk-based means of land settlement and re-settlement (Satherthwaite, *et al.*, 2007). Rio is relatively fortunate in having federal revenues guaranteed by the Constitution; the other cities make do with a part of 4-5% of national revenues apportioned to urban areas (*id.*). Studies of other cities are instructive and often transplantable—if carefully modified: balancing growth, equity, and sustainability in a Cape Town “ecovillage” (Swilling, 2006); achieving a sustainable infrastructure planning in Cape Town (Swilling & Annelke, 2006); improving the slums of Phnom Penh, Cambodia (Payne, 2005); public participation in environmental management projects within a low-income settlement in Chiang Mai, Thailand (Ribeiro & Srisuruan, 2005); and phasing the transfer of health services from an international NGO to a local government/local NGO partnership, in Nepal (Allaby & Preston, 2005). All of these studies emphasize the political and administrative obstacles that will figure prominently in our

subsequent analyses.

Climate hazards are unique in their combination for each city (de Sherbinin, *et al.*, 2007) but similarities are often stressed here—as more amenable to overall policy analyses and conclusions. Each city has a gleaming, high-rise commercial center (a “heat island” which, except in Cairo and perhaps Rio, is smaller in relation to the city’s total surface area than in the West), spacious elite residential areas (some residents are foreigners or ethnic minorities, and their success stirs resentment among the poor and thus occasional disorders), and (with the partial exception of Kuala Lumpur) huge residential areas are occupied by poor and powerless people (many of whom are recent migrants from rural areas, seeking any kind of job) plus a better-educated (emerging) middle class who cannot afford elite residences. This group lives in barrios, favelas, townships, alleys, or kampongs. In each of these, urban “infrastructures” (roads, electricity and power plants, sewage, water and water plants, schools, medical care and hospitals, transport and communications, culturally- and religiously- important structures, responses to emergencies, financial services, supplementary care for the very young and elderly, and a paucity of social safety nets and bureaucratic competence and, often, honesty. These infrastructures range from grossly overstretched (e.g., decaying colonial-era facilities and administrative structures) to virtually non-existent. All of this exacerbates extreme weather events: e.g., a sewage-laden flooding during increasingly-common extreme monsoons (World Bank, 2005, 4-6).

Many opponents of projects aimed at mitigation of, or adaptation to, climate change argue that such projects take attention and resources away from immediate “development” needs. This line of thought is debunked by Lecocq and Shalizi (2007), who examine theoretical and empirical studies of economic growth (rather than development) from the standpoint of climate change: mitigation, adaptation before and after a disaster, and the ultimate damages caused. They find significant reductions in both short-term and long-term growth, due to the destruction or reduced productivity of production factors (including human labor and other resources, of course), to the introduction of economic rigidities, and through forced technological changes, national as well as local poverty traps, and “lock-ins.” Mitigations and adaptations before the fact are cheaper and less concentrated than adaptations after the fact, they find, especially given the possibility of good “lock-ins.”⁴ The difference between growth and development (which is increasingly called “sustainable development”) is the varying degrees of attention paid to improving the lot of the poor and powerless through development; a rising tide does not lift all boats in developing countries, any more than it does/did in the U.S. for example. Climate changes thus reduce development rates to a greater extent than they do growth rates.

⁴ Lecocq & Shalizi (2007) go on to argue that “lock-ins”—strong commitments to doing certain things in certain ways—and other channels by which climate change affects growth are poorly understood. In contrast to practices in most of contemporary economics, growth must be evaluated in the presence of climate change—as path-dependant with multiple equilibria Existing economics models can be significantly improved by focusing on the indirect effects of the energy and climate-sensitive sectors on the rest of the economy, *id.*

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A committee of the Intergovernmental Panel on Climate Change (IPCC, Yohe, *et al.*, 2007) finds a “high correlation” between development and adaptive capacities, a correlation created by markets only in part. The *net* costs of climate change (some of which are not yet monetized) will grow over time and vary widely across sectors and localities. Others (e.g., Satherthwaite, *et al.*, 2007) find correlations among an interrelated development, resilience, reduced vulnerability, and increased opportunities—qualities associated with actions against climate change (*id.*) The first item on the climate change policy agenda is thus: “*Start with what you have, build on what you know.*” (*Id.*) It is not too cynical to call the same project “developmental” or “climate-change mitigating,” or both, depending on an aid donor’s preferences. This is an alternative superior to the “moral hazard” of waiting until after a climate change disaster, for the international relief community to bail you out. Disasters and everyday risks exist on a continuum rather than in separate categories. A new literature on “risk accumulation processes,” shows the need to shift attention away from disasters anyway. The urban poor spend their lives adapting, to (often-small) economic opportunities, political circumstances, risks to their homes (like crime in some cities), and a paucity of buffering community organizations (Satherthwaite, *et al.*, 2007). To understand constraints on autonomous adaptations by the poor, it is necessary to adopt a *pro-poor and powerless attitude*—the *second* policy agenda item, perhaps implicit in the first—to understand the segregation leading to a lack of information which is not intensely local, and of participation and the authority to organize. Poverty is difficult to understand because data on household incomes in the ‘informal’ sector, and the cost of non-food necessities, are usually unavailable. Proxies must therefore be used: malnutrition, infant mortality, housing quality, personal security (a particular problem in Caracas, Rio, and Nairobi), and the life-chances of women and the elderly (Satherthwaite, *et al.*, 2007).

Each vulnerability such as poverty (10% of which the World Bank ascribes to climate change) and powerlessness, reinforces other vulnerabilities, natural and man-made—such as an unequal access to resources (including information and technology), food insecurity, poor disaster management, poor land cover and use, incompetent governance and administration, malnutrition, insecure residential status, weak civil society supports and a deteriorating public safety (World Bank, 2005, ix; WUF, *Our Future*, 2006; Yohe, *et al.*, 2007). Traditional coping techniques—trade, migration, the storage of food during ‘good’ years, temporarily laboring for someone else, etc.—are often unworkable in urban areas, where houses and the savings needed to replace them when destroyed by extreme weather events are equally flimsy: World Bank, 2005. The *third* policy agenda item is thus the value in an analyst’s struggle to understand so complex an *interrelatedness*.

Much as in US “slums”, the poor and powerless are *segregated* from mainstream markets and the better economic opportunities they offer, and from the decent education and health care that improve productivity and the quality of life over time (Brietzke, 1992, 741-98). (This comparison is relative; there is currently a debate over whether poverty should be measured in developing countries as living on \$2/day versus \$1/day—poverty no Westerner can imagine.) Even under conservative assumptions about trends in

population growth, land use, and industrial production in developing countries, computer models that combine environmental with epidemiological factors predict horrid health consequences in a warmer world (Perkins, 2004, 3), especially in under-resourced megacities like the six surveyed here (with the partial exceptions of Rio and Kuala Lumpur). The *fourth* policy agenda item is to promote the political and socio-economic *integration* of the 1 billion (2 billion by 2030) urban poor and powerless—at the international level (*infra*) as well as within developing countries.

All of the cities under discussion have outgrown the good reasons why they were founded in a particular location in the first place: *see* Brief 15, 2007. This is due to what economists call a “collective action problem”: moving to the relevant city was and is a rational *individual* response to changing opportunities, while it creates an overcrowded mess in the aggregate. Various national government efforts to curb urbanization and thus solve this problem have proved all but futile because they contradict a private economic logic. The city will rarely depopulate much or disappear after a disaster (in the modern world), for economic reasons. Corporations and wealthy groups can adjust to disaster with relative ease, and the poor who are bound to them *de facto* are “stuck” and forced to learn to live with the risk of disaster (*id.*; Satherthwaite, *et al.*, 2007). In the crisis-prone Mumbai slums, for example, young workers often eat and sleep near their sewing machines, work-house fashion, while earning *four times* what they would earn in the rural areas (*Poverty in India*, 2007, 59). The *fifth* agenda item is an attention to such *collective action problems*, since they reinforce or can all but negate policy proposals.

High levels of air and water pollution, already endemic in the cities under discussion, will exacerbate climate change events for the overwhelming majority who cannot afford ameliorations: e.g., air conditioning or bottled drinking water. While the air has different degrees of unbreathability in the six cities being discussed, it is estimated that breathing the air of Jakarta (currently, 14 million residents) is the health equivalent of smoking two packs of cigarettes a day. Since many Jakartans also smoke two or more packs of strong but cheap (*kretek*, clove) cigarettes daily, the fight for breath is sometimes audible on the streets on a hot day.

Doubling atmospheric concentrations of carbon dioxide boosts ragweed pollen production by 60 percent; developing countries have other asthma-inducing plants and conditions which are exacerbated in similar ways. Pollen and spores easily attach to diesel exhaust, which is then inhaled by children, the elderly, and others at risk, (Perkins, 2004, 3). Such studies are “a real wake-up call for people who mistakenly think global warming is only going to be a problem way off in the future or that it has no impact on their lives in a meaningful way” (Kinney, 2004, 4). We have not seen relevant studies, but asthma is a more serious problem in our six (and many other developing) cities, when compared to the US. Another air pollution source, ground-level ozone and airborne particulates, is associated with increased emergency room visits, hospital admissions, and deaths from lung diseases in the US (Perkins, 2004, 3).

The absence even of exposed but interconnected sewer drains, much less treatment of the sewage, in the poor and powerless neighborhoods in ‘our’ developing cities, means

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that flooding increases a potentially deadly water pollution—especially as the water table is typically quite high. This is echoed in the findings of the City ombudsperson of Buenos Aires, Argentina, after an NGO filed a complaint against the City government for “sewage discrimination” against the poor and powerless who live in the Southern districts (Valente, 2006). Children there, and older people to a lesser extent, thus face the risks of hepatitis, gastroenteritis, cholera, meningitis, typhoid, and even polio (*id.*). The only sewage arrangements were “substandard.” They were created by the residents themselves, rather than planned to interconnect by local government, and the French consortium hired to improve things did little and is being sued for breach of contract (*id.*). This tale is typical of infrastructures in the developing world because, by definition, the poor and powerless cannot help themselves or compel the authorities to help them. (I.e., if they could, they wouldn’t be poor and powerless.) Cairo, and the agricultural productivity of rural Egypt offer the contrary example because they are vulnerable to upstream rainfall variations—rainfall which is markedly decreasing overall—in Ethiopia and South Sudan. (This rain then flows to Egypt through the Blue and White Nile respectively; decreased rainfall will impoverish three connected countries. A similar story can be told about the Ganges and the Indus, flowing through India and many of its major cities.)

The availability of cooling centers is meager in developing cities, since the main venues—government offices and elite hotels—are unlikely to welcome temporary occupation by poor people. It might be thought that tax incentives would encourage corporations to open their offices to the poor temporarily but, in ‘our’ cities and others, most corporations have already bribed their way into paying little if any taxes. A clever NGO might convince a multinational corporation of its need for the good public relations that would come from serving as a cooling center. Otherwise, the poor may feel lucky to cool off in badly-polluted underground car parks. Rural residents are often out of luck altogether. The *sixth* agenda item is perhaps obvious: *tailor infrastructure projects* (including those in health and education) *to match local conditions and knowledge.*

A major reason why slum housing is overcrowded and of poor quality is the fact that (with partial exceptions in Caracas and Kuala Lumpur), such housing is ostensibly illegal and thus occupied by “squatters” who often connect to electricity lines illegally—and are treated as illegals by local governments, police and the military. Owners, frequently as landlords, thus have no incentive to invest in housing improvements that the municipality can bulldoze at any time. Hernando de Soto (1989) has done excellent work on the design of private property rights (of “identified encroachers” in Mumbai, who are guaranteed compensation if their house is bulldozed *Poverty in India*, 2007, 59) and of administrative laws: basically, decreasing the number and complexity of bureaucratic procedures, to reduce their cost and the opportunities for corruption. An “audit” of existing planning regulations would show the points where access to land is most impeded. This increases tenure security in “unauthorized” settlements while reducing future slums through an improved access to land and basic services. There are promising experiments with communal urban tenures and, under UN-Habitat, shared private-public ownership;

30% of costs concern roads and needed public spaces anyway. (Payne, 2005; Satterthwaite, *et al.*, 2007). The *seventh* agenda item is *private property and land administration rules*, consistent with the nation's legal system (often influenced by colonial experiences and by subsequent ruling ideologies) which increase tenure security and access to land at a price the poor can afford, as well as basic services. Such an improved "stake" likely gives the poor more incentive to participate, and to reduce their powerlessness.

Community-based adaptation (CBAs) and a micro-planning, within a developmental framework rather than the narrower one offered by, e.g., the U.N. Framework Convention, *infra*, are so important that they provide our *eighth* agenda item. This is because CBAs can and (sometimes actually) do things that poor individuals can't afford and that the various levels of government, aid donors and international agencies can't or won't fund: de Sherbinin, *et al.*, 2007; Satterthwaite, *et al.*, 2007. The problem is that local NGOs frequently cannot reach consensus because (as in the typical faculty meeting) little or nothing is at stake. Seed money, or sponsorship by international or national NGOs, sometimes or often helps to form a compelling consensus, however. Human rights and the environment are areas where "civil society" has made great strides. Amnesty International or Greenpeace, for example, are international NGOs that offer compelling agendas and small amounts of money to their national and local affiliates. The international NGO sometimes deflects criticisms from its affiliates, many of which operate "underground." Those interested in climate change have yet to organize in this fashion, and this step could be promoted by policy analysts *qua* analysts. In the many countries where the right to organize is not robust, operating underground makes sense: the police and military treat those who *seem* to oppose government (even local government) policies as "terrorists" (the current favorite buzzword) or "radicals" who must be opposed coercively—like the illegal residents they are. The *ninth* agenda item is to give the (typically underemployed yet expensive) *police and military* disaster relief and other *useful climate change tasks* to perform. This is good public relations: uniformed and poor people getting to know each other in uncoerced ways.

II. POLITICS AND ADMINISTRATION

Kwame Nkrumah, the Black Star and first leader of post-colonial Ghana, famously said: "Seek ye first the political kingdom, and everything else will be given unto you." (Davidson, 197x.) Nkrumah was arguably, being more honest than his counterparts elsewhere, and we will thus examine the domestic political and administrative backdrop to climate change, sometimes using Chicago's Mayors Daley (the Elder or the Younger) as our guide. One of us worked in Jakarta while the protracted relaxation of Suharto's and his cronies' grip on power was going on. (This was called the "first e-mail revolution": security forces were never able to puzzle out the hit-and-run tactics of large numbers of students and others, tactics coordinated over the Internet and by e-mail.) Anyway, Jakarta friends and colleagues thought one of us authors a psychic because he could almost always predict the cronies' short-term responses. His technique can now be

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revealed: from Chicago, he would think of what Chicago's former Mayor Daley *the Elder* would do in like circumstances. This analogy predicted so well because Chicago politics was (and still is), highly centralized in a one-party state (municipality, for non-Chicagoans), run through patron-client relations blended with some democratic aspects—partly to disarm would-be domestic reformers and, in many developing countries, to soothe international and bilateral donors, *infra*. We see such regimes in many developing countries; Indonesia's Sukarno called it "Guided Democracy", and its hallmark is a political elitism.⁵

A. POLITICS

As always, the political complexity of climate change events continues to outrun their scientific complexity. Americans should not merely project elitism into a Chicago known to be naughty, or into some analytically 'safe' foreign city. However, there are some countervailing powers and pressures on elitism in the US, so that elitism does not always determine political outcomes. But these powers and pressures have yet to emerge in many developing countries.

The six developing cities and their countries under discussion have slightly varying degrees and types of democracy, while sharing the common element of governance through elitism (*see* Brietzke, 2004, 4, 6-9). Keen to insulate themselves from extreme-weather events, they (like Mayor Daley *the Younger*) will attend to such events only if forced to do so. Unfortunately, the poor and powerless, who suffer most from extreme-weather events, by definition lack a politically-effective way to express their needs and desires, or to organize effective nongovernmental organizations (NGOs) to pursue these *as the poor define them, rather than relying on some elite politician who purports to represent them*.

It is a necessary (but not sufficient, as the mathematicians say) condition to an effective and permanent democracy that the ranks of the elites be fragmented. Lula and Chavez have divided Brazilian and Venezuelan (Rio and Caracas) elites respectively, for example, with their populist rhetoric and some populist (and occasionally undemocratic) actions. (Populism is both the antithesis of, and an outgrowth from elitism: consider Peronism in Argentina and Huey Long's politics in Depression-era Louisiana.) Lula and Chavez *may* prove responsive to an extreme-weather planning but, in the other four cities/countries under discussion, elitism correlates with an increasing inequality and a resistance

⁵ Brietzke, 2004, 4-12. "Elitism" is rule by an autonomous and self-perpetuating group, especially as unreconstructed from a previous, undemocratic regime. Elites dominate politics, business, higher education, the media, and most other axes of power. Analyses can profitably be based on the century-old Italianate elitism model of Gaetano Mosca, Wilfredo Pareto, Antonio Gramsci, and Robert Michels—perhaps as given an American twist by C. Wright Mills. It speaks to the chaebol of South Korea, *apparatchiks* and the *nomenklatura* of Russia and Eastern Europe, the kleptocrats of Indonesia, and various family-based groups in Latin America. Some find a façade democracy in an elitism: democratic procedures, but little that is democratic in substance, leaving a regime vulnerable to an undemocratic backsliding—into Louisiana politics under Huey Long, for example. *Id.* at 4-5, 11.

to reform through “business as usual” (Brietzke, 2004, 4, 6-9). Regardless of whether elites are fragmented, the only recourse of the poor and powerless is usually to demonstrate or riot—a major reason why elites (and *their* police and military) treat extreme-weather events as law-and-order problems first and foremost.

Adaptations to climate changes require long time horizons, while political time horizons are short. This discrepancy makes the design of political incentives difficult (de Sherbinin *et al.*, 2007). The Chicago heat wave of 1995 can be understood on the basis of a political underdevelopment there. An actual climate disaster is almost always a necessary precondition to effective action in the future, given the many things that compete for the attention of politicians of limited imagination. (Indeed, handled carefully, a climate disaster can, sad to say, be the basis for pretty fundamental reforms: Satterthwaite, *et al.*, 2007). Daley’s initial reluctance to innovate stemmed from (self-) satisfaction with the status quo, and from fears that the necessary changes would diminish his power—based as it is on patron-client networks. Fundamental to change under a political elitism is the reasonable certainty that the electorate will hold incumbent elites responsible (accountability, *infra*) which, in turn, requires a vibrant media and a civil society which discovers and publicizes the consequences of politicians’ inaction. (In our six ‘cities’, there are few such political channels which the vulnerable can use to reduce their risks: Satterthwaite, *et al.*, 2007). Daley was smarter or less arrogant than other autocratic leaders in Chicago, and recognized a regime-threatening event when he saw one. He was eventually perceived to act appropriately and spur the development of a heat wave response plan that subsequently proved effective.

As with the effects of hurricane Katrina in 2005 New Orleans, it is generally agreed that many massive natural disasters, famines for example, often have human folly as their precipitating ingredient—such as when the famine follows revolution and/or government aggression against civilian populations in Ethiopia, Sudan, Uganda, and too many more countries in recent decades. Since the 1980s, Oxfam and other voluntary disaster relief organizations have seen famines and malnutrition as man-made disasters, rather than the result of purely natural phenomena (Watts, 1997, 9, 202). The burden of relief falls on these organizations and those of the UN, enabling those elite politicians who need not fear electoral loss to practice what economists call a “moral hazard”: do nothing to mitigate or adapt to a climate change disaster before the fact, secure in the knowledge that disaster relief agencies will bail out their poor and powerless after a fashion. The same kind of moral hazard also applies to education and health care: the money saved by not incurring expenses in these areas—because international and bilateral donors will fill the gaps after a fashion—can be spent on the arms that reinforce elite politicians’ power.)

B. ADMINISTRATION

The accuracy of Kwame Nkrumah’s assertion, *supra*, is borne out when we explore a comparative public administration. In the West, effective heat wave response plans, for

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example, are produced by appropriately trained and motivated professionals, some of whom belong to advocacy coalitions (*infra*). Such bureaucrats think and behave in ways which neo-conservative public choice economists do not understand and thus cannot explain: on the basis of the altruistic “inner checks” associated with their professionalism, and based on a long-term, agency-socialized view of “the public interest”—the very existence of which is denied by such economists, who consider nearly all bureaucratic acts as inherently selfish and merely budget, and power or wealth maximizing. *Compare* Golden, 2000, 11-12; Man bridge, 1990, 16; Sabatier, 1999; *with* Downs, 1957; Mohr, 1999, 5, 151; Niskanen, 1971, 5. However the reader comes out on this issue with regard to Western administrators, it seems clear that there is very little bureaucratic altruism in most developing countries because there is very little of the professionalism through which it can take root. The net effect in these countries/cities is that little will happen unless Nkrumah’s political lash is applied liberally, inevitably by elites whose motives are usually far removed from extreme-weather events.

Low levels of administrative competence in many developing countries, especially at the municipal level, and public mistrust because of the few benefits conferred by the bureaucracy (in the absence of bribes the poor cannot afford, perhaps), would bedevil any serious attempt to implement extreme-climate policies: *see* Migdal, 1985b, 4-5, 27. Local administrators and politicians in ‘our’ six cities are typically placed in office by national politicians, as rewards for services they provided through patron-client networks—rather than a competence determined through competitive exams. Low incomes and meager tax collection capacities at the local level generate few local revenues, which are dissipated through political maneuvers in any event (de Sherbernin, *et al.*, 2007). Robin Craig (2007) makes the important point that regulatory fragmentation—multiple assertions of authority and use-right claims—wastes scarce water (and many other resources, we would argue), provokes irreconcilable conflicts and, we would add, creates collective action problems: ensuring “enough” for yourself creates waste, hoarding, and thus too little for the others in the aggregate. (As it passes through central Jordan, the once-mighty River flows six feet wide and two feet deep; an upstream Syria and Israel take too much River and underground water for irrigation purposes.) Elites and their special interest groups, rather than some politically or administratively defined “public interest”, will win such games: *see id.* More neutral and expert international determinations are really no solution (*infra*), and leaving such determinations to the (economists’ disembodied) “market” makes them no less vulnerable to subformation by elites and their special interest groups. Craig’s recommendations (*id.*) of a public debate that weighs cross-jurisdictional tradeoffs, and pays more attention to the “end of the line”—e.g., the shrinking or otherwise-dying Dead Sea, into which the River Jordan empties—could be adapted to suit other resources as well.

Capable planning resources are scarce, stretched, and stressed by elites ignoring or bribing their way out of such inconvenient strictures as are embodied in a plan. It is risky to specialize in, e.g., health care planning, since bureaucrats are regularly transferred for reasons unrelated to need or individual performance: to forestall the emergence of

rival patron-client networks, real or imagined, for example. Planning is almost certainly a sketchy, top-down imposition, where the undifferentiated 'top' has often been wrong in the past. Such planning and regulation as exists only serves those in power, as colonial relics perhaps, expensive and therefore corruptible. Emergency responses are uniformly directed toward maintaining regime stability, and involve the military and police rather than civil servants. Very low bureaucratic salaries and, often, a culture of corruption (the "tradition of gift-giving," or the "way we do things here," as it's sometimes called) mean that the bureaucratic decisions actually taken often run contrary to policies based on reasoned elaborations of the public interest (Brietzke, 2003, 43-47, *passim*).

People imbued with a professionalism would do almost anything but join the dispirited, ill-trained and poorly-paid bureaucracy in most developing countries. Brietzke (2003) has concluded that rather strict, discretion-minimizing administrative laws, with clear criteria for evaluating and promoting the bureaucrat (and her evaluator), are what works in most developing countries. This is simply because few will use their bureaucratic discretion to innovate in ways that advance the public interest. In sum, then, the frequent absence of suitable political and bureaucratic incentives are significant constraints on transplanting useful experiences from elsewhere, to deal with extreme-climate events in the developing world.

Explanations are needed for the paucity of climate change studies and plans in developing countries/cities. Is it caused by a lack of awareness? A lack of interest, given seemingly more pressing developmental needs or an inattention among elites? Overstretched scientific and planning capacities? All of these reasons? What if anything *should* be transplanted from Western countries, if it *could* be transplanted? For example, after the 2003 heat wave the European Ministries of Health and Environment, (at the Fourth Ministerial Conference for Environment and Health, in Budapest in 2004) recognized the increasing hazards posed to human health by global warming. It was thus decided: 1.) to develop guidelines for estimating the burden of disease due to weather; 2) to develop indicators for inter-country and intra-country comparison, and for the monitoring of progress; 3) to coordinate the development of new methods, including sentinel monitoring and surveillance systems, to provide timely information on health impacts, and to develop and implement more effective interventions—such as early warning systems, and to reduce negative impacts; and 4) to harmonize interventions across regions and countries, to facilitate the sharing of data and lessons learned (Menne, 2005, p. 270). The World Health Organization (WHO) recommended and then participated in this harmonization. For Europeans, "[i]t is the combination of science, skills, and beliefs that is directed to the maintenance and improvement of health of all people through collective social action" (Ebi, 2005, p.47).

Could this kind of approach be transplanted into the six cities being surveyed? Arguably yes, into Caracas, Rio and Jakarta, where ideological leanings coincide with a colonial background and legal system influences—Spanish, Portuguese, and Dutch respectively. But the emphasis on uniformity assumes this is both possible and desirable. This kind of "collective social action" is very-un-British (now more than ever, given Blair's

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'reform' of the Labour Party) and incompatible with the subsequent laws and ideological orientations evident in Nairobi, Kuala Lumpur or Cairo. While Islam might be thought supportive of such an approach, it is given lip-service in Egypt and Malaysia; it does not form much of the political formula in either country. More importantly, *should* this approach be transplanted? Europeans often kick things like this upwards to the European Union, a step frequently thought inappropriate by the British—to say nothing about ostensibly individualistic Americans. "Jurisdiction" over climate-change disasters in the U.S. usually falls to local governments by default, since state and federal governments try to duck responsibility—see the chaos surrounding responses to hurricane Katrina—despite the fact that climate change is "in Interstate Commerce" —the major constitutional source of (unenumerated) federal powers in the U.S. Accountability here, (discharging responsibility in visibly-effective ways) is as vital to achieving administrative goals as it is in politics. In the Chicago example, *supra*, the public and the media fixed responsibility on the office of the Mayor. In Europe, responsibility is fixed on a national ministry or even on the national chief executive; the EU lacks reality and responsibility, for many Europeans and their media. It makes sense to apply a "European approach" to accountability in 'our' six cities, where local politicians and administrators are seen as incompetent time-servers, lacking in the independent power base of Chicago's Mayors Daley and their offices. We will see whether bilateral aid donors or international agencies can perform EU-like functions for 'our' six cities, *infra*.

Some functions are easy to integrate, prediction for example. The U.S. National Oceanic and Atmospheric Administration (NOAA) has global satellite and computer modeling coverage which is far superior to its European counterpart's—NOAA gives about two weeks warning, compared to three to seven days for European systems, Michele, *et al.*, 2005, 71)—to say nothing of the World Meteorological Organization's System. NOAA already has a significant number of "subscriber" countries, funded by small sums from Congress to deliver the kinds of models and information that local experts need. Some, Venezuela's Chavez for example, might mistrust NOAA's information (admittedly, cleansed of national security-sensitive information before being shared), but other users find it reliable. There is a great deal of research on risk assessment (the implications of vulnerability to the event, rather than the potential seriousness of the event), rapid detection (e.g., during the 2003 French heat wave, the effects in any given location were small, but 3,000 died throughout the country), the costs and effects of housing design, the means of organizing churches, synagogues, mosques, and other community organizations for local observations and disaster relief, and fixing many other gaps in our knowledge. (Henning, 2004; Covets and Jendritzky, 2006, 79-80; Menne, 2005, 265, 268.) Such information can be, and to a large extent already is, being shared with the developing world. Financial adaptations and innovations are also important. Cheap credit concerning small sums can be used to upgrade (reduce the climate change risk of) housing, to create modest infrastructures or to start a business. An attenuation and more accurate pricing of risk could result in spreading that risk through a widespread and affordable, privately- or publicly- underwritten, insurance, which spreads risk without creating moral hazards

(Satterthwaite, *et al.*, 2007). The World Bank is experimenting with underwriting such insurance, *infra*. Overlapping international, national, and local structures spawn incoherent and uncoordinated funding systems, systems particularly damaging to longer-term projects. Private sector investment and private/public or NGO/public partnerships all have their welcome place but, like insurance, their potential role has long been overestimated. In these and many other areas, local participation can be used to get the projects right, and to reduce their cost (Satterthwaite, *et al.*, 2007).

What should administrators, and/or politicians *do* about climate change in developing countries? US experiences give a long list for developing countries to ponder, concerning the relevance of topics and the workability of local adaptations: creating alert/watch/warning systems around weather predictions, *supra*; effective education and communication, for and with various publics and by various means; public registries of the elderly and other at-risk groups, who are to receive special attention during a disaster; experimenting with higher-tech solutions such as a network of remote sensors that are particularly valuable for monitoring heat and earthquake events; public health measures, as executed by agencies that are under-funded and over-stretched in all countries; how medical practices and emergency systems for people who fall ill from extreme weather events differ from “ordinary” practices and systems; disaster response—perhaps by training the police and military, to build the more positive image discussed *supra*; a more expert urban and regional planning that will create public benefits beyond responses to climate change; cultural, behavioral, and sociological factors that can make relief easier or more difficult; determining which additional resources are needed and where these can be obtained, perhaps borrowed; and how local political, NGO, and media support can be deserved over time, through a greater accountability for example.

European efforts tend to be broader and more integrated. Contrasts with shorter-term, municipal-level plans of the U.S. are striking: changes in European building codes and wetland/shoreline protections; other land use provisions and planning permissions; controls over the rates of urbanization and deforestation; curbing air and water pollution by certain industries located close to cities; and other longer-term, risk-reducing concerns. These matters are all regulated to some extent in the US, but Europeans (will) try to link these factors more coherently with concerns about climate change. Still, disasters like extreme-heat events are so new in Europe that the tailoring of responses to a specific event leaves much to be desired—especially the tailoring of *local* care and outreach, the communication of information to various publics, providing some basic responses such as ice or untainted water and food, and the air conditioning of hospitals, cooling centers, and other facilities where at-risk people congregate. But developing countries are ‘lucky’, in that they can select among what they may see as adaptable US and European approaches—to help develop a coherent ‘package’ for meeting local needs.

In the end, administrative success turns on a local accountability (*supra*), capacity and competence (Satterthwaite, *et al.*, 2007).

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III. DONORS AND POTENTIAL GLOBAL SOLUTIONS

It is too easy to paint ourselves into a gloomy policy corner. Chicago's, French and some additional underdevelopments (for want of a better term) in the politics, administration and scientific capacities of most developing countries, and certainly in the six cities being surveyed as well as elsewhere in the West, show how problematic the political/planning/implementation/enforcement 'interface' can be for dealing with climate changes: *see* Brietzke, 2006a and 2006b. Can bilateral donors and U.N. agencies remedy these weaknesses?

Egypt (Cairo), Kenya (Nairobi), and Indonesia (Jakarta) are acutely dependent on aid from multilateral and bilateral donors. Without this aid, it is unlikely that their not-very-stable governments could remain in power, and the International Monetary Fund, the World Bank, the US Agency for International Development, etc. could thus demand implementation of effective climate change policies, as one among many conditions on the giving of regime-saving aid. But this is unlikely to happen: donor funds are small compared to developing country needs, and the donors are not likely even to consider extreme weather at present (*but see* World Bank, 2005). The hope is that "logical, justifiable, fundable" climate change projects, "driven by good science," will get funded (Satterthwaite *et al.*, 2007), but this hope usually recedes into the future. Composed of elites (*supra*) at their upper reaches, the donors only know how to deal with fellow-elites living in developing cities/countries: people unlikely to consider extreme-weather events because they offer little profit and they can often be ameliorated for your family if you are wealthy—vacationing in Paris during such an event, for example. Consider the World Bank's passion for huge dam projects, which provide cheap power for large corporations—and misery and eviction from their dam-flooded lands for the rural poor, who swell the ranks of the urban poor as a consequence. (The late John Kenneth Galbraith called a fondness for things like dams an "Edifice Complex.") Even if aid donors mandated good climate change policies, their unwillingness to monitor the subsequent implementation of their mandates leaves the countries/cities in question free to do little more than give lip-service to such policies, and appoint several bureaucrats—who will busily do nothing to implement the mandate (Brietzke, 2004, 13-19, and *infra*).

Funds are more likely to be available for disaster relief than for climate change ameliorations. People and governments are moved to contribute to relief NGOs and U.N. agencies by sights of a manifest suffering. Even so and admitting how awful climate change disasters are for the participants, U.N. and charitable donations are often grossly inadequate and/or seldom meet the needs of the poor and powerless most affected. After the December 2004 tsunami in South Asia (admittedly, not a climate change disaster) the Red Cross distributed thick blankets in Sri Lanka—a place far too warm to need them. Relatively abundant disaster relief funds are being used there to build "world-class tourist centers", rather than to re-settle the half million displaced people or rebuild the 200 schools and four universities that were destroyed (Sang aula, 2006). Can we imagine a global (or

at least a regional) equivalent of the new tsunami warning system (which failed South Java, Indonesia in July 2006) for extreme-weather events generally, along with a much more effective and customized planning for each city—but without the climate change equivalent of that tsunami having to occur before meaningful global action begins? How would resources be provided for such systems?

According to Brief 15 (2007): “It is profoundly unfair that those who are most at risk from climate change globally are not those most responsible for causing it [through CO₂ emissions and the “high consumption lifestyles” of wealthy people and nations]. High-income nations hold down their own greenhouse gas (and worse) emissions by importing many energy-intensive goods from e.g., China, which has now replaced the U.S. as the world’s largest polluter—of greenhouse gases and many other things.⁶ After all, analyses of sustainable development stress equity in the distribution of resources. Such equity has gone global, to incorporate climate change factors as well (Yohe, *et al.*, 2007). Such facts and arguments have led many to call for a distributive justice, some call it a corrective justice: wealthy polluting countries should play for amelioration of the climate change effects they have caused in more lightly-polluting developing countries (see Brief 15, 2007; Satterthwaite, *et al.*, 2007)—and the six cities we survey. It thus takes little imagination to understand why wealthy countries contribute so little money to U.N. climate change programs, under a “not until China, India and Brazil do” refrain—that believing funding from such countries is unlikely. Doelle (2005) takes an excellent but very different approach from ours; it could be consulted as an antidote, perhaps,

This article treats significant parts of what UN-Habitat’s head, Anna Tibaijuka, calls “the biggest problem confronting humanity in the 21st Century” (Ajayi, 2006). According to the background paper for the 3rd World Urban Forum (WUF, Our Future, 2006), the “very existence [of cities] is threatened by climate change”—a prospect meriting interventions from the very highest to the lowest of levels. The WUF (*id.*) thus recommends that cities form a new web of relations and partnerships with and among multilateral institutions, bilateral donors, national and state/provincial governments, the private sector, and the urban poor, to realize up-front resource commitments for plan preparation and implementation, and for the up-grading of slums—which is part of the WUF’s broader “cities without slums” campaign. This is good advice for, as the Hyogo Framework for Action, 2005-2015 (Building the Resilience, hereinafter Hyogo Framework, 2005), notes:

Disaster loss is on the rise with grave consequences for the survival, dignity and livelihood of individuals, particularly the poor... [, since this loss interacts with] changing

⁶ Ratliff, 2008; Satterthwaite, *et al.*, 2007. *But see* Posner & Sunstein, 2007. One much-touted reform that is no reform at all is the U.S. ‘saving’ of 1,711 million tons of carbon dioxide, by importing goods from China (Black, 2005b)—something Americans were going to do anyway, given cheaper Chinese prices. These American imports accounted for 14% of China’s carbon dioxide emissions, a saving in the U.S. of (only) 3%. The American touting of this process ignores the essentially global flow of carbon dioxide, as illustrated by the fact that airborne mercury from coal-fired plants in China (and India), and dioxin and furan from Chinese cement kilns, also find their way into the U.S. atmosphere (Yeh, 2006).

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demographic and socio-economic conditions, unplanned urbanization, ... environmental degradation, climate variability and change [including El Niño/La Niña], ... competition for scarce resources, and the impact of epidemics such as HIV/AIDS....

Events of hydrometeorological origin [i.e., floods, droughts, landslides, tropical cyclones, hurricanes and typhoons] constitute the large majority of disasters. ...

The Yokohama Strategy ... [of 1994 addressed] disaster risks in the context of sustainable development [and identified gaps and challenges that still remain unfilled and unmet,] in five main areas. (a) Governance: organizational, legal and policy frame-works; (b) Risk identification, assessment, monitoring and early warning; (c) knowledge management and education; (d) Reducing underlying risk factors; (e) Preparedness for effective response and recovery.

These are the kinds of weaknesses and shortcomings identified in this article, and we see them replicated at the international level—usually for different reasons.

This article so far has identified many “best practices”, some of the ways in which these can be adapted to become more palatable and thus more effective in developing countries, and the many ways in which the integration and implementation of these practices are stymied: failures of imagination, political inattention, falling between overly-rigid layers of government, planning and administrative incompetence, etc. Yet, after 14 years (really some 18 years, since efforts began), effective international efforts have not gotten too much further than identifying many best practices—including some we neglect—by a bewildering variety⁷ of international agencies and NGOs, which are sometimes preoccupied

⁷ Google “International Strategy for Disaster Reduction” (ISDR), and you discover that the ISDR was created in 1999, at the end of the International Decade for Natural Disaster Reduction promulgated by the General Assembly (GA); see GA Res. 44/236 of 1989. The ISDR reports to and takes instruction from the Economic and Social Committee (ECOSOC), which in turn reports to the GA. The ISDR operates through a small independent secretariat, the Global Platform for Risk Reduction, the Hyogo Framework, the Inter-Agency Task Force on Disaster Reduction (which also includes academics and scientists), and the following divisions: Africa, Asia and the Pacific, Latin America and the Caribbean, the Early Warning Platform, the Programme Advisory Committee, and the Management Oversight Board. Representative international NGOs that coordinate their activities with the ISDR are the Global Alliance for Disaster Reduction (more than 1,000 experts, based in North Carolina) and the GDIN (motto—“The right information in the right format, to the right people, in time to make the right decisions”). Other agencies with an interest in the area are the UN Development Group and Development Assistance Framework, the Commission on Sustainable Development, the World Bank (*infra*), the Inter-Agency Standing Committee (on humanitarian action), the UN Office for the Coordination of Humanitarian Affairs (OCHA), the Red Cross/Crescent/Flame, the World Meteorological Organization, and UNESCO (on disaster education in the schools; a special program was in effect for 2006-07). We have no idea whether this list is complete, since we know that the World Health Organization (WHO), UN-Habitat, the United Nations Environmental Programme, and the UN World Food Programme play significant roles concerning disasters. This is the basis for the “bewildering variety” characterization in the text; the likelihood that this jumble can be coordinated and integrated, along with regional, national, state/provincial, and city governments, approaches the vanishing point.

with re-inventing the wheel.⁸ (Each of your authors has differing expertise in overcoming coordination and integration problems within and among complex organizations, but we haven't obtained enough information to make concrete recommendations at the international level yet—a good future topic.)

While international efforts properly seek to integrate disaster plans into overall development efforts, they then ignore—as perhaps they have to, in order to build political coalitions—a basic chicken-and-egg dilemma: climate change mitigation/adaptation efforts are more similar than is often realized (*supra*), and both are stymied by varying political and administrative underdevelopments that exist (by definition) in the developing world. The Hyogo Framework (2005) calls for enhancing “governance for disaster risk reduction...and for capacity-development measures ...[through, e.g.,] a strong institutional basis for implementation”, ignoring the fact that only a modestly improved disaster governance can occur independent of an improved governance in general. Also and presumably for political reasons, again, international efforts typically ignore the need for collaborations between foreign experts, perhaps from within international NGOs, and local NGOs—precisely for the reason that such collaborations can circumvent or help to change a conventional national politics and (to a lesser extent) administration, factors we identify as significant stumbling-blocks.

Why do international agencies do so little to help poor city dwellers in their struggle against climate change? According to Dreher and Ramada-Sarasola (2006), many of these agencies are part of the problem rather than the solution: the World Trade Organization (indirectly) and projects financed by the International Monetary Fund, World Bank, the African and Asian Development Banks and the U.N. Development Programme increase carbon dioxide emissions; projects of the U.N. Environmental Program and the EBRD are emissions-neutral; and only Inter-American Development Bank projects decrease emissions on balance. David Satterthwaite (*et al.*, 2007) then identifies four reasons for this state of affairs. First, international agencies are in “antagonistic relationships with [the] low-income groups” regarded as inessential and as holding back a progress presumably defined in terms of growth rather than development, *supra*. Second and given a tendency to exaggerate the relative problems of rural people in developing countries, carbon reduction initiatives are “deliberately” ignored. Third, the links between the disaster and development departments of an international agency, and links among agencies, are weak. Each department or agency has its own programs, criteria and project cycles, and

⁸ The Hyogo Framework (2005), identifies “Objectives” “for the next ten years”, which arguably have already been refined in the Western best practices we identify, *supra*: “identify specific activities...on vulnerability, risk assessment and disaster management;...share good practices...increase awareness...[; and]...increase the reliability and availability of appropriate disaster-related information.... The OCHA (Humanitarian, n.d.) wisely calls for the development of a “culture of protection”, and speaks of increased vulnerability: 200 million were affected by natural disasters in 2003, and 45 million needed life-saving assistance during “complex emergencies”—which include disasters plus armed conflict or human rights abuses.

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each prefers simple, discrete projects. Fourth, international agencies work through national governments, while climate change solutions are often intensely local.

If formal international agencies are of little help, what of international NGOs? As we saw *supra*, they have yet to form, but there is at least one nascent possibility. A loose advocacy coalition formed in the U.S., to lobby and share expertise with regard to extreme heat events. With members of the Global Alliance for Disaster Reduction and experts from Europe, international organizations, and developing countries, they could serve as secular climate change missionaries. As economist Jeffrey Sachs (*quoted by Reuters*, 2006) puts it: “The question is, do you sit back and watch it [climate change] as a tragic spectator sport or do you roll up your sleeves and try to do something about it?” A rather loose structure could and should be retained, but modest funding from a source that would not compromise the group’s independence (the WHO or the EU?) is required. Expertise in a variety of local cultures and languages, and in educational and media matters—with special reference to how the mistrust common among the poor can be overcome, would also be needed. Overall, this is an expertise of comparisons and contrasts, since one-size-fits-all policies don’t work.

With a legitimacy based on their not-for-profit voluntarism, Advocates could initially try to deal with interested municipalities and NGOs: local chapters of the Red Cross/Crescent/

Flame and other first responders to disasters, and organizations of the elderly and medical types, would make good beginnings. In its democracy-through-civil-society efforts, the US Agency for International Development tries to create/strengthen many NGOs. Its track record with purpose-built NGOs is quite poor however, with funds too often winding up in the pockets of elites who try to use ‘their’ NGO as a political power base. The better course is for the Advocates extensively to publicize climate change preparedness, and hope that supportive NGOs will then grow or organize themselves.

While Advocates should not neglect national governments rudely, conveying a willingness to proceed regardless, and to seek funding directly for municipalities and from an international organization, might enhance opportunities for useful collaborations at the national level. At the least, national politicians could increase the incomes and status of bureaucrats in climate change-related fields, and markedly reduce the rate of their transfer to other departments—to give their group expertise a chance to grow.

While altruism has its (limited) place among a city’s residents, the negative incentive of the probability that one’s family will lose life, health, residence, and/or livelihood due to a climate change event *should* be quite effective. But studies show that many people discount similar probabilities too heavily, and that positive incentives are more effective in any event. Chief among these is the opportunity for participation in the planning and implementation of climate change mitigations and adaptations: *see* Hyogo Framework (2005). Elite politicians might oppose this, thinking that it will lead to demands for public participation in other areas as well, and/or result in the loss of politicians’ “moral hazard” opportunities—of doing nothing because international organizations will bail citizens out after a fashion, if disaster strikes.

Empowerment through participation is a powerful incentive, which can lead to the growth of a valuable “culture of disaster resilience” (Hyogo Framework, 2005). The ISDR (Building, 2000), on the other hand, speaks of “a true culture of prevention” taking root, adapted to local contexts and stressing cooperation and coordination. Both of these cultures rely on education, beginning in primary school, as “an interactive process of mutual learning among people and institutions” (ISDR Latin America, 2006)—about, e.g., lessons learned locally and from other countries, and “the sustainable use and management of ecosystems” (Hyogo Framework, 2005). While on the subject of incentives, it is as important to determine what motivates cooperation within, between, and among the varied agencies at international, national, and local levels, and different ethnic and religious groups at the local level. There is some research which can be carefully adapted to be made more relevant culturally: the effects of information on participants and on their problem-solving (Hanna, 2000), consensus building and using it for planning purposes (Innes, 1996, 46-72; Taylor, 1998, 64-75), local knowledge and the discussion process (Wilson, *et al.*, 2003, 354-67) and dealing with ethnic/religious dissensus (Pollens, 2002, 22-42).

Food security prior to the disaster, the subsequent availability of emergency funds, and the means of forestalling epidemics and criminal activity after the fact, are fundamental to ensuring resilience, as is the protection and strengthening of the infrastructures: discussed earlier. The Hyogo Framework, 2005, also calls for strengthening social safety-nets, ignoring the fact that these have been dismantled in many developing countries because of conditions previously attached to loans from the International Monetary Fund and the World Bank. Also, the diversification of income-earning opportunities to decrease the disaster vulnerability of the poor, recommended in Hyogo, *id.*, is useful in theory but unrealistic: the poor are lucky to find one such opportunity, which can then be wiped out by a disaster—e.g., fisherman who lost their boats and fishing grounds because of the December 2004 tsunami. But funds spent duplicating income opportunities can better be used to create primary opportunities for those who do not yet have them.

Above all, much of the otherwise-valuable disaster planning done by international organizations only amounts to ‘wish-lists’, because it does not describe where and how the resources necessary for policy implementation are to be found. Perhaps to atone for past policy mistakes, and like the G8 (at its 2005 Gleneagles Summit), the World Bank (WB) seems to have the inclination as well as the money to deal with climate change and disasters in a developmental context: *see* World Bank, 2006 and 2005. (Unfortunately, climate change evaporated from the 2006 G8 Summit.) The WB is trustee and an implementing agency for the Global Environmental Facility established in 1991, and also the financial mechanism for administering the UNFCCC, *infra*: WB, n.d. The WB may thus be able to coordinate and integrate some or many efforts at various levels through the power of its purse, since the departure of Paul Wolfowitz reduced WB ructions. Inevitably, money will be sought where it can be found, and other international organizations

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will fund different aspects of the problem (dissipating a policy coordination and integration accordingly)—perhaps including an International Monetary Fund desperately in search of new roles (*infra*) and able to coordinate with the WB in the past. Two of the favored WB projects are described below.

We sometimes forget that the rather unsuccessful 1997 *Kyoto Protocol* (which Clinton weakened and Bush tried to destroy) was appended to the UN Framework Climate Change Convention (UNFCCC) that took effect in 1994. This Protocol does not cover rapidly industrializing countries like China, India, Brazil, and Mexico; the rather optimistic hope is that such countries will learn from Western experiences and develop in more sustainable ways: Suri, 2006a. Except for bits and pieces (*infra*), it would be an exaggeration to say that the UNFCCC, secretariat and all, disappeared without a trace—but not much of an exaggeration. Its application is supposed to be coordinated with the Biological Diversity, Combating Desertification, and Telecommunications for Disaster Relief Conventions that are only a little more prominent in their effects: *see* Suri, 2006a; WB, 2005, 10; WB, n.d. While the UNFCCC is broad enough to accommodate improved global policies and coordination, steps in that direction in the Bali of 2007 were not promising.

One of the World Bank's most favored projects, a bit-piece referred to above which is also recommended in the Hyogo Framework (2005), is insurance (inevitably laid off on the reinsurance market, to free resources for other uses) against the effects of disaster. The first such exercise is already in place, for Ethiopia and against the effects of drought. Globally-visible economist Jeffrey Sachs recommends it as an alternative to the overstretched UN World Food Program for, e.g., flooding and mudslides in Guatemala (Reuters, 2006). Sachs says: "This should be an insurable risk, but whether... the premiums would be too high... [should] be explored. It may have to be done with some co-financing from the World Bank", *id.* Indeed, the insurance commissioners of the 50 US States voted unanimously to establish a task force to consider the effects of climate change on the industry; and the world's largest insurance broker, Marsh & McLennan, is advising its "Fortune 500" clients on the same subject (Lobe, 2006b). Discussing which premiums to charge, and who can or must pay them—the Ethiopian or Guatemalan governments, much less their peasants, are too poor to do so—arguably creates too much 'cooperative' activity on both sides of the insurance market. The likely effect would be to manipulate premiums into a two-tier (sovereign/international organization versus corporate) insurance market.

We could tell Sachs that all risks are insurable, including the World Trade Center on September 11, although the US government chose to bail out the relevant US insurance companies—thus creating "moral hazard" for the companies over insurance for mega-risks in the future. The conventional solution is for a re-insurer, Lloyds of London or Munich Re for example, to set a reinsurance premium on a particular risk, which insurers then use to calculate their own premiums. If the World Bank is known to be paying much or all of the premium, our old friend "moral hazard" raises its ugly head again. It might thus be more efficient and effective for the World Bank simply to "self-insure": to cut out the

insurance company middleman and simply pay the cost of disasters itself—rather than get beaten to death with insurance premiums set by uncompetitive means. There might also be a useful role for the IMF here, since the conditions it sets on subsidizing *monetary* disasters are (after Argentina called what turned out to be the IMF's bluff) no longer much observed.

Another favored World Bank project, and the second bit-piece referred to above, is to underwrite carbon dioxide “emissions markets” like Europe's, as stipulated in Art. 12 of the Kyoto Protocol: WB, n.d.; <<http://europa.eu.int/comm/environment/climat/emission.htm>>. (CO₂ emissions have increased by 20% since Kyoto was signed in 1997, Mouawad, 2006.) The idea is that relatively non-polluting companies (or countries) can sell “rights to pollute” (pollution credits) to relatively polluting companies (or countries), at a market price. This is supposed to encourage the adoption of pollution abatement technologies (so as to sell more pollution credits or to need buy fewer of them) by making it less costly to do this.

The relevant market is fragile and fickle, however: the European market is driven by an EU rule whereby each of 12,000 firms which are big users of fossil fuels will have to pay a “carbon” tax of \$50/ton beginning in 2006 and \$125 a ton beginning in 2008, to the extent that companies do not meet the targets set by the EU. The so-called free-market price under the shadow of this tax stood at \$29.45/ton of carbon dioxide at the beginning of 2006, and rose to \$ 37.75 by mid-April (Ingham, 2006). Then came the announcement from several European governments that carbon dioxide levels were lower than each government's quota level, and the market price quickly fell to \$16.60/ton, *id.* Rational (cost-based) investments in pollution abatement technology, so that you can sell pollution credits or buy fewer of them—the purpose of the whole scheme—cannot occur in so volatile a market. Germany, the biggest EU carbon dioxide emitter, decided (pending a challenge in the European Commission) to exclude its coal industry from its carbon trading program, (Dempsey, 2006). If this decision sticks, it likely spells the end of the European emissions market. This market can anyway be seen as an expensive flop: Kyoto leads to high carbon prices, and highly differentiated and thus inefficient allocations of emission abatements (Nordhaus, 2005).

The U.S. is not a member of the Kyoto club and, as the largest emitter until recently (24 tons per person per year, Doyle, 2006) its corporations do not participate in such a market. The EU prohibits participation in this market by non-EU members, and prohibits EU members from participating in non-EU carbon markets—inefficient restraints of trade (Nordhaus, 2005). The U.S. could institute its own EU-style carbon tax, to fund environmental or disaster remediation perhaps. This seems unlikely, California's plans notwithstanding—at least until after the 2008 elections. Partly as a result of U.S. government inattention, a study shows European (and some Asian) companies paying more attention to global warming than their American counterparts, and that chemical companies pay more attention overall than do oil companies; Chevron and Texaco are partial American

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exceptions (Deutsch, 2006). DuPont did the best, and United Airlines the worst concerning carbon in the U.S., and some investor groups say they will give effect to this study (*id.*).

IV. THE END AS THE BEGINNING

The pessimism voiced by Paul Samuelson and James Fleming and discussed in the first paragraph of this article, *may* prove warranted. A committee of the Intergovernmental Panel on Climate Change (IPCC, Yohe, *et al.*, 2007, 813) adds to this pessimism with its “high confidence” that, by 2100, climate change will produce “significant impacts” despite “aggressive mitigation and significantly enhanced adaptive capacity.” But our long journey through the politics, administration, and (tangentially) economics of cities, countries, and regional and international organizations, in their dealings with extreme-weather events and climate change, arguably generates many useful insights which are conducive to a *guarded* optimism. We wish we could offer simple resolutions tying up the many loose ends that remain, but this topic is as complex as it is essential to solve—likely, in bits and pieces that are tied to an overall development at the various levels of governments domestic and international. We have carried the discourse over climate change some way forward, but the global poor command that we and our readers persist.