Degraded Commitments: Reviving International Efforts to Combat Desertification

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No deterioration of a natural resource has generated a more painful and tragic pathology than has desertification. With the steady loss of fertile lands to wind and water erosion coupled with growth in population, each year the world has less soil to sustain its life support systems, food production, and communities. This dynamic is especially acute in the drylands, which comprise some 4 percent of the earth's continental surface.

The most definitive assessment of the severity of desertification on a global scale was produced by the United Nations' 2005 millennium ecosystem assessment. It estimates that some 10 to 20 percent of the planet's drylands (6 to 12 million square kilometers) are already degraded, making desertification "among the greatest contemporary environmental problems." An effective global response is further complicated by the fact that some 90 percent of the residents of the semi-arid and arid lands live in developing countries which are impoverished and facing destitution and subsistence conditions.[1]

Despite common misapprehensions, desertification does not mean the relentless expansion and encroachment of deserts into productive regions. Such phenomena are not unknown and can be witnessed at the edges of the Sahara or in China. Nevertheless, desertification, as defined by the UN, is "the loss of the biological or economic productivity of drylands." While a variety of operational definitions for the concept have been put forth, they all include soil and nutrient loss due to overgrazing, deforestation, or inappropriate cultivation methods as well as soil salinization due to water mismanagement.[2] In many cases, these direct drivers are actually manifestations of a broader array

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of indirect drivers that cause desertification. These factors can involve social dynamics from overpopulation and land tenure systems to the status of women and agricultural trade policies, as well as the physical manifestations of human imperfections such as ignorance and greed. All contribute to the ominous scarcity of productive soils in arid and semi-arid regions.

Environmental optimists, therefore, had ample reason for hope in 1996 when the United Nations Convention to Combat Desertification (UNCCD) came into force. Despite past disappointments in global efforts to address the issue, there was every reason to believe that a comprehensive treaty to counter the scourge of desertification would alleviate many of the associated symptoms—the damage to soil fertility and consequent famine, refugees, and general ecological devastation.[3] Over 190 countries—virtually the entire family of nations—signed on as members, and developed the international consensus that desertification was a global problem that humanity could actually defeat. After all, unlike many of the planet's ecological crises there was nothing new about the problem of land degradation in the drylands, and practical solutions for abating soil erosion caused by human activities have indeed been around for decades. Even the ancients used terraces, rotated crops, and knew how to impose stock limits on marginal lands.[4] So when the international community finally decided to seriously address desertification ten years ago, there was little concern about the underlying science and the ability to find the requisite technological solutions. What was needed was a framework that could mobilize resources, engage local populations, and focus affected countries' strategies. [5]

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A decade later, however, examples of meaningful macro-level progress are difficult to find. Perhaps worst of all, with poorly characterized benchmarks and indicators, scientists are not even able to determine whether the rate of desertification in the world is actually decreasing. A litany of ecological disasters and human tragedies—from deadly famine in Niger to massive soil salination in Central Asia—suggest that the trend is not a happy one.[6] The UN's Food and Agricultural Organization reports that although per capita food production has increased worldwide at an impressive rate—ahead even of population growth—in sub-Saharan Africa it continues to fall. Indeed, only two countries in the Sahel region on the southern border of the Sahara, Burkina Faso and Mali, have increased their per capita production of millet since 1980.[7] While the "Green Revolution" transformed yields in other parts of the world, most of the African

drylands continue to spiral downwards in regards to productivity. This trend serves as a disconcerting reminder that desertification remains a global environmental challenge that could be solved, but is not. To reinvigorate international efforts, the United Nations declared 2006 the "International Year of Deserts and Desertification."[8] Sadly, with the year now past, it is hard to see anything remotely resembling a turning point. Based on any objective criterion, the world's performance remains disappointing.

Three factors can be identified for causing the lack of progress in addressing desertification: First, there is inadequate focus on critical indirect drivers of desertification. Second, there is inadequate funding of initiatives to combat land degradation in developing dryland countries by the international donor community. Third, there is an absence of effective domestic policies and legislation mandating sustainable land management practices.

Ironically, a closer look at the UNCCD reveals that the convention itself specifically targets each of these three factors. The international normative infrastructure is very much in place. But the the words belie the lack of action. If, ten years from now, world leaders want to be able to look at their response to the ongoing land degradation crisis in the drylands, and in particular in Africa, with more satisfaction than they can at present, then it is necessary to change international orientation, priorities, and commitments. The above three factors must be considered prescriptively: a general diagnosis must be provided of what has failed and why, and then possibilities for tackling the challenge desertification for a better future can be recommended.

Indirect Drivers

The UNCCD holds a key conceptual advantage in that it embraces a holistic perspective that attempts to address the complex dynamics of desertification. From its inception the convention realized that a response needed to go beyond direct physical causes and confront the indirect drivers of desertification. The view is evident in the convention's preamble:

> Mindful that desertification and drought affect sustainable development through their interrelationships with important social problems such as poverty, poor health and nutrition, lack of food security, and those arising from migration, displacement of persons and demographic dynamics . . .[9]

Despite the intentions and rhetoric, in practice the UNCCD has done little if anything to direct the attention of its member nations to interventions that might address deeper sociological factors. For example, the link between the status of women, who comprise the vast majority of farmers in the drylands, and their ability to adopt soil conservation policies is well documented.[10] Yet, in its annual gatherings, the UNCCD parties have

never gone beyond co-sponsoring occasional consciousness-raising, gender-focused conferences. There is no real substantive expectation that domestic policies in dryland nations do anything to empower females to change cultivation practices.

Nor do national action programs, the chief operational mechanism for the treaty, contain anything resembling a strategic effort to address indirect drivers. Given the sensitivity of the associated social issues and the absence of a true ethical consensus about how to address many of them, it is easier to limit the international response to lip service. As a result, in many cases national and local efforts to combat desertification are limited to treating symptoms, rather than targeting root causes.

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Ultimately, the environment and the people of the drylands pay a price for taking the politically convenient path of least resistance, and the price tag is rising. Overpopulation, euphemized as "demographic dynamics" in the treaty language, is of course an important part of the land degradation equation in many countries. Population growth rates in many countries have slowed or gone negative. But present demographic projections suggest that the size of countries such as Afghanistan, Burkina Faso, Burundi, Chad, Congo, Mali, Niger, and Uganda—all dryland nations—will triple by 2050.[11] Half of the 2.6 billion additional people that will populate the globe will originate in India, Pakistan, Nigeria, Democratic Republic of Congo, Bangladesh, Uganda, Ethiopia, China, and the United States—all countries with substantial desertification problems.

In the past a small component of the scientific community used the existence of possible exceptions or imperfect data to question the causal link between overpopulation and land degradation, attributing the change in land cover in the Sahel primarily to climate and drought cycles.[12] This doubt complicated efforts to translate demographic concerns into public policy prescriptions. But today the number of cases, from Mali to India, where degradation of soil in the drylands can be linked to an exceeding of local carrying capacity by burgeoning populations is too great to dismiss. Indeed, leading ecological expert Jared Diamond's best-selling book *Collapse* documents the ruin of a string of societies, many in the drylands, because they exceeded the land's carrying capacity.[13] Diamond argues convincingly that overpopulation led to land degradation and a consequent shrinking pool of land resources, which in turn was the real cause of the interethnic enmity and horrendous violence of Rwanda's civil war.

Nonetheless, population policy proposals or family planning initiatives for affected countries are totally absent from debates at the UNCCD. Indeed, demographic expansion in regions with some of the most vulnerable soils on the planet is accepted

as ineluctable, or at least outside the realm of international discourse. The best that can be done is to mitigate the consequences.

Poverty is another indirect driver which cannot be ignored. Whether poverty causes desertification or desertification causes poverty appears to be one of the least productive debates in the development literature; the feedback loop is fairly intuitive. When people face the prospects of starvation, long-term sustainability will be knowingly sacrificed in order to meet immediate needs.[14]

Photo Courtesy of Matthew Reichel

How significant a problem will soil degradation pose to farmers in developing countries?

A desertification treaty was originally put on the table by developed countries as an alternative to developing nations' (especially African) demands for a "poverty convention" to improve the planet's environment. As the developed world tried to cobble together the broad support that would allow them to pass the Climate Change Framework and Biological Diversity Convention at Rio De Janeiro in 1992, they met with resistance from developing countries. Why should poor nations make sacrifices to solve environmental problems that were largely caused by and remain the concerns of wealthy nations, when their immediate acute economic condition prevented them from addressing their own environmental problems? While donor countries were loath to put a poverty convention in a multilateral environmental context, a desertification pact offered a reasonable compromise.[15]

Yet, even though the UNCCD desertification treaty was specifically designed not to be a narrow poverty initiative (but rather an environmental one), poverty cannot be ignored as a major driver of land degradation. Mercifully, other frameworks have emerged to directly address poverty. In the year 2000, the United Nations launched the Millennium Program with the objective of halving the number of people living in poverty by the year 2015. The linkage between the two UN frameworks is self-evident. Without adequate resources for something as minimal as reseeding deforested lands, affected communities cannot begin to change the direction of the ongoing deterioration in land fertility. Here developed nations promised to step up to the plate. Sadly, the second factor behind the UNCCD's poor performance reflects a reneged commitment and economic neglect.

Financial Disappointment

Combating desertification has never really been a major money maker. Other international environmental challenges—from whaling to ozone holes—have always offered a better sell. For example, the Global Environmental Facility (GEF), the world's largest fund for support of international environmental challenges, did not identify desertification as part of its agenda for years. Support for projects addressing challenges associated with climate change and biodiversity has been plentiful—the other two UN-sponsored Rio conventions enjoyed support between 1991 and 2005 of roughly $2 billion each; land degradation received only $91 million in grants from the GEF.[16]

The UNCCD Secretariat itself offers an excellent example. The secretariat operates on a bare bones budget of less than $10 million—a budget that was cut by 20 percent by the parties at their last conference. A weakening dollar and a location in Germany have made the drop in resources even more acute. When compared with the resources of similar multilateral conventions, the paltry state of affairs becomes clearer. This is not just a bureaucratic problem. It has substantive implications.

In the absence of sanctions, reporting constitutes one of the most important tools for fostering compliance among parties of international agreements. Yet, the necessary expertise and availability of personnel required to prepare a detailed and informative report is not always available among developing countries. To prepare reports that are to be submitted under the international treaty for protection of biological diversity, developing countries can receive support of $20,000. For the Convention on Climate Change, the convention secretariat can offer support as high as $300,000. An "affected" nation under the UNCCD can only expect help up to $5,000 in preparing their biannual assessment of implementation.

It could be argued that the lack of bureaucratic budgets is fine as long as bilateral assistance ensures that money gets to the local communities who so desperately want to take measures to preserve soil integrity and restore its fertility. Indeed, Article 6(b) of the convention expects developed nations to "provide substantial financial resources and other forms of support to assist affected developing country parties, particularly those in Africa, to develop and implement their own long-term plans and strategies to combat desertification and mitigate the effects of drought." However, once again the numbers simply do not add up.

The United Nations Environment Programme (UNEP) estimates that an effective 20-year global effort to reverse desertification trends would cost $10–22 billion per year.[17] To put this estimate in perspective, UNEP also calculates that desertification currently causes affected countries to forego some $42 billion in income per year. How much are donor countries giving to finance the fight against desertification? All developed country parties to the UNCCD must submit country reports on their support for anti-desertification activities. Developed country reports from the last two reporting

cycles (2004 for activities in Africa and 2006 for other regions of the world) show total funding for anti-desertification activities of approximately $3 billion per year.[18] This includes funding of both bilateral and multilateral programs and is generally thought to contain highly inflated numbers, as there are no clear criteria for designating aid as desertification-oriented. The level of resolution in the accounting of the national reports tends to be extremely low. Even so, it only reaches one-third to one-seventh of the amount needed.

The situation is particularly discouraging because a little money goes very far in combating desertification. While literature evaluating international aid to restore drylands and stop erosion is surprisingly sparse, most cases point to extremely cost-effective interventions. A 15-year program in the central plateau of Burkina Faso designed to promote soil and water conservation, along with agroforestry, required $38 million of support. Fifty nurseries were established, 261 wells were drawn, and the productive capacity of 91,500 hectares of farmland was enhanced with a quarter of the lands treated showing average increases in yields of 25 percent.[19] At the human level, 350,000 people's nutritional security improved, with the area providing up to 90 percent of food requirements—an increase of more than 10 percent. All that for $2 million a year!

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The geographic diversity of the success stories and the low price tag associated with quantifiable results suggest that loss of soil productivity in developing countries need not be inevitable. In eastern Morocco, one program to combat desertification from grazing increased rangeland productivity on 461,000 hectares, with plant biomass growing from 150 to 800 kg/hectare. The price tag: $47.7 million over ten years.[20]

Among the key interventions planned in the new UN-sponsored millennium villages—designed to pull entire communities out of poverty—is the simple provision of fertilizers. With nutrient depletion on many sub-Saharan African lands reaching critical levels, a plentiful crop will require between two and four bags per hectare, or between $50 to $100 per farm.[21] Yet, even this minimal level of funding is unimaginable for communities in which the average income is $1 per day. Without these inputs, it will be practically impossible to break the cycle of poverty. Without far greater assistance, the degradation of drylands will continue apace.

Regulation and Legislation

The UNCCD does not only expect wealthy nations to send checks. It expects poor nations to roll up their sleeves and tackle their soil loss problems with the resources they have. The national action programs they prepare are to be a road map for local strategies to combat desertification and these programs need to be integrated into national development strategies. A central element of the programs is regulation. Specifically, the convention calls on the programs to "provide an enabling environment by strengthening, as appropriate, relevant existing legislation and, where they do not exist, enacting new laws and establishing long-term policies and action programs."[22]

In fact, many nations have shown the potential of laws to slow, and in some cases reverse, the negative trends produced by the heavy footprint of humanity on the drylands. Frequently, analyses of desertification problems reveal classic cases of overexploited commons.[23] Fifty years of environmental law and enforcement experience in every corner of the globe have shown that legislation and ambitious policies can force people to internalize the externalities associated with their individual decisions. Centralized intervention is often the most efficacious way to reach socially optimal equilibriums.

Surely this is the case with overgrazing. Biblical stories reflect a recognition even among ancient herders that when the flocks reach high densities, coordination and the establishment of clear limits become imperative. Modern stock limits have been introduced in the form of primary and secondary legislation in China,[24] Morocco,[25] North America,[26] and Israel[27] with impressive results. Even beleaguered Sudan has seen a surprising resilience in its rangelands when herds and pastoral activity were reduced as a result of war and migration.[28] The integrity of nomadic lifestyles and pastoral cultures of course needs to be respected. But a steady rise in human and animal numbers, along with a shrinking of traditional ranges, means that if grazing is not controlled it will devastate the resource base upon which it relies. Shepherding can be sustainable on public and private lands, but ultimately must be managed.

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The same is true for deforestation. While woodlands in the semi-arid regions are not as lush and the trees not as tall as in wetter, more temperate forests, these lands play a critical role in preserving the soil. Accordingly, national legislation needs to both prevent logging and encourage afforestation. Zoning and conservation laws in the context of a national strategy are essential. India, for example, watched its forests steadily disappear until it made such a commitment. As part of a national plan, total forest and tree cover is now starting to recover in India, with almost a quarter of its lands intact as forests.[29] Israel, with its arid and semi-arid

climate, designates 10 percent of its lands as forests in addition to the 25 percent it sets aside as nature reserves.[30] With the added potential economic benefit of carbon sequestration in a global warming-driven market system, there is a new carrot that should be cultivated in drylands to accompany the stick of conservation policy.[31] Some arid countries like Australia have already enacted laws to bring about this synergy between climate change and desertification efforts in semi-arid zones.[32]

In some cases, laws and regulatory programs are necessary to diffuse technologies. Water management offers such a case in point. Myopic irrigation practices have led to the massive water logging and salination of soils on roughly a quarter of the world's irrigated lands.[33] These phenomena, which devastated agricultural efforts in the drylands in days past, are wholly avoidable today with the advent of drip irrigation and a better understanding of drainage dynamics.[34] However, less than 2 percent of the world's irrigation has moved to water-efficient and cost-effective drip irrigation. A commitment to creative and determined public policy (coupled with support for the associated infrastructure) would immediately change a country's prospects for sustaining an arid agriculture.

One of the distinguishing characteristics of the UNCCD is that it champions the virtues of bottom-up programs. Local populations have valuable knowledge that needs to be tapped. Moreover, without their active participation, even the best-crafted policies are likely to sputter. Nonetheless, the "commons" dynamics, which push individuals to make unwise decisions, along with the proven success of regulatory programs, means that this respect for local participation must be balanced by a scientifically defensible strategy, oversight, and limits.

Conclusion

Among the more disturbing dimensions of desertification is its irreversible nature. Soil formation is a process that can take thousands of years, and even with great care and active nourishment, soil is difficult to restore. Like most environmental problems, an ounce of prevention is worth many pounds of cure. Today's failures will be readily translated into the depletion of productive land reserves for tomorrow's generations. We are squandering their most fundamental resource.

In considering how the global community might do better, we would do well to recall that there is no need to reinvent the wheel in galvanizing an effective response. For decades, the mechanics of soil conservation practices and sustainable water management for drylands have been well understood. The international normative framework required to diffuse them was developed more recently, but has had a decade to establish the requisite national frameworks, focal points, and institutions.

It would seem that everything is in place to open an improved second decade of global efforts to combat desertification. Yet, if national programs remain too narrowly framed, if international funding remains too measly, and if government regulation and legislation are too amorphous (or nonexistent), then progress will be unlikely. Surely, in the twenty-first century humanity can find the necessary political resolve, resources, and wisdom to save the good earth that sustains it.

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