Introduction to Volume 8

This volume, titled *The Americas and Oceania: Assessing Sustainability*, is the second of three regional volumes of the *Encyclopedia of Sustainability*. (Volume 7 focuses on China, India, and East and Southeast Asia; Volume 9 deals with Africa and Eurasia.) The regional volumes have a particular focus on the assessment of sustainability in each of these regions, which allows the reader to understand the variability of sustainability at a regional scale. This volume has a range of important articles—from the general to the specific in both topical and geographic terms. This volume also represents a very interdisciplinary take on sustainability with entries written by natural scientists, social scientists, philosophers, and humanists.

From the Earth Summit to Rio+20

The United Nations promoted the concept of sustainable development beginning in the 1980s as a way to address the dual crises of environmental degradation and persistent poverty in the developing world. In 1983 the United Nations convened the World Commission on Environment and Development, commonly referred to as the Brundtland Commission. Its 1987 report, *Our Common Future*, laid out a series of global challenges including uneven growth, food insecurity, species decline, and energy and resource depletion, and put forward a model of sustainable development as the solution. The Brundtland report's definition of sustainable development, "development that meets the needs of the present without compromising the ability of future generations to meet their own needs," remains the standard definition today.

The 1992 United Nations Conference on Environment and Development in Rio de Janeiro, Brazil (commonly known as the Earth Summit), built upon the work of the Brundtland Commission, further establishing concrete mechanisms to achieve sustainable development. Additionally, the conference produced the nonbinding Rio Declaration on Environment and Development, which put forth the twenty-seven principles, known as the Rio Principles, intended to guide future sustainable development. The Earth Summit succeeded in changing the discussion around environmental issues from government regulation to market provision of sustainable growth. The Rio Declaration, in large part, has made sustainability the dominant environmental discourse of recent decades. Yet, the outcomes of the Earth Summit and the sustainable development model in general for biodiversity conservation and environmental protection have been mixed. In this volume, Sandy Irvine's article, "Rio Earth Summit," does an excellent job of documenting and discussing this mixed record.

In 2012 we are celebrating the twentieth anniversary of the Earth Summit and the Rio Principles. It is, therefore, no coincidence that these final volumes of the *Berkshire Encyclopedia of Sustainability* are being published at this precise historical moment—to commemorate the Earth Summit and celebrate Rio+20, the United Nations Conference on Sustainable Development that took place in Rio de Janeiro, Brazil, in June of 2012. This conference—like its namesake the 1992 Earth Summit—brought together representatives of governments around the world (including heads of state) along with international institutions, organizations, researchers, and members of civil society to develop strategies for advancing poverty reduction and sustainability.

The original Earth Summit was vaguer than Rio+20 in the way it conceived sustainable development. Where the original Earth Summit was focused on conceptually linking environmental stewardship and economic growth more generally, Rio+20 specifically focused on honing and reaching consensus around strategies of the so-called green economy to stem the tide of climate change. The United Nations identified seven critical axes that

made up the focus of the Rio+20 meetings: jobs, energy, cities, food, water, oceans, and disasters. The model of the green economy—economic revitalization through transforming our energy, waste management, and transportation infrastructures—is a set of ideas that captures the spirit of the original Rio Principles but with much more coherence and specificity. Further, where the original conference was focused on environmental issues more broadly, Rio+20 focused more specifically on the urgent issue of global climate change. Because the emphasis of these meetings was more specific, and because climate change is such an urgent and salient issue today, there was hope that Rio+20 would produce concrete and binding resolutions that would bring us closer to the elusive goal of sustainable development. Unfortunately, though, this does not appear to have happened. Although it is too soon to judge the long-term outcome of Rio+20, many commentators seem to be of the opinion that the meeting had low expectations for any real change in global climate change governance, and that even these low expectations were not met; the consensus on the meeting's legacy appears to be that the major changes in environmental behavior that the world desperately needs must be made first by individuals and groups, rather than waiting for governments to act.

Rio de Janeiro (Rio), Brazil's second-largest and best-known city, was a fitting site for this meeting, as it was for the original Earth Summit in 1992. Rio is located in an ecologically important stretch of Atlantic rain forest, a global biodiversity hotspot. In addition, Rio is a massive, industrial city with sprawling slums (*favelas*) ringing the urban core. Being both a biodiversity hotspot and a source of a great deal of contamination and ecosystem degradation made Rio an ideal site, both symbolically and practically, for this conference. Rio represents the contradictions of development and is a place where sustainability must be worked out and put in place. Further, under Brazilian President Luiz Inácio Lula da Silva (in office from 2003–2010), cash transfer programs and social policies helping the poor succeeded in dramatically reducing inequality during a period of high economic growth (Seidman 2010). Achieving economic growth and economic justice simultaneously has been a rare outcome throughout modern world history. Therefore, Brazil serves as a symbol of growth with justice and was thus further appropriate as a site for Rio+20. In this volume, Colin Crawford's article, "Rio de Janeiro," captures many of these complex issues in great detail.

Toward *Developing Sustainability*

The Rio+20 United Nations Conference on Sustainable Development, like its predecessors, made it clear that the emphasis in the term *sustainable development* is on the noun, *development,* and that *sustainability* is relegated to adjective status. This focus has changed little since the original Rio Principles stated, "Human beings are at the center of concerns for sustainable development." Terminology used throughout the original Rio Declaration—"production, exploitation, technology, and free trade"—underscored the intent of the doctrine to address environmental ills as spillovers of advocating economic growth. The Earth Summit took the position that both poverty and wealth were leading causes of environmental degradation, and therefore framed economic growth itself as a solution to environmental ills as well as a cause. As the Rio Principles suggest, sustainable development is a model in which environmental stewardship and economic growth are understood not simply as complementary but as codependent. One cannot exist without the other.

Because sustainable development treats economic growth and environmental stewardship as correlated, it has wide appeal across the political and geographic spectrums. Further, since *sustainable* is used widely to apply to a broad range of institutions, the meaning has become so diluted as to be virtually meaningless. The win-win framing of sustainable development, as well as its definitional ambiguity, has imbued sustainability with a near-universal appeal. As the sociologists Craig Humphrey, Tammy Lewis, and Frederick Buttel (2002, 224) point out, no politician has ever come out in favor of "unsustainable development."

Regarding the definitional problem, economist Herman Daly (1996, 2003) has pointed out that it is unclear what exactly is being sustained in discussions about sustainability. Is it the economic growth that we are sustaining or is it the Earth's stocks of biophysical resources? Daly calls the former of these interpretations *the utility definition,* and the latter *the throughput definition*. The utility definition suggests that the happiness of future generations is to be non-declining. This is the common definition bequeathed by Brundtland, Rio, and subsequent conferences. Daly's favored definition, the throughput definition, takes nature as its focal point rather than human society. The throughout definition holds that resource inputs into economic production be returned to nature's resource stocks in the same proportions in which they are extracted.

Following the throughput definition, then, is human society practicing sustainability? Regrettably, we haven't been converting proportional amounts of outputs into inputs (throughput) since the late 1970s. In 1961, human society was consuming approximately half of what the Earth could provide in terms of energy and material resources, but we crossed the sustainability threshold in the late 1970s. By 2010, human civilization was consuming approximately one and a half times what the Earth could sustainably supply. We are drawing down nature's stocks 50 percent faster than they can be replenished, and this pattern is intensifying every year (Ewing et al. 2010).

In light of our wildly unsustainable current rate of resource consumption, we must move beyond the Brundtland utility definition. We must shift the focus away from the phrase *sustainable development*—where *sustainable* merely modifies the noun *development*—to a focus on *developing sustainability,* where *sustainability* itself becomes the operative noun. Many hoped that Rio+20 would have taken such a revised conceptual framework seriously, although (admittedly) this would have been difficult to accomplish at a conference designed for broad appeal and intended to achieve consensus among the world's diverse heads of state. As Sandy Irvine highlights in the article titled "Rio Earth Summit" in this volume, neither the original Earth Summit nor Rio+20 were focused on reducing consumption as a centerpiece of the agenda.

The Value of This Volume

Nowhere are questions of sustainability more acute and salient than in Latin America and Oceania—the two regions with the greatest stocks of biological capacity remaining in the world. Australia and South America, together with Canada, comprise the densest concentrations of biological capacity. Yet Australia—like the United States, Canada, and Scandinavia—has one of the largest per capita ecological footprints in the world. This means that Australia, with very high levels of biocapacity and a deep ecological footprint, is a crucial nexus for reversing global patterns of unsustainable consumption. Oceania overall, despite its tremendous biocapacity, has a per capita ecological footprint of more than double the global average, a majority of which is contributed by Australia (Ewing et al. 2010).

In Latin America, biocapacity is high relative to its levels of consumption. As a region, residents of Latin America are below the global average per capita ecological footprint, although this varies greatly by nation. Haiti has the smallest per capita footprint in the region, and Paraguay has the largest. To a large extent, the considerable biocapacity of Brazil, Argentina, Uruguay, Paraguay, and Bolivia compensate for high levels of consumption in the region, maintaining Latin America as "by far the largest regional ecological remainder in the world" (Ewing et al. 2010, 64).

Despite Latin America's high concentrations of biomass, the region faces severe environmental issues. The glaciers in Chilean and Argentine Patagonia are thinning at a dramatic rate. Glacial melt from Patagonia alone, over the past half century, has contributed approximately 10 percent to the total increase in the sea level from mountain glacier melt (Glasser, Harrison, Jansson, Anderson, and Cowley 2011).

The Amazon rain forest is giving way to monocultures of soy beans and natural gas fields at an exponential pace, diminishing biodiversity and emitting a great deal of carbon. As infrastructure in the Amazon improves, more and more of the rainforest is being cleared for soy production. Brazilian soy production exploded in the 1990s and has been increasing exponentially since. In 2006, Brazilian exports outpaced US exports for the first time in history with a record 26.1 million metric tons as compared to US exports of only 24.8 million metric tons (USDA 2006).

Further, the so-called political turn to the left in Latin America in the first decade of the twenty-first century has not meant greater environmental protections for this vulnerable region. Extractive industries—mining and petroleum—continue to expand in the region under weak regulatory institutions. Matthew D. Himley's article, "Mining (The Andes)," in this volume discusses this in detail as does Erkan Topal and Diarmid (Dinty) Mather's entry, "Mining (Australia)." For these and many other reasons, assessing sustainability in the Americas is crucial at this particular historical moment.

The economies of Oceania range from advanced industrial world leaders like Australia, to traditional smallholder agricultural economies on many small islands. Agriculture is a small part of the overall economy of the region but accounts for the majority of foreign exchange earnings. Agriculture is more important on smaller islands such as Vanuatu and Fiji. Across Oceania, the largest economic sector is service, owing to the large tourism industry.

Glacial melt from Patagonia links sustainability concerns in Latin America with Oceania in visceral ways that highlight the global dimensions of the climate crisis. Smaller islands in the Pacific Ocean are losing surface

area at an alarming rate as a result of sea level rise, yielding the world's first climate-change refugees and serving as symbols of the urgency of addressing greenhouse gas emissions. Between 1979 and 2008 the average global rate of coastline erosion has increased by 300 percent. Because of their unique position as the world's first climate change refugees, the governments and civil society in many parts of Oceania are on the cutting edge of climate change activism. As of 2009, for example, Fiji derived 66 percent of its energy from renewable sources (Bohane 2009).

Not only are many islands in Oceania losing surface area, but the encroachment of the sea salinizes agricultural land, making farming more difficult, forcing residents to change their traditional diets, and creating new dependencies on foreign food aid. Further, neighboring areas must absorb these refugees, creating fiscal stress for local governments and generating social conflict. In this volume, C. Michael Hall's "Small Island States" explores this phenomenon of sea level rise in Oceania as part of a larger discussion of small island ecosystems and the particular sustainability challenges these small island nations face. In many parts of Oceania, non-Western cosmologies are still strong but are increasingly threatened by displacement and social change wrought by climate change. James D. Sellmann and Robert Andreas have an article in this volume titled "Pacific Island Environmental Philosophy," which provides a well-informed and elegant discussion of this issue, among many other topics.

In addition to their connection via sea level rise, both Latin America and Oceania are home to a variety of indigenous peoples and minority ethnic groups that bear disproportionate amounts of the global environmental burden. More frequent and more intense droughts (as well as the increased frequency of tropical cyclones and their associated devastating effects) impact subsistence farmers disproportionately, and indigenous and remote rural settlements are increasingly being asked to absorb waste-treatment facilities, extractive projects, and hydroelectric dams that transform the landscape and take a toll on traditional social relations.

About This Volume

These regional volumes of the *Berkshire Encyclopedia of Sustainability* series are additionally important because they serve to highlight the fact that human civilization's unsustainable rates of growth do not impact all regions and all countries evenly. In fact, one of the great tragedies of advanced global capitalism is that those countries with the smallest ecological footprints often face the costs of unsustainability most acutely. Parts of Latin America and Oceania, in particular, face new challenges wrought by overconsumption in the wealthy countries of Europe, North America, and parts of Asia.

These regional volumes also are important because of their emphasis on assessment. As discussed above, there is no definitional consensus for sustainability. The meaning of the term varies widely depending on the intentions of the speaker. For this reason, sustainability is difficult to assess and even harder to measure. These volumes lead us incrementally toward those elusive goals of a consensual definition of sustainability and a standard for assessment.

In this volume we have included a wide range of country-specific articles as well as many more general topical articles that span the focal regions. There are a rich series of pieces herein dealing with the environmental history of key countries and subregions within the geographic compass of this volume. We have also included a number of articles on key geologic and hydrogeologic resources within the scope of this volume. For North America, we have provided articles on the Chesapeake Bay—the world's largest estuary—the Mississippi and Missouri Rivers, the Appalachian Mountains, and the Great Lakes, among others. Regarding Latin America, we have articles on the Andes Mountains, the Southern Cone (the southern tip of the continent), and the Amazon River, among others. Regarding Oceania, articles such as that on the Murray-Darling Basin and those on the environmental histories of Australia, New Zealand, and Oceania in general, highlight key focuses of regional sustainability. This volume also offers a series of excellent articles on urban sustainability in major urban centers within the target region—from New York City and Detroit, to Guatemala City and Bogotá, to Vancouver, Sydney, and Auckland. Finally, the volume also offers a variety of more general articles on sustainability issues as wide-ranging as fair trade, rural development, gender equality, and parks and protected areas.

We have sought to strike a balance between the geographically specific and topically broad in this volume, yet no single volume encompassing such a wide swath of world geography can be entirely comprehensive. There are inevitable omissions in our coverage here, but the geographic range, the cross-cutting focuses on urban and rural issues, the transdisciplinarity, and the combination of specific and general topics provides a useful reference guide for understanding and assessing sustainability in the Americas and Oceania.

It is urgent that human civilization achieve sustainability—in throughput terms rather than utility terms—in the immediate future. Already we have begun to witness irreversible environmental degradation as a product of global climate change, and nowhere are these changes more visible and urgent than in the ecological toll on Latin America and the human toll in Oceania. Since the original Earth Summit in 1992, the considerable amount of debate, research, and advocacy undertaken has failed to resolve the tensions in human society between the drive for economic growth and material satisfaction and the need to shepherd our biophysical world. The Rio+20 conference was a landmark meeting and an opportunity to reach a binding consensus on the steps toward sustainability. This volume, and indeed the entire ten-volume *Berkshire Encyclopedia of Sustainability* series, serves as a comprehensive inventory of themes, issues, and phenomena related to understanding, assessing, and achieving these goals. Thank you for using this reference.

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