



# Introduction to China, India, and East and Southeast Asia: Assessing Sustainability

This volume—*China, India, and East and Southeast Asia: Assessing Sustainability*—is the first of three *Encyclopedia of Sustainability* volumes to be devoted to a particular region. This volume covers a huge region in terms of both population and geographical size, a region that embodies many of the Earth’s superlatives—pick up any newspaper on any given day and it is clear that there are a lot of things afoot. Even sticking to environmental matters, the mind reels at the sheer amount of activity: new cities sprouting like mushrooms in China; countrywide coal shortages in India; renewable energy projects taking shape, being argued over, sold, and traded; Chinese mining and other corporate interests investing in seemingly every country on Earth; solar-powered (and rainwater-collecting and shade-providing) “Supertrees” being built in Singapore’s Gardens by the Bay; and consumerism and a desire for Western living standards taking hold in various places, in ways that would have seemed unimaginable two decades ago.

With all that’s going on in the region, it may seem preposterous to attempt to produce a volume in an encyclopedia—which is by definition stuck in time—dedicated to the subject. Any book that tries to cover both China *and* India (not to mention their neighbors) will have difficulties. In China’s case, the fact that it has experienced a quick (and ongoing) transition to a market economy, while still being governed by a one-party system, defies easy description. Meanwhile, India’s status as the world’s largest democracy comes with fairly predictable results.

The value of an encyclopedia, however, is its ability to present a comprehensive view of how things stand at one point in time. It forces us to slow down, to look in depth at what’s happening in many fields, in many countries, across river systems and mountains, forests, factories, laboratories, gigantic cities, rural villages, and everywhere

in between. The vast panoply of the region is preserved in time.

Encyclopedias are also wonderful for their ability to present a vast array of facts and figures to the curious reader. To pick but a few superlatives, the parts of Asia covered in this volume include the following (although it should be noted that not all of these facts appear in this book; sources appear below the Acknowledgements section):

- The Earth’s **highest point**: Mt. Everest, on the China-Nepal border, at 8,848 meters high.
- The Earth’s **lowest point**: the Mariana Trench, off the coasts of Japan and the Philippines, at 11,033 meters deep.
- The first, second, and fourth **most populous nations**: China (1.34 billion people), India (1.2 billion people), and Indonesia (248.2 million people), respectively.
- The **most crowded place**: purported to be Hong Kong’s Mongkok (or Mong Kok) neighborhood (meaning *busy place* or *busy corner* in Cantonese). The previous record holder, Kowloon Walled City—pictured in the image above in a schematic map drawn up by a Japanese firm before the city was torn down by order of the Chinese government in 1993—was also in Hong Kong and is thought to have been the most crowded place of all time before its destruction.
- The **largest casino**: Macao, China.
- The **largest film industry**: Bollywood (the informal name for the film industry in Mumbai, India) produces more films each year than does Hollywood. The name comes from Mumbai’s former name, Bombay, combined with Hollywood.
- The **largest conurbation** (i.e., megacity): Tokyo has over 35 million residents in four prefectures.

- The **largest rare-earth metal refinery**: under construction in Malaysia as of 2012; the refinery owners (the Australian company Lynas) hope to overcome China's overwhelming monopoly on the substances, which are vital to the manufacture of smart phones and other electronics. The owners claim to be improving on China's dismal environmental record regarding rare-earth metal refineries. (See the article "Rare Earth Metals" in Volume 4 of this series, *Natural Resources and Sustainability*, for more on this subject.)
- The **largest mega-region**: according to the 2010–2011 UN-Habitat biannual report *The State of the World's Cities*, Hong Kong–Shenzhen–Dongguan–Guangzhou in southern China had a combined estimated total of 120 million residents in 2011.
- The **largest generator of electricity**: the controversial Three Gorges Dam in China's Hubei Province generates an estimated 20 times the electricity-generating power of the Hoover Dam in the United States. Roughly 1,000 towns and villages were relocated to make room for the dam's massive reservoir.
- The **most (and fastest) Internet users**: China had an estimated 420 million Internet users in 2010, representing roughly 23 percent of the world's Internet users. South Korea has the fastest Internet connections of any country on the planet.
- The **worst air**: according to the 2011 Environmental Performance Index (EPI), South Asia in general, and India in particular, placed last in the world for air quality. India was at the bottom of the list (number 132), followed by Nepal (131), Bangladesh (130), Pakistan (129), and China (128).
- The lowest **per capita emissions**: many of the countries at the bottom of the list for air quality are also the least polluting, per capita. In 2008, India was ranked number 122 in the world, with 1.5 metric tons of carbon dioxide emitted per capita; Nepal was ranked number 188, Bangladesh was 161, Pakistan was 137, and China was 66. South Korea ranked number 22, the highest per capita emitting country under consideration in this volume. (The top ten countries in the world are mainly in the Middle East, with the United States coming in at number 10, with 18 metric tons of carbon dioxide emitted per capita.)
- The first and second **deadliest floods** of all time: the Yangzi (Chang) River in 1931 and the Huang (Yellow) River in 1887, respectively—both in China. Proponents of the Three Gorges Dam say

that the new dam potentially will save the lives of millions of people on the flood-prone Yangzi; opponents say the new dam may do that now but will make the flooding worse in the future.

- The first and second **busiest ports** in the world: Shanghai and Singapore, respectively.
- The world's **largest democracy**: India (as mentioned previously).
- The **rainiest year** in recorded history: Cherrapunji, India, had 26.4 meters of rain in 1861 (the fairly rainy city of New York, in comparison, typically sees 1.14 meters of rain in a given year).
- The **world's largest encyclopedia**: China was home to what the *New York Times* called "the most colossal literary work ever carried out by man" before it tragically was lost to humanity in a fire in 1900. The *Yongle Dadian*, or *Great Compendium of the Yongle Reign*, was an enormous literary encyclopedia that was completed in 1408 and had 22,877 chapters in 11,095 volumes; the table of contents alone spanned 60 volumes.

The list could go on.

Clearly, Asia is a singular place, and one that can't easily be covered in a single book, let alone on a topic that's as intriguing (and slippery to define) as sustainability. While we would aspire to have the reach of the *Yongle Dadian*, and would love to be able to call this series the *Great Compendium of Sustainability*, we must, of necessity in this modern age, set our goals somewhat more realistically.

What the reader will find in this volume of the *Encyclopedia of Sustainability* is a fascinating patchwork of material, including a general overview of cities in Asia, as well as a selection of cities, including Dhaka, Chennai, Singapore, Beijing, Mumbai, Shanghai, Jakarta, and Tokyo. There are articles on the environmental histories of China, India, Southeast Asia, Japan, and the Korean peninsula, as well as the Tibetan Plateau, the Himalaya, and a selection of key rivers such as the Mekong–Lancang, Ganges, Yangzi, and Huang. There are articles on the steel, automobile, nanotechnology, and information and communication technology (ICT), industries; articles on energy (renewable and otherwise), energy projects (after all, Asia has witnessed in recent years the creation of the aforementioned Three Gorges Dam and the devastating earthquake and tsunami that crippled Japan's Fukushima nuclear power plant in March of 2011—possibly taking with it the future of the entire industry, at least in Japan,

although it may be too soon to judge), and energy security; articles on the traditional knowledge of China and India, both of which have huge implications for the modern nations of today; and general articles on public health, public transportation, microfinance, water security, rural development and livelihoods, consumption, and the influence of religions on current (and past and future) sustainability thought.

Other articles cover country-specific topics such as China's One-Child Policy and India's "white revolution," during which the country was transformed into the world's largest producer of milk, providing, according to author Amrita Patel, sustainable livelihoods to more than 70 million smallholder dairy farmers. Sustainability is not possible without considering the livelihoods of the people involved, be they urbanites or rural dwellers, rich or poor.

## Sustainability in the Asian Context

*Sustainability* as a word may be somewhat new; the term emerged in various places in the early 1970s to describe the idea of preserving resources in such a way that future generations will be able to benefit from them without the economy collapsing in the process. The *idea* of sustainability, however, is certainly not a new one, despite the increasing use of the word to describe seemingly everything remotely ecologically oriented on the planet. In his article "Traditional Knowledge (China)," Kirill Ole Thompson of National Taiwan University points to the *Classic of Changes*—the *I Ching* (*Yijing*)—and its suggestion that there is a continuity between humanity and nature; to go against this is to risk going against the natural harmony of the world. On the other hand, he goes on to write, "the philosopher Mozi (flourished 479–438 BCE) believed that the Confucian rituals diverted resources needed by society as a whole and were wasteful. His principle of 'impartial regard' stressed fairness, and preached economy in expenditures and conservation in the use of natural resources. His pragmatic approach, however, was so human-centered that it justified exploitation of nature for human uses."

Perhaps the culmination of this human-centered exploitation of resources was Mao Zedong's well-known and disastrous campaigns against the environment. One of the more infamous of these was his Wipe Out the Four Pests campaign, a synchronized mass strategy to eliminate China's rats, mosquitoes, flies, and sparrows, which ate grain seeds and were therefore considered enemies of

the state. The result: because the birds, which were driven close to extinction, ate insects, infestations of locusts and other insects spread, ruining a large portion of the crop. Millions starved as a result. This is an extreme example of a tragic lack of sustainability in more ways than one. (Another of Mao's schemes was the idea to launch China into the industrial age by forcing villagers across the country to start small-scale iron smelters in their backyards, with similarly disastrous results.)

Mohandas Gandhi, on the other end of the spectrum, was a leader who took a different approach to nature, one that would later be closely identified with sustainability. Sanjay Lal writes in his article "Gandhism,"

Fully adopting Gandhian nonviolence means taking no more from nature than is truly necessary. This means that human practices will be sustainable, as the resources provided by the environment are sufficient for all people to obtain what they need. When, for example, we desire warmth and convenience in travel to the extent that we endanger the world's oil supply, we accept violence as a legitimate means for preserving our lifestyle.

There are countless instances in the region of the perils of not living in harmony with nature, whether by design or not. Bangladesh is a well-known example of people living in harm's way, due to poverty or otherwise; its 161 million citizens are famous for their resilience in the face of frequent—and frequently cataclysmic—monsoonal flooding. The huge nation (huge in population, that is: the entire country would fit inside the US state of Illinois, with 12.5 times the population) faces equally huge challenges in the years ahead, as most climate change models point to rising sea levels; the big question is how *much* the seas could rise. Any rise will cause problems for a country where the majority of the population lives mere meters above sea level.

Some environmental disasters develop slowly, over the course of decades: there are cycles of flooding, drought, and desertification, and the famine and associated human miseries that go with them. Other disasters happen in a matter of hours. The most infamous chemical disaster of all time took place in Bhopal, India, in 1984, when the Union Carbide plant there leaked methyl isocyanate into the surrounding city, killing an estimated 3,800 people outright in a few short hours, and leading to an estimated 20,000–30,000 subsequent deaths. (This topic, discussed briefly by Sam Geall in "Media Coverage of

the Environment” in this volume, is covered in more depth in “Bhopal Disaster” in Volume 3 of this series, *The Law and Politics of Sustainability*.) With any disaster, the hope is that people learn from their mistakes—in this case, lax international (and domestic) environmental laws governing the actions of multinational corporations. The cataclysmic tsunamis that hit South Asia in December of 2004 and Japan in March of 2011 show the perils of large populations living close to tsunami-prone coastlines. The extreme fertility of volcanic soils—and the generally beautiful surroundings where volcanoes tend to be found, for various geological reasons—means that populations in volcano-riddled Indonesia and the Philippines, to name but two nations, face existential dangers of another variety.

But it is not all bad, which is the point of this book. A book only about our helplessness in the face of nature would be depressing indeed—and it would tell only half the story. In his article “Reforestation and Afforestation (Southeast Asia),” for instance, J. David Neidel outlines some of the many strategies currently underway to bring forest cover back to denuded areas in Southeast Asia. Many readers will be familiar with television images of masked inhabitants of cities such as Jakarta, Indonesia, their atmosphere choked with smoke from the innumerable fires started to clear land for crops and other uses. These innovative strategies take many forms, depending on local circumstances. In the Philippines, for instance, a reforestation approach known as *rainforestation* (or *rainforestation farming*) has been developed

to mix economically and ecologically important species. This approach, which allows for local communities to gain multiple economic benefits while restoring forest cover to the land, is necessary in the Philippines where the rural population density is very high. The practice of rainforestation is now being promoted widely in Cambodia, Vietnam, Sri Lanka, and southern China, as well as in the Philippines.

Sustainability happens on all levels, from people making individual choices to governments of huge nations passing laws (whether initiated from the “ground up” or from on high, as is generally the case in China, although even that is changing). The well-known Chipko movement (discussed by George Alfred James in Volume 1 of this series, *The Spirit of Sustainability*) was a successful Gandhian-inspired grassroots movement for forest sustainability that flourished in what is now the Indian state of Uttarakhand in the western Himalaya between 1973 and 1981. (The name of the movement is derived from the resolution of the local people to embrace—*chipko*—the trees in order to prevent the ax from doing its work.) The Chipko movement was one of the first so-called tree-hugging movements.

Our hope is that readers of all sorts will be inspired by the material found in this book to find new ways to make daily living a more sustainable thing: not simply a buzzword but a real, tangible thing.

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