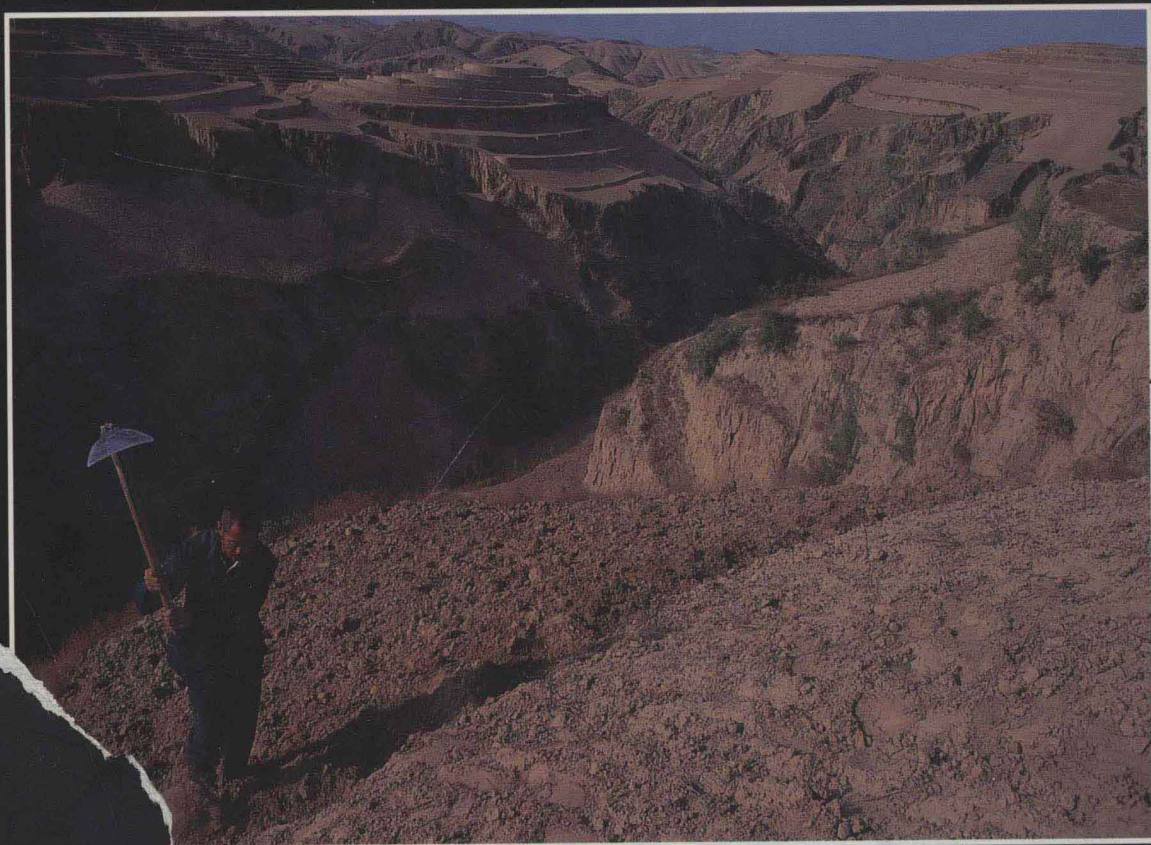


# CAN WE FEED OURSELVES?

A FOCUS ON ASIA

Hiroji Kubota



ter R. Brown

INTRODUCTION BY Gordon R. Conway

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**A Focus on Asia**



*To Cornell and Edie Capa  
whose human concerns have inspired me.*

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## **A Focus on Asia**

Photographs by

**Hiroji Kubota**

Foreword by Lester R. Brown

Introduction by Gordon R. Conway

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## FOREWORD

“Can Asia feed itself?” is one of the central questions that will shape the human prospect during the twenty-first century. Of the world’s population of 6 billion, 3.6 billion—well over half—live in Asia. China, the world’s most populous country, contains nearly 1.3 billion people. India has just reached 1 billion. During the next half century, China’s population is expected to grow by 200 million and India’s by more than 500 million.

The environmental devastation of Asia is affecting the food prospect. Deforestation is leading to more destructive flooding. With 85 percent of the original tree cover of China’s Yangtze River basin gone, the 1998 flood of the Yangtze River basin was one of the world’s worst of this century. Flooding in China in 1998 drove an estimated 160 million people from their homes.

The list of problems appears endless: population explosion, water shortages, environmental destruction, illiteracy, economic crisis, food shortages, and, in the case of North Korea, famine. Hiroji Kubota has focused the lens of his camera and his talent as a photographer on the food situation in Asia.

Kubota, a member of Magnum Photos, has been documenting Asia for many years. He felt so compelled to make the Asian situation known to the world that he painstakingly completed this splendid book of photographs, “Can We Feed Ourselves?”

In this project he focused on food, but one cannot look at Asia’s food prospects without looking at the population pressures. With the cropland area in Asia no longer expanding, more people means less cropland per person. At some point, as the cropland area shrinks and as the demand for food expands, the growing demand for food can be solved only by turning to the outside world for imports.

Japan, South Korea, and Taiwan already import more than 70 percent of their grain. It is one thing for a country of 125 million people, like Japan, to import more than 70 percent of its grain from the outside world, but quite another thing when a China, with 1.3 billion people, turns to the outside world for a large share of its grain supply. Then the question becomes not only “Can Asia feed itself?” but “Can the world feed Asia?” This is the second

key question.

Perhaps the greatest single threat to food security in Asia is spreading water scarcity. Water tables today are falling in China almost everywhere the land is flat. Under the North China Plain, the water table drops by 1.5 meters per year. The Yellow River, the cradle of Chinese civilization, now runs dry for a large part of each year.

The water situation may be even more dire in India. The latest analysis of India's water situation indicates that the amount of water pumped from underground is double the rate of aquifer recharge. As a result, water tables are falling throughout much of the country. The International Water Management Institute, based in Sri Lanka, estimates that aquifer depletion could reduce India's grain harvest by up to one fourth. In a country adding 18 million people per year, this is not a pleasant prospect.

Falling water tables in India could lead to soaring food prices. Unless the government can effectively manage spreading water shortages, the loss of confidence in the government could lead to political instability and severe food shortages. With 53 percent of all children undernourished and underweight, life for most of the 1.3 billion people living in the Indian subcontinent is precarious even now.

Not every face of every person in every photo of Hiroji Kubota's collection has an expression of poverty or suffering. The lives of people who struggle daily with insurmountable obstacles are captured in these photos. They reflect not only scenes of poverty and despair but also radiant moments of joy and hope.

*Lester Brown*  
*President, Worldwatch Institute*

## Food for All in Asia—Can It Be Done?

Nature can be bountiful. The ricefields of Asia, so evocatively photographed by Hiroji Kubota, have fed people and sustained civilizations for thousands of years.

But natural bounty by itself is not enough. It has to be matched with human ingenuity. The Green Revolution, a joint product of Western and Asian science and technology, was one of the great success stories of the second half of the twentieth century. Food production in the developing countries kept pace with population growth. Since 1960 an additional three billion people have been fed. Without the Green Revolution many of these, perhaps as many as two billion, would be starving.

Yet, like most technological advances, it was not a complete success. It had its drawbacks. There is still hunger in the world. Hiroji Kubota captures the reality of hunger today and also, more subtly, the prevalence of malnutrition and the constant struggle facing so many people in their daily quest for enough food for themselves and their children.

Today, about eight hundred million people, or some 15 percent of the world's population, get less than 2,000 calories per day and live a life of permanent or intermittent hunger and are chronically undernourished. Over five hundred million of these people live in Asia. Many of the hungry are women and children. More than 180 million children under five years of age are severely underweight (150 million in Asia). This represents a third of the under-fives in the developing countries. Young children crucially need food because they are growing fast and, once weaned, are liable to succumb to infections. Seventeen million children under five die each year and malnourishment contributes to at least a third of these deaths.

Lack of proteins, vitamins, minerals, and other micronutrients in the diet is also widespread. Over one hundred million children suffer from vitamin A deficiency. As has been long known, lack of this vitamin can cause eye damage. Half a million children become partially or totally blind each year, and many subsequently die. And, as recent research has shown, lack of vitamin A has an even more serious and pervasive effect, apparently reducing the ability of children's immune systems to cope with infection. About two million children die each year as an indirect effect of vitamin A deficiency.



Iron deficiency is also common in the developing countries, affecting a billion people. Over four hundred million women of childbearing age (fifteen to forty-nine years old) are afflicted by anemia caused by iron deficiency. As a result they tend to produce stillborn or underweight children and are more likely to die in childbirth. Anemia has been identified as a contributing factor in over 20 percent of all postpartum maternal deaths in Asia and Africa.

Paradoxically, hunger is common despite twenty years of rapidly declining world food prices. Although in many developing countries there is enough food to meet demand, large numbers of people still go hungry. Food prices are low, yet they remain high relative to the earning capacity of the poor. Market demand is satisfied, but there are many who are unable to purchase the food they need and, hence, to them the market is oblivious.

Not surprisingly, hunger is closely related to poverty. To the casual observer, poverty seems to be worse in the cities but, in reality, the urban poor fare better. About 130 million of the poorest 20 percent of developing country populations live in urban settlements, most of them in slums and squatter settlements. Yet 650 million of the poorest live in rural areas, often in the midst of healthy fields of grain and gardens of fruits and vegetables. But if they do not have the land or the income from employment, the food is out of their reach, and they are as malnourished as any urban slum dweller.

The first question we ought to ask ourselves is, why should we be concerned? Probably everyone who reads this book and looks at these photographs is getting an adequate diet. Does it matter to us that others are not so fortunate? Does it matter to the industrialized countries that many people in the developing countries are malnourished? Part of the answer to these questions is political. The end of the Cold War has not brought about an increase in global stability. While conflict between East and West has declined, there is a fast growing divide between the world of the peoples, countries, and regions who "belong" in global power terms and those who are excluded. Yet this potentially explosive inequity receives relatively little attention in the industrialized countries. The volume of agricultural aid going to developing countries is stagnating in real terms. We need to recognize that unless the developing countries are helped to realize sufficient food, employment, and shelter for their growing populations or to gain the means to purchase the food internationally, the political stability of the world will be further undermined. In today's world, poverty and hunger, however remote, affect us all.

At the same time, the growing interconnectedness of the world—the process commonly referred to as globalization—holds the promise of alleviating, if not eliminating, poverty and hunger. Globalization while threatening, on the one hand, to concentrate power and increase division, on the other contains the economic and technological potential to transform the lives of rich and poor alike. Much depends on where our priorities lie and, in particular, whether there is sufficient access by the poor to the economic opportunities created by the products of the new technologies.

### **Prospects for the Year 2020**

If nothing new is done, the numbers of poor and hungry will grow. Most populations in the developing world are still increasing rapidly. By the year 2020 there will be about an extra 1.5 billion mouths to feed. If the proportion of the population of the developing countries deprived of an adequate diet remains the same, the number undernourished twenty years from now could be well over a billion.

What is the prognosis for feeding the world's population in the twenty-first century? Producing forecasts of world food production is complicated. Some predictions are relatively optimistic. They claim that the production of the major food crops will meet the demand over the next twenty years. Thus, in theory, world population growth rate will be matched by a similar growth in food production and food prices will continue to decline. Nevertheless, the developing countries as a whole will not be able to meet their market demand. In the IFPRI (International Food Policy Research Institute) model the total shortfall by 2020 is some 190 million tons, which will have to be imported from the developed countries. Asia will be importing some forty million tons.

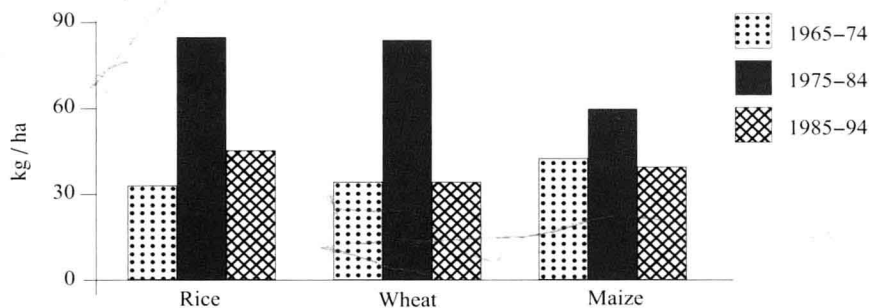
Inevitably, models of this kind raise more questions than they answer. Most important, the food needs of the poor and hungry are omitted. As in the real world, they are simply priced out of the market and their needs are “hidden.” By 2020 the total number of malnourished children will have declined slightly to 155 million, but over 100 million of these will be in Asia. And, probably, there will still be close to three-quarters of a billion people chronically undernourished.

### **The Decline in Yield Growth**

These models also make optimistic predictions about crop yields and production. But, there is evidence, albeit largely anecdotal, of increasing production problems in those

places where yield growth has been most marked. For example in the Punjab of India (one of the centers of the Green Revolution), wheat production is now being seriously threatened. Of greatest concern is the growing scarcity of water. According to several estimates, good quality water availability in the state is about 25 million acre feet, but the demand of the existing cropping intensity is about 37 million acre feet. There are some three-quarters of a million tube wells drawing water at greater than the recharge rate. In the most intensively cultivated districts the ground water table has fallen to a depth of nine to fifteen meters and is falling at about half a meter a year. Salinization is also serious, affecting 9 percent of the total cropped area, as is waterlogging. This and other, albeit largely anecdotal, evidence from the intensive grainlands of Asia, for example Luzon in the Philippines and Java in Indonesia, suggest there are serious and growing threats to the sustainability of the yields and to the production of the Green Revolution lands.

There is also widespread evidence of declines in the rates of yield growth. In the early years of the Green Revolution yields of rice, wheat, and maize were growing at thirty to forty kilograms per hectare per year. At the peak of the Green Revolution, in the late 1970s and early 1980s, yields were increasing at between sixty and eighty kilograms per hectare per year. But since the late 1980s the increases are down to around forty kilograms per hectare per year.



Average annual increase in developing country cereal yields by periods.

A combination of causes is responsible. In parts of Asia declining prices for cereals are causing farmers on the best lands to invest more in higher value cash crops. But, more important, there has been little or no increase in yield ceilings of rice and maize in recent

years. A third factor is the cumulative effect of environmental degradation, partly caused by agriculture itself. Virtually all long-term cereal experiments in the developing countries are showing marked downward trends in yields.

### **Agriculture and the Environment**

Environmental degradation is a sign of the failure of human ingenuity. Increasing agricultural productivity is not enough. The increase has to be sustainable, and that is the greatest challenge to our ingenuity.

The litany of environmental loss is familiar. Soils are eroding and losing their fertility, precious water supplies are being squandered, rangeland overgrazed, forests destroyed, and fisheries overexploited. The heavy use of pesticides has caused severe problems. There is growing human morbidity and mortality while, at the same time, pest populations are becoming resistant and escaping from natural control. In the intensively farmed lands of both the developed and developing countries, heavy fertilizer applications are producing nitrate levels in drinking water that approach or exceed permitted levels, increasing the likelihood of government restrictions on fertilizer use.

Other agricultural pollutants have the potential for damage on a much larger scale. While industry is often to blame, agriculture is becoming a major contributor to regional and global pollution, producing significant levels of methane, carbon dioxide, and nitrous oxide. Natural processes generate these gases, but the intensification of agriculture in both the developed and developing countries has increased the rates of emission. Individually or in combination, these gases are contributing to: acid deposition, the depletion of stratospheric ozone, the buildup of ozone in the lower atmosphere, and global warming. The effects on the natural environment and on human well-being are well known, but in each case there are significant adverse effects on agriculture. In relation to global pollution, agriculture is both culprit and victim.

### **The Doubly Green Revolution**

Some argue that lack of food is simply a problem of unequal distribution. If poor people were not poor, they could buy the food they need. This is true, but oversimplistic and not very helpful. There are no signs the world is about to engage in a massive redistribution of wealth.

In theory the industrialized countries could feed the world. However, this would require several hundred million tons of food aid, compared with only about 10 million tons

today. Asia alone would require over 240 million tons of aid in excess of their predicted production, if everyone in Asia were to be adequately fed. This would place extraordinarily heavy burdens on both the donors and the recipients. The environmental costs for the developed countries would be high, and for the developing countries the availability of free or subsidized aid in such large quantities would depress local prices and add to existing disincentives for local food production. More importantly, this scenario implies that a large proportion of the population in the developing world would fail to participate in global economic growth.

The practical reality is that the majority of the poor live in rural areas. The only way they can increase their incomes is through agricultural and natural resource development, which means greater rural productivity, generating both more food and more employment.

Implicitly, this recognizes that food security is not a matter solely of producing sufficient food. For the rural poor, food security depends as much on employment and incomes as it does on food production, and agricultural and natural resource development is crucial in both respects.

Food security, so defined, is also a key determinant of family size. The greater the degree of security and the higher the level of their education, the more will women take advantage of new opportunities and plan ahead for themselves and their families. Appropriate agricultural and natural resource development can also significantly contribute to greater environmental protection and conservation. Finally, vigorous agricultural and economic growth can stimulate world trade, providing significant benefits for all countries, developed and developing.

I believe these arguments, when taken together, point to the need for a second Green Revolution, yet a revolution that does not simply reflect the successes of the first. The technologies of the first Green Revolution were developed on experiment stations that were favored with fertile soils, well-controlled water sources, and other factors suitable for high production. There was little perception of the complexity and diversity of farmers' physical environments, let alone the diversity of the economic and social environment. The new Green Revolution must not only benefit the poor more directly but also must be applicable under highly diverse conditions and be environmentally sustainable.

In effect, we require a Doubly Green Revolution, a revolution that is even more productive than the first Green Revolution and even more "Green" in terms of conserving natur-

al resources and the environment. Over the next three decades it must aim to:

- repeat the successes of the Green Revolution
- on a global scale
- in many diverse localities

and be

- equitable
- sustainable
- and environmentally friendly

The complexity of these challenges is daunting, in many respects of a greater order of sophistication than has gone before. Yet, I am an optimist. I firmly believe we can provide food for all in the twenty-first century. But there is no simple or single answer. It is not just a matter of producing more or enough food. If hunger is to be banished the rural poor have either to feed themselves or to earn the income to purchase the extra food they need. This requires a new revolution in agricultural and natural resource production aimed at their needs. And this cannot be achieved by ecology alone or by biotechnology alone, or by a combination of these. It requires participatory approaches as well—involving farmers as analysts, designers, and experimenters. If we can bring all three approaches together, then we can feed the world in a way that is not only equitable but also sustainable.

*Gordon Conway*

*President, The Rockefeller Foundation*

*This introduction draws on Professor Conway's recent book, The Doubly Green Revolution: Food for All in the 21<sup>st</sup> Century, published in 1999 by Cornell University Press, Ithaca, New York.*



### 1. Sa Pa, Vietnam

The village of Sa Pa, 1,600 meters above sea level, is about forty kilometers from Lao Cai, a city on the border between Vietnam and China. Access to Sa Pa is along mountain roads. Many members of the H'mong and Zao tribes live in Sa Pa. They plant and harvest rice in terraced fields built like steps in the side of the surrounding hills. At the Sunday morning market, one of the principal enjoyments of the people in the area, this young H'mong boy put his own rice in a bowl of noodles he had ordered, then took his time eating.

### 2. Calcutta, India

How surprised I was to realize that even today many people in India are very poor. In Calcutta, one of India's best-known large cities, many street people have been chased off to the city's outskirts over the past two years. The city took this action in the hope of attracting foreign investment. In addition, the streets are now cleaned twice a day, in the morning and evening. All such action, however, does not mean that poverty has disappeared. This photo, showing a mother and child early in the morning in busy downtown Calcutta, tells the story vividly.

