

## **A Sustainable Path Toward “Zero Hunger”**

Charles L. Wilson, Founder  
World Food Preservation Center® LLC  
[worldfoodpreservationcenter@frontier.com](mailto:worldfoodpreservationcenter@frontier.com)  
<http://www.worldfoodpreservationcenter.com/index.html>

*The World is proceeding toward a global food shortage crisis and we are not on a sustainable path to address this problem.*

The “Zero Hunger Challenge” was launched by the United Nations’ Secretary-General Ban Ki-moon in 2012. His ambitious goal envisioned a world free of hunger by 2030. A multifaceted program was proposed to reduce world hunger based on the Sustainable Development Goals (SDG) of the United Nations. Subsequent to this the African Union Commission (AUC) and other international and national organizations have set their own goals toward reducing postharvest food losses and world hunger. There are mixed reports on whether global hunger is increasing or decreasing in spite of all the new initiatives. Agreement does exist that world hunger is set to increase dramatically if we remain on the present path toward meeting this crisis. The world’s population is expected to reach 9.6 billion people by 2050. By remaining on our present path toward reducing world hunger we are going to fall far short of the food required to feed the world’s exploding population.

<http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0066428>

### **Global Warming and Other Added Pressures on Our Food Supply**

Not only is our present course to reduce world hunger unsustainable, our food supply is also being further diminished by global warming, the increased consumption of animals over plants for protein, and the accelerated use of food for fuel.

Global warming and agriculture are closely linked. If you include greenhouse gas emissions from land-use change and deforestation, as well as the processing, packaging, transport, and sale of agricultural products, estimates of greenhouse gas emissions from agriculture run from 43%-57%.

<http://blogs.wsj.com/numbers/how-much-of-worlds-greenhouse-gas-emissions-come-from-agriculture-1782/>

It has been determined that if the greenhouse gasses produced by the food that is lost and wasted after it is harvested were made into a country, this “country” would be third in line to China and the United States in regard to its greenhouse gas emissions.

<http://foodfoolishbook.naturalleader.com/>

As developing countries acquire a larger middle class more individuals in these societies consume animal protein than plant protein. This further restricts the world's food supply since producing animal protein requires much more energy, water, and land than plant protein.

<http://www.worldwatch.org/node/549>

The increased use of food for fuel reduces our food supply. Presently we are using 4% of our agricultural land to produce fuel rather than food and this practice is set to increase exponentially.

### **World Hunger Impacts Both the Developing and Developed World**

Most of the world's hungry people live in developing countries. According to the latest Food and Agriculture Organization (FAO) report, there are 795 million hungry people in the world with 98 percent being in developing countries. A disproportionate number of these individuals are children.

<https://www.wfp.org/hunger/who-are>

Although individuals in developing countries living on the margins of food security will be impacted most severely by the world's pending food shortage crisis, the developed world will be affected profoundly as well. As food become scarce, food prices soar, resulting in more people in developing countries being denied access to food. Food shortage crises in developing countries lead to political unrest and even terrorism. Uprisings during the Arab Spring that occurred in Egypt and Tunisia were thought to have been triggered by soaring food prices.

[http://www.pbs.org/newshour/updates/world-july-dec11-food\\_09-07/](http://www.pbs.org/newshour/updates/world-july-dec11-food_09-07/)

As developing countries acquire a larger middle class they consume more of their protein from animals than from plants. This reduces their food supply because it takes much more energy, water, and land to produce animal protein than plant protein.

<http://www.worldwatch.org/node/549>

### **Choices in Increasing the World's Food Supply**

We have two fundamental approaches in increasing the world's food supply. We can *produce* more food or *save* more of the food that we already produce. The question becomes, "Which of these approaches is the best investment of our agricultural dollars to meet this pending world food shortage crisis?" Presently, we are investing 95% of our agriculture dollars in the production of food while investing only 5% in food preservation. Even with our present investments of hundreds of millions of dollars in research and development to produce more food we are barely able to increase our crop yields a little over 1% per year. Since we are not going to meet this world food shortage by just producing more food we clearly need another strategy.

## **Producing More Food**

In the past we were able to meet a similar global food shortage crisis during the “Green Revolution” in the 1960’s and 70’s by producing more food. This was accomplished by developing high-yielding crop varieties and applying more intensive agricultural practices. We were able to increase crop yields 3-5% per cent during the “Green Revolution.” Presently, even using our most advanced food production technologies, we can barely increase crop yields over 1% per year. This is going to leave us far short of the food that we will need by 2050 to feed the world’s ballooning population.

<http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0066428>

Agribusiness and government organizations are launching a “Second Green Revolution” in order to produce more food to meet the “Zero Hunger Challenge.” Agribusiness sets the agricultural research and education agenda and it makes its profits through the sale of seeds, fertilizers, and pesticides (production technologies). Agribusiness sees little profit in the preservation of food once it is produced. In fact, Agribusiness actually profits from food loss in that this reduces the food supply thus creating a demand to produce more food. Without their participation, more pressure is placed on organizations outside of agribusiness to mount initiatives to save more of the food that we already produce and emphasizes the need for a “Food Preservation Revolution™.”

Many questions have been raised as to whether launching a “Second Green Revolution” is a sustainable approach toward meeting the present world food shortage crisis. The “First Green Revolution” while helping to meet the world’s increased demand for food left in its wake an agricultural system that was unsustainable. It involved significant environmental costs such as unsustainable groundwater extraction, fertilizer run-off, pesticide residues, and salinization.

The “First Green Revolution” required expensive inputs of fertilizers, pesticides, and irrigation water which were not available to small holder farmers that produce most of the food in developing countries. Since the “First Green Revolution” one-third of our agricultural land has had to be abandoned because of soil contamination, erosion, and lack of fertility. Over seventy percent of our ground water is used for agriculture globally. Heavy dependence on irrigation to increase crop yields during the “First Green Revolution” in some countries has resulted in the mining of this water at a much greater rate than it is being replenished.

<http://www.economist.com/blogs/economist-explains/2016/05/economist-explains-11>

## **Saving More of the Food that we Already Produce**

One-third of the food that the world produces already is lost between the time that it is harvested and consumed. *This is enough food to feed over two billion hungry people annually.*

<http://www.fao.org/docrep/014/mb060e/mb060e00.pdf>

Since we are not going to be able to feed the worlds exploding population by just mounting another “Green Revolution” it is important that we look at alternative strategies. Saving more of the food that we already produce is a compelling approach.

Investments in postharvest infrastructure and research also make good economic sense. Harvested commodities have baked into them substantial investments in the cultivation, harvest, and processing of the crop. Therefore, a tremendous gain can be return on investments in postharvest infrastructure and technologies. Such investments allow you to protect and realize a full return on investments in the production of food. A good example of this is the “Grain Cocoon” technology commercialized by GrainPro, Inc. Investments in this postharvest technology allows farmers to realize maximum return on their investment grain production. Without investments in the “Cocoon” technology a 100% loss would have been realized in the investment in the production of this grain.

<https://www.youtube.com/watch?v=z82fbTKZqi0>

This is contrasted to the slightly over 1% increase in crop yields that are received from investments in new technologies to enhance grain production.

### **What is Our Most Sustainable Path Toward “Zero Hunger?”**

With investments in the postharvest preservation of food toward reducing world hunger being advantageous over investments in food production, we need to examine where the best place is to make these postharvest investments.

**As programs are initiated to reduce the postharvest loss of food in developing countries we are faced with critical postharvest “Skill Gaps” and “Technology Gaps.” These gaps have occurred because of our underinvestment in “postharvest educational capital” in developing countries. Alleviating these “gaps” is at the heart of the mission of the [World Food Preservation Center® LLC](#). Student/scientists from developing countries are given a world-class education (M.S./Ph.D.) in the latest technologies for the postharvest preservation of food and they conduct research on much needed new technologies for food preservation. When these newly educated postharvest scientists return to their native countries they are able to establish independent postharvest research, education, and extension programs. Such programs will continue generationally through the students and farmers that they educate.**

<https://www.dropbox.com/s/zsbua12xd4imf04/MALAWI.mp4?dl=0>

### **Need for a Major Paradigm Shift in Our Agricultural Investments**

Meeting the challenge of “Zero Hunger” and feeding the world’s rapidly expanding population sustainably requires a major paradigm shift in our agricultural investments. Since agribusiness at this point sees little profit in postharvest technologies to increase our food supply an added burden is placed on the rest of agriculture, particularly its agricultural higher education systems to accept this challenge. It is not only IMPORTANT that we do this. It is IMPERATIVE!