

SESSION I: INTERNATIONAL PERSPECTIVES

October 13, 2005 - 2:00 p.m. - 4:00 p.m.
Stanley Foundation Lecture: Nutrition in North Korea

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I've been asked to talk about nutrition in North Korea today, and I'll be using, for the most part, the term DPRK for Democratic People's Republic of Korea, as being a somewhat more respectful term.

We raise this topic because of the history of famine and a ten-year food aid effort that apparently will be ended in 79 days by the decision of the North Korea Government. What has happened? Has DPRK farm production increased by the 20% necessary to feed its people this year? Has the overall economy rocketed back from disaster? All of us who work in the DPRK are speculating as to the reasons behind this abrupt declaration from the government, but none of us really knows.

The nutrition of a population depends on many things. During the 1999 NGO conference on assistance to the DPRK, Erich Weingartner, who was the Food Aid Liaison Unit representative in Pyongyang at the time, referenced Ronald Reagan's often-quoted statement about food aid: *A hungry child knows no politics*. But Erich added to it in a very profound way: *A hungry child knows no politics, but every hungry child is a victim of politics*. I wish to take this idea as the premise for my remarks.

Food and nutrition in the DPRK cannot be divorced from politics, and today I want therefore to consider the politics of food in the DPRK. The basic situation warrants a brief review.

In 1995 the DPRK experienced a typhoon and widespread flooding that seriously damaged crops throughout the country. In '96 another major typhoon struck, and the government asked for disaster aid in order to combat the food emergency that they said was caused by this natural disaster.

A widespread drought affected the country in 1997, and aid workers in the DPRK and on the Chinese border began to report visible signs of a population in serious difficulty. The DPRK government was quite reluctant to give aid agencies access to the victims, but you've surely seen the pictures of the starving children in babies' homes, hospitals and so on. The famine was quite real, and reasonable estimates ranged between a half million and two million excess deaths between 1995 and 1998, out of a population of 21 million. About five percent of the population probably died, and the rest was permanently damaged by severe malnutrition.

Only extremely tight social control enabled the society and the government to survive this crisis. Total state control over the media and education had created a population that, after three generations, knows only the bounty of Eternal President Kim IL Sung and the steadfast leadership and guidance of General Kim Jong IL. Hardships were blamed on natural disasters and on a U.S.-led economic embargo. As one colleague said – People stayed home and quietly starved.

The first food aid came from nongovernment organizations, but the World Food Program quickly became the main conduit for massive food assistance to the DPRK, delivering annually between several hundred thousand and a million metric tons of food grain. It was the largest WFP aid program ever, providing supplemental food for up to 30% of the population at any one time.

Much has been said about WFP monitoring and the potential for food diversion in the DPRK. WFP workers and all foreign aid agencies in the DPRK work under adverse and adversarial circumstances regarding movement and communication. And working there myself over the last eight years, I know that they have done an exemplary job of negotiating and renegotiating their working conditions on almost a daily basis and have done as much as humanly possible to ensure that the food made its way to its intended recipients – children under seven, pregnant and nursing mothers, the aged and infirm, and, if donations allowed, children older than seven.

The DPRK is a country of institutions, and food aid is distributed through those institutions – orphanages, baby homes, daycare centers, hospitals and so on. And food aid has made a difference. There were three national nutrition surveys carried out in 1998, 2002 and 2004, according to international research standards and with international aid, and they document the effect.

The DPRK government resists any data collection by foreigners, and the surveys were limited to measuring the height and weight of a nationwide sample of children under seven and the upper-arm circumference of mothers of children under two. Despite this limited scope, the data are quite revealing, and I'll focus on two measures that were reported – stunting and wasting. Stunting, meaning a child's height for age is more than two standard deviations below the mean, is an indicator of long-term malnutrition. Wasting, that a child's weight for height is more than two standard deviations below the mean, measures severe short-term malnutrition.

Breastfed children are somewhat insulated from malnutrition, but when they're weaned, the food shortages take a tremendous toll. In the '98 WFP survey, about 74% of children between 25 and 84 months were stunted. And in a normal population, of course, you'd expect less than 5% of the children to be in this range. About 17% of children in the same age were affected by wasting. We believe that 1997 was probably the worst year of the famine, and so these statistics accurately reflect the alarming situation in DPRK.

After five years of food aid and some increases in farm production, the situation had improved, and the 2002 UNICEF survey, following a similar methodology, reported 46% of children between 2 and 7 were stunted, and 8% were wasted. These statistics reflect the continuing food shortages but some improvement. In 2004 again the rates were slightly improved, and the age-specific stunting rates suggest that again food availability had improved over that two-year period.

For adults, the only measure we have is the upper-arm circumference of mothers of children under two. And according to those data, the 2002 survey found that about 32% of mothers were malnourished, and in 2004 the statistics were effectively unchanged.

Beyond these meager statistics, we have little hard information. But the accumulated observations of international aid workers confirm the essential accuracy of these surveys – people in the DPRK mostly don't get enough to eat. Since 2000, the situation has been improving, but neither the quantity nor the quality of the average diet is sufficient for normal health, physical or mental development.

For many years, the DPRK attributed their food crisis to the continuing natural disasters and the trade embargo. The disasters were indeed serious, but actually I would say that they were the straw that broke the back of an already well-emaciated camel. In reality, DPRK agricultural and industrial development policies since the sixties set the stage for this collapse.

Farming in the DPRK has never been easy. Prior to the Korean War, the north was the industrial sector and the south was the rice basket. With partition and the rise of Kim IL Sung and the Korean Workers Party, a policy of self-reliance – in Korean the word is *Ju-che* – was instituted in all sectors. And over the next thirty years DPRK built a successful industrial economy that equitably distributed food, housing and other basic needs as a right of citizenship essentially for free in a relatively unmonetized economy.

Land reform and cooperativized farming replaced the feudal *yang-ban* system, and an industrial farming model was implemented through the domestic production of farm equipment, irrigation pumps and fertilizer.

Four “Rural Technical Revolutions” characterized the North Korean farming model. Absent their ideological underpinnings, these are also the foundations of North American and European farm technology. And under this system, annual grain production rose to reportedly over eight million tons, and people were adequately fed during the 1980s.

But there's a critical difference from the Western approach to farming. Under the command economy in the DPRK, agriculture strategy emphasized grain production to meet basic food requirements and decreed that yields be raised to levels that would meet those requirements regardless of the environmental or the economic costs of such intense production.

Crucial to the *Ju-che* ideology was the ability to say to the world, “We feed our people by our own means.” And it didn't matter that the fertilizer that was used to raise rice yields from 7 to 9 tons per hectare cost more than those two tons of rice would have cost on the world market.

And in any case, the DPRK didn't pay world prices for either fertilizer, fuel or feed stock because they had concessional trade relations with the USSR and China. And so, despite the ideology of *Ju-che*, all sectors of the economy were dependent on imported energy. And when the USSR dissolved in 1990 and the Chinese government at the same time demanded hard currency payments in the future for fuel and fertilizer, North Korea began a period of sharp economic decline.

Deprived especially of fertilizer, food production fell to about 40% of its 1990 level over six or seven years, with grave consequences for the North Korean people.

Industrial production concurrently collapsed, leaving no resources with which to import extra food. Seeking security through isolationism, the DPRK instead created the preconditions for an economic disaster. Ideology had trumped science. The blind adherence to *Ju-che* policies caused decision-makers to deny the economic links with, and their dependency on, outside resources. The DPRK attempted to isolate itself and to develop a utopian socialism behind walls.

But basic thermodynamics teaches us that every system needs to import energy in order to survive, in order not to run down because of increased entropy. The DPRK economy was built on the unacknowledged assumption of imported energy from the USSR and China. And when that energy flow stopped, the system ran down; and it collapsed rather quickly because it had never attended to energy efficiency.

The DPRK farming system was simple and rigid and fragile as a consequence. Eighty percent of production is rice and corn, and a limited number of varieties are planted. Farm mechanization was designed around a 1950s vintage Chinese tractor that was reverse engineered and reproduced in DPRK but never modernized. Farms are constrained by a rigid state planning apparatus that specifies what fields at each farm are grown to specific crops. And the reliance on collected, on-the-spot guidance of Great Leader and Dear Leader over the years prevents most farm managers from trying different farming practices, such as crop rotation or diversification, or even different seeding practices and rates.

On the other hand, during a crisis, DPRK is able to mobilize the urban population and send them to nearby farms to help with the planting and the harvest. Lacking fuel and equipment, labor was substituted for capital. And for the last three years, the DPRK has successfully bartered its threatened nuclear weapons capability for food aid and diplomatic recognition.

The overall situation seems quite grim, and certainly the causes of the continuing problems are deeply rooted. But I believe food production can be substantially increased in the near term and in a way that's not overly dependent on imported supplies. But before I discuss how I think this is possible, I want to note some lessons from the DPRK's hardships that we might want to consider regarding our own food system.

As a nation, we are food secure in many ways, though there are many individuals in the U.S. that don't share this food security. Farms are productive, and we can buy the additional fuel and other resources that we need from overseas in order to keep our system operating. As a people, we spend a smaller portion of our income on food than any country on earth. But just like the pre-crisis DPRK, our food supply depends on cheap energy, energy to produce fertilizer, energy to build and operate ever-larger farm equipment, energy to transport food from the heartland to the coasts, and to process and preserve it along the way.

Could we withstand a sudden loss of 30 to 40% of our energy flow? Just a temporary reduction in domestic production caused by hurricanes Katrina and Rita was enough to send fuel prices spiking and to revive, in some parts of the country, hoarding behavior and gas lines that are reminiscent of the 1973 OPEC embargo.

Our farms are diverse and geographically distributed, and farmers have hundreds of seed varieties from which to choose. These characteristics promote resilience and flexibility. And U.S.

farms are also very innovative and flexible in their consistent efforts to stay one step ahead of the bank. But what would happen if the support infrastructure began to fray?

At times we have also used force, or the threat of force, to guarantee continued access to important resources, including fuel, land and cheap labor. Is this the kind of food security we want for our children?

But let us return to the North Korean food system. After ten years, food shortages have not been resolved in the DPRK. American and European governments have resolutely refused to consider funding development programs that might possibly help the DPRK overcome its structural weaknesses. And the system has lurched from one political crisis or adverse weather event to another.

But it's past time to change how we relate to the DPRK. Built over three decades on a model of overcoming nature by brute force, constrained by a Siberian climate and by limited arable land, farming in the DPRK has never been easy.

Some analysts argue that they should not attempt to become food self-sufficient by domestic production, and this idea has now entered the collective wisdom. From a perspective of global trade and comparative advantage, the analysis may be correct in the long term, and the DPRK may ultimately choose to develop its industrial and its service economy to the point where it can buy food from places with better climates and cheaper production.

But I suggest that such an argument ignores both the huge investment and the long time that would be necessary to completely rebuild the now defunct DPRK industrial sector. And as well, it ignores the country's strategic need to produce at least a significant portion of its own food.

As it responds to continued economic adversity, the DPRK actually has an opportunity to develop a new kind of food security based on a more diversified agriculture that relies primarily on natural energy and resource flows and which meets nearly all of the domestic demand with relatively few external imports.

Having considered the country's human and natural resources and farming practices, I can see a plan by which the DPRK could achieve self-sufficient food production in the near future, using sustainable methods.

For the last several years, the DPRK has promoted sustainable farming, though more with slogans than by applicable methods. Our own AFSC agriculture program, along with work by the FAO and several other NGOs, has identified some of the important elements of a sustainable farming system:

- Extensive use of winter green manures for nitrogen fixation;
- Expanded crop rotation using legume crops like soybean – and I'm very, very much pleased to hear all the work that's happening on soybeans and the promotion around the world today;
- Supplemental irrigation in early spring to counter the frequent dry periods;

- The integration of livestock into the grain farm system;
- And simple improvements in harvest processing that cut the post-harvest losses that are estimated by the FAO to be over 15%.

Since 2002, DPRK farm production has remained about 20% below the minimum nutritional need for the population. But with a few reasonable changes, improvements in cereal yields, substantial increase in soy production, reduction of post-harvest losses, the DPRK could meet virtually all of its domestic production food requirement, using mostly sustainable farming methods. This is normal science – the application of well-known and understood methods to a farming system that was distorted by ideology-driven plans.

These yield targets and crop modifications can be accomplished by implementing the changes noted above. The changes would require investment in modern small tractors and in some specialized farm equipment, but they could be introduced and phased in throughout the country over several years. And the cost would be of the same magnitude as the last five years of food aid.

Here is an area that is ripe for international aid and an ideal inducement to present to the six party talks on nuclear disarmament. Talks on the nuclear weapons crisis are, as you know, in process. And what is going to be given to the DPRK to persuade them to give up the nuclear weapons is very, very important.

The cost of initiating, supporting and institutionalizing this farming transformation would be somewhere around \$840 million, including foreign technical assistance, or less than \$40 per North Korean. And put this into context – in 1994, an agreement was negotiated whereby the West would build two light water nuclear plants for the North Koreans at the cost of about \$10 billion. So this is relatively small potatoes. Once the people have enough to eat by means of their own efforts, they can consider whether they want to join the global economy and diversify between food and industrial production.

But just as I question whether the U.S. and other international donors are willing to fund development assistance programs in the DPRK, I question if the DPRK is willing to move in this direction. Their economic reforms in July of 2003 did open up farm production. It freed some aspects of on-farm decision-making, and it allowed farms to sell part of their surplus on the open market. In the last two years, we've seen significant changes in the DPRK farm behavior, as well as increased yields. Farm managers and agricultural scientists are looking with enthusiasm for new ideas and information from their counterparts outside of Korea.

But last month the government announced that all foreign food aid would be refused after December 31st of this year, and that all resident NGO aid personnel must leave the country by the same date. Two weeks ago, it appears that the state has moved again to recapture control over all grain trade, in order to again distribute rice, corn and wheat to the people only through the Public Distribution System.

This announcement comes at harvest time, and the farmers made their spring production decisions based, of course, on the planting process but also on their expectation that they could sell some of their surplus on the open market. Sudden policy reversals like this will inevitably

affect farm managers' future willingness to innovate or to allocate resources outside of the rigid structures of their annual county plan.

In the long run, the DPRK, the U.S., and every other country of the earth must live within the physical and biological limits of our system. Other than what's been stored, we must stay within the limits of the solar flux, also expressed in wind, tides, biomass accumulation, hydropower and so on.

The reorientation of DPRK agriculture, which I and others are proposing, moves in that direction. On the other hand, DPRK policymakers regularly predict that the continual advances of science will expand the boundaries, either by developing new forms of energy or new crop strains that yield ever more than before and with fewer inputs.

This approach has led every year since 1996 to a new slogan and a new campaign to solve the food problem for once and for all. In 2000 it was the "great potato revolution." In 2001 it was "increase the production of grass-eating animals." This year scientists in the DPRK are talking about the "white revolution" of using microbes to release soil nutrients. And always there's been the quest for the one best rice variety or the one best pig breed that will suddenly boost production and solve all of their problems.

On the 4x15-meter granite monolith in front of the Tower of the *Ju-Che* Idea in Pyongyang, there is a poem by Kim IL Sung in which he writes, "Man is the master of all things." This is the epitome of the North Korean view toward the natural world. And every time I see it, I am reminded of the fourth law of ecology, that Mother Nature bats last. As we look together for food security worldwide, I would like to be playing on her team, working with, rather than counter to, natural process.