

**Frederick L. Kirschenmann's Remarks  
Upon Accepting the Glynwood Medal  
for Distinguished Leadership in Sustainable Agriculture**

**October 27, 2008, New York City**

Thank you, Judy, for those kind words. You know for this North Dakota farmer it is truly unbelievable to be given this kind of recognition. I thought about it a lot when they called me and told me they wanted to do this. I was reminded of last summer when I was back up in North Dakota on my farm for my vacation. I always try to go to the bar at least one evening and meet with my fellow farmers and check in to see where things are really at. This last time I was up there, after a couple of beers one of my neighbors turned to me and said: "So Fred, you've been involved in all this stuff for the last 35 years. Tell me what's changed?" It's a great question and you know it's always hard to be able to point to anything that you can say "because I did this, that happened". We had a nice lovely long conversation about the state of agriculture and the kinds of changes that we need, all recognizing together that none of us have really been able to address all of the issues that we need to address to bring about the changes we need.

Sustainable agriculture is all about change, so I want to take a few minutes to share with you some of my perspective about the kind of challenges we are likely to face as we move into the future and therefore two big issues we need to address.

Because sustainability is about the future – about keeping something going, maintaining something into the future -- I want to first share some of the things that I see coming at us in the future that we have to prepare for. I hope you will see that there will be incredible opportunities for change that we have not seen in the past 60 years. While some of the things that we will be facing will be enormously challenging, they are also going to present us with unprecedented opportunities to change the food system in ways that we need to accomplish if we are interested in sustainability.

So what are some of these changes? First of all, we're going to be moving into a very different energy future than we've had for the past 150 years. For the last 150 years we have been living in a world which has had access to stored, concentrated energy (primarily coal, oil and natural gas) which has been stored up in the earth's crust for millions of years. We have mined all the easily accessible stored energy in the last 150 years to support our industrial economy and it has been very effective. But the era of cheap, stored, concentrated energy is now essentially over and so that resource so vital to the industrial economy will become increasingly expensive. I know that oil has gone from \$146 a barrel to some \$60 again now, but it will continue to trend upward. Even T. Boone Pickens is saying that we should expect that oil will hit \$350 a barrel in the next 10 years. Is he right about that? I don't know, but that's the direction we're headed. And since all alternative energy is current, dispersed energy, and therefore less efficient, it will always be more expensive than the cheap energy we got so used to.

Our current food system is enormously dependent on this cheap energy on every level. On the farm, the fertilizers we use are all based on petroleum energy, the pesticides we use are all based on petroleum energy, the farm equipment we use is all manufactured from petroleum energy. It's all based on petroleum energy. As energy costs go up, this current food system will become increasingly untenable – and it's not just on the farm, it's also the processing and distribution - our whole food system is enormously dependent on cheap energy. We're not going to have the cheap energy, so the question we have to ask ourselves is what kind of food system can continue to provide us hopefully with *better* quality food than we currently have and that does so with much less energy.

That's a major challenge that we have to look at. It provides us with enormous opportunities to creatively rethink the food system. The really good news is that there are a lot of individual farmers, some of them in this room, who have already begun to make that transition moving from an energy-intensive farming system to a knowledge-intensive farming system. There are many creative examples out there.

The second change that we have to anticipate concerns our fresh water supply. Our current industrial food system, as well as the rest of our industrial economy, has been able to be successful because we've had enormous quantities of surplus fresh water available. Those water supplies have accumulated at least since the Ice Age. We have been drawing down those fresh water resources all across the planet at an absolutely unsustainable rate. The High Plains Aquifer, which provides much of the irrigation water for the central United States, has been drawn down by half since 1960. We draw it down by about 1.3 trillion gallons of water each year faster than it can be recharged. We can't continue to do that indefinitely. Fortunately, in this country only one fifth of our acreage is dependent on irrigation; in places like China 80% is dependent on irrigation for grain production. They draw down groundwater by 10 feet every year in some places.

We often forget how much water is really embedded in the food we eat. We each need about 4 liters of water to supply the daily liquid needs for our bodies, but we consume up to 2,000 liters of water to meet our food requirements from the current industrial food system. Every time we drink a cup of coffee there are 140 liters of water embedded in that cup when you include all the water needed to raise the coffee beans, process it, etc. Every time we eat a pound of boneless beefsteak there are 2,000 gallons of water embedded in it. We can't continue to do that. So we need to think about a food system that continues to provide us with good, healthy, nutritious, pleasurable eating as we address these new challenges.

The third big elephant in the room is, of course, climate. It isn't just the greenhouse gases in the atmosphere that are going to change our climate. The climate that we've had over the last hundred years has been, as a National Academy of Science study put it in 1975, "abnormally stable". This is not the norm for the planet, so we are very likely going to see much more unstable climates in our future.

The current food system is highly dependent on specialization, and specialized farming systems require stable climates to remain productive. In Iowa today, 92% of all

cultivated land is in just 2 crops: corn and soybeans. So we need to have a climate that is consistently favorable to corn and soybeans but we're not likely to have that in the future. So how do we redesign our farming systems in Iowa to make them more sustainable in unstable climates?

I think we know how to answer these questions but there are incredible barriers to change. We have made enormous investments in infrastructure and in intellectual and political capital that is all insisting that the food system we have today is the best. So we are determined to keep it going. To that end we make huge investments in new technologies and other Lone Ranger approaches to keep our industrial food system going. But it's not likely that it can be sustained in our new future. When we anticipate the aggregated effect of our new energy, water and climate future it is not likely that we can overcome all of the changes with technological fixes. A new food and farming system will need to be created.

This is where some of the humble experiments that are taking place at the Glynwood Center, the Stone Barns Center, and other places around the world become so important. Thirty years ago people looking at such alternatives were saying: "You gotta be crazy, this is not the future of agriculture." But now even some experts are saying: "Gee, maybe we need to be looking at this." And I think we're going to see that more and more as we move into the future.

Then there is a second big issue we now need to consider. Those of us who are interested in sustainable agriculture have to fundamentally change our focus. For the last 30 years I think all of us, including myself, were looking at sustainability as a steady state phenomenon. I looked at my farming operation in North Dakota and said "OK, in order to make my farm sustainable, what changes do I need to make so that it will be a sustainable farm?" I assumed that the context of my farm was basically going to stay the same. Now I know it's not. Instead of thinking about *steady state* sustainability – how do we modify a few things, green it up, make it more efficient, etc. – we have to start thinking about *resilient* sustainability. How can we redesign our food and farming systems to make them resilient in the light of the shocks and disturbances coming at us? How can we design systems that can absorb the shocks of depleting fresh water resources, unstable climates and much more expensive energy, and still produce a reliable source of healthy, nutritious, tasty food? That's the new thinking we need to entertain.

That's going to be very difficult for us, because to create resilient systems we need to incorporate redundancy and diversity into the system. And our current food system is captivated by an ideology which claims that efficiency accomplished through specialization, simplification and economies of scale, is the only way to be economically sustainable. Such efficiency tends to eliminate redundancy and diversity. Consequently, it's going to be very difficult for us to invest in a future that builds redundancy into our systems.

But farmers have long understood the need for resilience. I learned about resilience in farming when I was about 8 years old. My father started farming in 1930. Those first few

years were in the middle of the dust bowl. So he learned the importance of resilience and frugality through direct experience. Consequently he was determined to teach his young son about the importance of frugality and resilience, so each time he sold a load of wheat or an animal, he would put the receipt in one box. Whenever he bought something he would put the invoice in another box. Every so often, at least once a month, we would sit down at the table together and he would go over it with me and show me the money that went out and the money that came in. After doing this for a period of time it suddenly occurred to me as I was looking at these numbers that we were earning much more from our crop production than we were from our animal production. I turned to him one day and said “Dad, so we’re making more money on crops than the animals, why do we still have cows?” He looked at me and he said “Because they don’t get hailed out.” For my father it wasn’t just about maximum production and short term return, it was about resilient production and long term return.

These are some of the cultural shifts we have to anticipate if we are to have a sustainable food and farming future. I’m very hopeful that we can accomplish this difficult transition because we already have some of the models out there. And Milton Friedman once made an important observation. He reminded us that change rarely happens without a crisis, but when the crisis comes you have to have ideas floating around to direct that change. I think that’s a very important concept for us to keep in mind. We’re not going to be short of crises in our food and agriculture system over the next three decades or so. The question is: do we have sufficient ideas floating around to direct that change toward a more sustainable food and farming system? That’s why the work that the Glynwood Center, the Stone Barns Center, Just Food, and others are doing is so important - they are floating some of those ideas around that will enable us, when the crisis happens, to move the change in the right direction – that’s why I think these ventures that we’re involved in together are so important.