



INTERACTION COUNCIL

**STATEMENT BY
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InterAction Council

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Tokyo, Japan

Thank you Mr. Chairman. One of the hand-outs at lunch time was this reference book *Vital Signs*. It has in it a number of the trends that we are focusing on in the early section, which is the section on agricultural and fishery indicators. I should also note that we gratefully acknowledge funding for it from the UN Population Fund.

I found all of the recommendations in the paper that Malcolm has supervised to be ones that I would fully support. The only thing that I would add to the paper is a greater sense of urgency. There is a line somewhere in the paper that says that most economic and social analysts believe that food production will stay ahead of population growth, at least slightly, over the next few decades. If one had consulted 20 of the world's leading biologists, however, you would have gotten a very different result. Within the biological community there is growing doubt as to whether food production is going to stay ahead of population or not as projected.

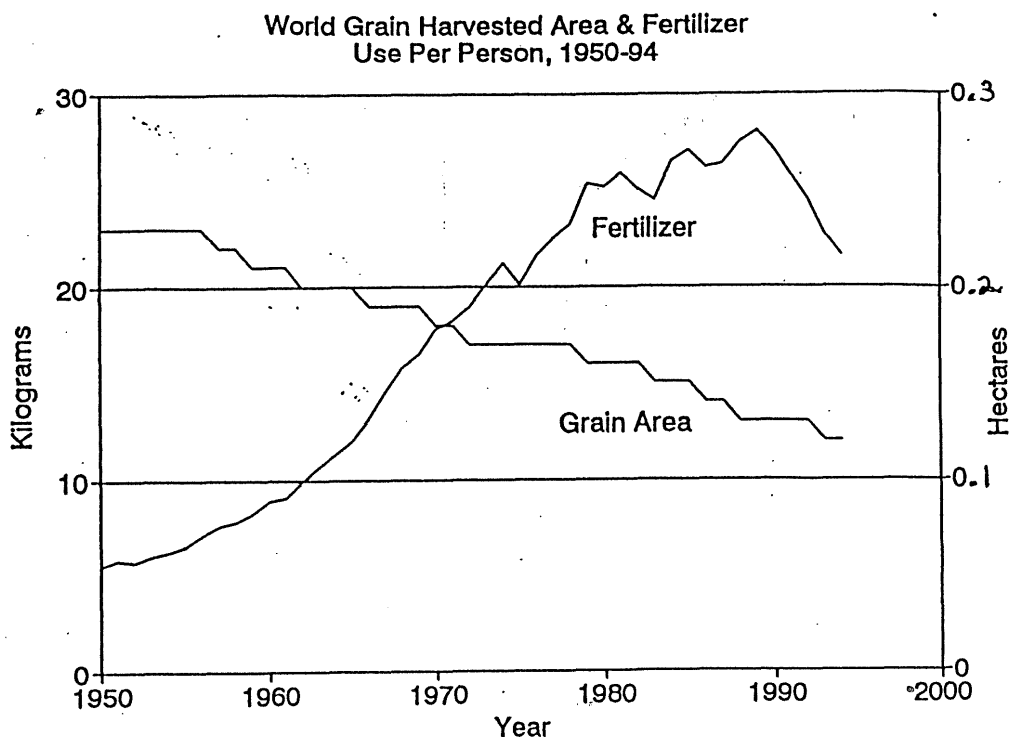
One of the omissions from the paper, one of the things that got very little attention, is oceanic-based food supplies. The paper is labeled "food", but I found very little about what is happening with fisheries, and they are important, simply because world-wide consumption of fish is nearly equal to that of beef and poultry combined. So it is not an inconsequential contribution. In looking at fisheries, we see that over the last four decades there has been an enormous growth in the world fish catch, going from 22 million tons in 1950 to 100 million tons in 1990. But as we look ahead over the next four decades we see no growth at all, unfortunately. There is near agreement by marine biologists that we probably have hit the limits with oceanic fisheries, that we cannot push them any further without doing even more damage and that we are going to have to settle for a catch, if we do not mismanage too badly, of something like 100 million tons per year for the indefinite future. Contrary to Jules Verne, who said that when we run into problems with food production on land we can turn to the ocean, in fact, it is working the other way around and we have hit the limits with the oceans first. Now that pressure is shifting to the land. The contribution of 2 million additional tons of seafood per year over the last 40 years has been an important contribution to the world food supply, particularly to the supply of animal protein.

In contrast to the last four decades, where the seafood catch per person doubled, we are now facing the prospect of it being nearly cut in half over the next four decades. As it declines the price of seafood will go up and that is going to create economic instability in the world food economy, particularly for those people who depend heavily on seafood for their animal protein intake, including importantly coastal populations in developing countries and a number of island countries.

So much for ocean-based food supplies. Let me look quickly at land-based food supplies. Just as we have crossed thresholds with oceanic fisheries, so too with water supplies. We are now beginning to run up against the sustainable yield limits of aquifers. And we are seeing falling water tables now in all the major food producing regions of the world, whether it be the southern great plains of the United States, several states in India including the Punjab and much of Northern China, which is now a water deficit region. Its deficit is being satisfied only by pumping down underground aquifers.

If we look at the world irrigation water supply per person, which increased rather dramatically from 1950 up until 1978, it has been declining since then. Thus, the world's farmers are faced, not only with a shrinking amount of crop land per person, but also a shrinking amount of irrigation water per person. It has now dropped about 8 percent since 1978 and will probably continue to decline for the indefinite future, given the extent of overpumping of aquifers and the excessive pressure that is now put on many of the world's rivers.

Another threshold that is being crossed that has gotten all too little attention is the capacity of existing crop varieties to effectively use more fertilizer. We have been extraordinarily successful over the last four decades in substituting fertilizer for land and I draw your attention to a graph that shows fertilizer use per person in the world and grain area per person. And it shows that over the last four decades the world's farmers have substituted fertilizer for crop land and they have done it with great success.

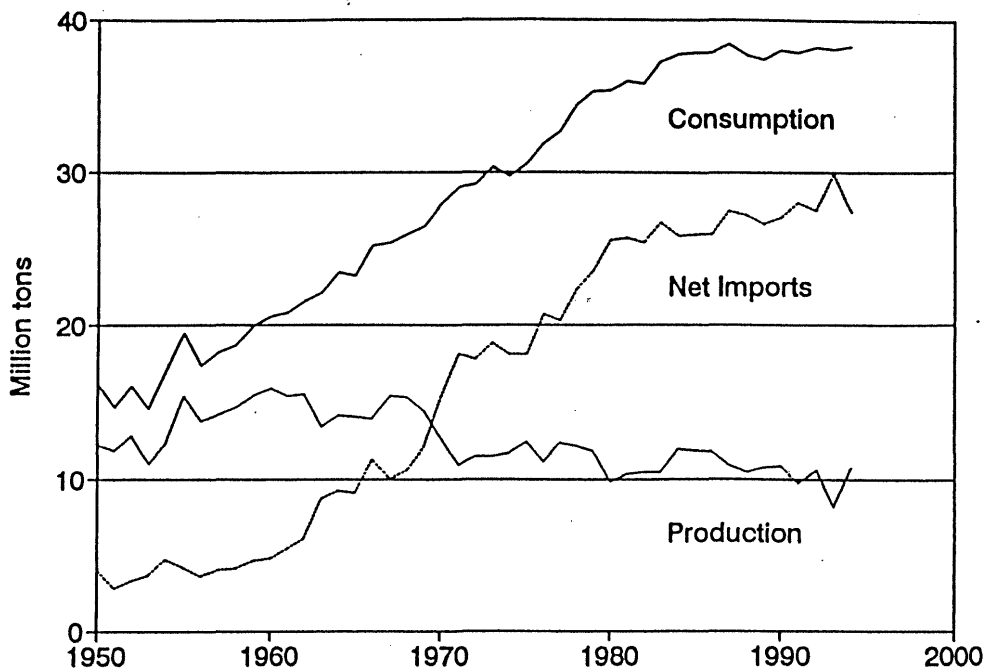


From 1950 to 1984 they were able, even with the shrinking crop land per person, to expand grain output per person by roughly 40 percent, between 1950 and 1984. But 1984 is about when the use of fertilizer began to level off. And as it has leveled off, the growth in the grain harvest has slowed and dropped to just under 1 percent per year. So over the last decade we have had roughly a 10 percent decline in grain production per person unless we can come up with something fairly dramatic, to alter this trend, this decline is likely to continue.

If I were to graph the human dilemma as we face the end of the 20th century and the beginning of the 21st century, it would be in terms of this fertilizer substitution for land and the growing difficulty in doing that. The decline in fertilizer use per person, the sharp decline in the last few years, is not terribly important by itself. That reflects almost entirely the result of economic reforms in the Former Soviet Union, where fertilizer was being used excessively, so it is not the decline that we are concerned about but the fact that fertilizer use is leveling off. And if the "fertilizer engine" that has been driving the growth in world food production so successfully over the last four decades no longer is able to do that, then we are faced with the question of where future gains will come from.

The second question or the second figure that I would draw your attention to is the one that looks at grain production, consumption, and imports in Japan over the last four decades. And what it shows is dramatic growth in grain consumption as a result of industrialization and rising incomes. Population plays some role here in boosting consumption, but most of the growth in consumption is from the dramatic rise in incomes that has occurred in Japan since 1950. The same dramatic rate of industrialization that raised the Japanese people up the food chain also consumed a great deal of crop land, so much crop land that it overrode the rise in land productivity, leading to an actual decline in production of some 32 percent, as I recall, between 1960 and 1994. The net effect of consumption going up and production gradually declining is a dramatic rise in imports as a result Japan today imports on average 71 percent of its total grain supply.

Japan: Grain Production, Consumption,
and Imports, 1950-94



Now this is a model of what happens in any country that is densely populated before it begins to seriously industrialize. Exactly the same thing that happened in Japan happened in South Korea and in Taiwan. One need only shift the timing by a decade or a decade and a half and you could use exactly the same graph for South Korea and for Taiwan and for exactly the same reasons. South Korea today, I think, imports 66 percent of its grain, Taiwan 74 percent.

Now, the significance of this model, is that China is now facing exactly the same conditions that existed in Japan, some 30 or 35 years ago. And as rapid industrialization proceeds in China, we are seeing an enormous growth in the economy. Over the last four years, the Chinese economy has grown by 13 percent, 13 percent, last year by 11 percent, this year probably by 10 percent, and if you multiply those through, it yields a growth of 56 percent in four years. This means that income per person for 1.2 billion people has gone up by roughly half during the four year period. As analysts we had never seen anything like this before, where such a large number of people have moved up the food chain at such an extraordinary rate. And much of this rise in income has been converted into the diversification of diet in the form of more consumption of livestock products, of pork, of poultry, eggs, beef and beer as well. All of these products take grain and are rapidly boosting the consumption of grain in China. And the same rapid growth in consumption, the rapid industrialization that is moving 1.2 billion people up the food chain at such an extraordinary rate is also consuming enormous amounts of crop land. And I know that in talking with Minister Huang Hua that this is a major concern within China, the loss of crop land particularly some of the best crop land in the country.

So, we are seeing China now moving into a period very similar to that of Japan of 30 years ago and this holds out the prospect of enormous dependence on imported grain, growing over the years ahead and over the next few decades. And it could easily reach a point where China's import demand would overwhelm the export capacity of the United States and other exporting countries. I am aware that the leadership in China does not want this to happen and thinks it will not happen. But in order to prevent it from happening they will either have to do a better job than Japan has done in protecting crop land, which will be extraordinarily difficult, because I know of no other country that has done a better job of protection its crop land than Japan – or, alternatively, China must in the decades ahead, raise its grain yields faster than Japan has over the last three decades. And that will be very difficult, particularly since Japanese farmers have a support price that is six times the world market level — a very strong incentive to raise land productivity. The bottom line of rising grain imports into China, I think, is going to be a conversion of the world grain market from a buyer's market to a seller's market. It will also bring a reversal of the long-term decline in food prices to a rise in food prices, a rise in grain prices of the same sort that we have seen in the last several years of seafood prices, which have been rising in real terms at 4 percent per year.

So, if this analysis is at all close to the mark, then it underlines the importance of every recommendation in Malcom Fraser's paper. What I think we are going to be faced with is the need to redefine security because if my analysis, which is very much based on the natural sciences, is at all close to the mark, then food scarcity is going to replace military aggression as the principal threat to security in the years ahead in many countries. And it underlines the importance of the point that Nafis Sadik was making of the World Population

Plan of Action that came out of the Cairo conference. My own opinion is that achieving an acceptable and sustainable balance between food and people in the years ahead is probably going to depend more on family planners than on farmers. That is not to say that farmers should not make every effort they can. I think, Nafis, that this is why I think you have the most important job in the world, probably also the most difficult one, I should add.

But the point that Nafis was making about filling the family planning gap —getting family planning services to the 300 million women who now want to plan their families and lack access to services— I think it is terribly important in terms of priority. If we are going to redefine security then we have to reorder priorities. In addition to filling the family planning gap, one of the things that was quite rightly emphasized in Cairo was the need to educate females. There is no social indicator that correlates more closely with the shift to smaller families than the level of education for females. Our future now depends on raising the level of female education, not some time in the middle of the next century, but in the next few years. It is an issue of great urgency, and it is recognized quite appropriately in the paper. Stabilizing population is a real challenge.

On the agricultural front, I agree that we need more emphasis on research. I am pleased to see that the World Bank recently has begun to put more resources in support of the international network of agricultural research institutes. We need to take soil conservation far more seriously than we do today. Every ton of top soil lost today is going to be at the expense of the food supply for the next generation. Water efficiency is one of the great areas of underinvestment in world agriculture, and in the world economy generally, but particularly in agriculture, since some two-thirds of the water is used for irrigation. Deforestation is important, not only for economic reasons but also for environmental reasons, because in many countries it is the key to stabilizing the hydrological cycle, to conserving top soil.

In conclusion, I return to the starting point, which is I think the recommendations in the paper are the right ones. I think they need to be even stronger than they now are and to reflect a greater sense of urgency than they now do for the reasons that I have attempted to summarize.