

**Remarks by Michael Mack  
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American-Swiss Foundation Dinner**

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I want to thank the American-Swiss Foundation for the opportunity to speak with you this evening.

And I wish to begin my by first taking a special moment to acknowledge Ambassador Faith Whittlesey, who launched the Young Leaders program 20 years ago which is still growing strong.

Faith, could you stand and be acknowledged?

I had the pleasure to address the 2009 Young Leaders last summer at our research facility in Stein Switzerland. I enjoyed the stimulating discussion and was thoroughly impressed by such a diverse and hugely accomplished group and particularly enjoyed the comparisons between Switzerland and the US.

As an American executive of a Swiss-based company, I have had an interesting vantage point from which to appreciate the differences between our countries, not the least of which is how differently we think about taxes! But that is for another day and another speech....

More importantly, what we share in common, aside from being major trading partners is that both our countries have, for a few hundred years now, absolutely cherish the ideal of independence and the important role that democracy plays to ensure it.

Those ideals have helped to make us two of the most innovative people's in the world, and they have propelled both our nations to the forefront of world trade. Our countries don't just "participate" in the global economy, we thrive on it. And, we also rely on it for our prosperity.

The economic upheavals of last two years, however, have given us a stark opportunity to appreciate just how fragile and interconnect we are. And we're all coming to understand that economic challenges are really just one among many of the challenges we face.

Broader questions, particularly around sustainability are rightly being discussed. Put simply: If we keep to our present course, can we continue on a path of widespread prosperity and opportunity; of balanced ecology; and of maintaining the natural resources that we all need today and in the future?

I recently had the opportunity to co-chair a study which posed precisely that question. The *Vision 2050 Project* was a concerted effort by the World Business Council for Sustainable Development and driven by 29 of its member companies. Our mission was to look ahead to the middle of this century and consider what needs to be done to

enable a global population of 9 billion people to prosper and live well. We examined the economic and resource challenges. We drew on experts from around the world.

I emerged an optimist, if for no other reason than every other outcome was so depressing.

We began the Vision 2050 exercise not by looking at what we think will be, and certainly not what we fear will be. Instead, we created a vision of a world in 2050 that represents the best possible outcome: a world in which the global population is living well and living within the planet's limits.

Then we asked ourselves and our experts: How do we get there? We mapped out the critical pathways by which the vision can be concretely achieved.

While *Vision 2050* covers a number of areas, including health care and financial markets, I will focus on the areas closest to my heart: the crossroads of food security, water and energy.

In my mind, making sure our world has enough of each of these is the crux of the matter.

I'm not saying the many other policy issues that confront us aren't important. Health care, national security, and jobs...they are vital. But if you don't have enough food, water, or energy, you're not going to have much of any of the others either. And we surely would not have the sort of level-headed discourse needed to solve other issues when very basic needs are not being met.

The fact is that, when it comes to the earth's resources, humanity has historically had a largely exploitative relationship with our planet.

Sustainable growth will require that we make that relationship a symbiotic one.

We really have no choice. By 2050, as I mentioned, there will be 9 billion people living on this planet. If we keep consuming at our current rate, the "business as usual case" means we will be consuming 2.3 planet Earth worth of resources.

Obviously, that isn't sustainable. But a diminished standard of living isn't acceptable either. And neither is a world in which the one billion people who today suffer from malnutrition are denied the opportunity for a better life.

A sustainable world means a world in which everyone has enough for a healthy, nutritious diet.

It means bringing the developing economies from subsistence to growth. Simply as a practical, if not moral matter, we can't allow whole regions of our planet to remain mired in poverty and under-development.

A sustainable world means enabling everyone on the planet to contribute by providing education and economic empowerment for those who lack them – especially women.

Finally, a sustainable world will require dramatic improvement in the use of resources and materials -- including cutting carbon emissions by half. And it will demand that we

incorporate the costs of externalities, including carbon, ecosystem services and water, into the structure of the market place.

That's a pretty tall order from where we sit today.

Let me spell a few of them so we can get a sense of the magnitude of what we're talking about. I'll start with the first: food security.

The global population of 9 billion in 2050 represents a 30 percent increase from today. And almost all that growth will take place in developing or emerging countries.

More people than ever will escape poverty. That's good. But rising living standards will be accompanied by rising demands on resources, particularly food where billions in developing nations will expect a more abundant and nutritious diet.

This means that by mid-century, we will physically need to grow twice as much of everything we grow today.

Unfortunately, we will probably have less farmland on which to grow it. Much of the best available farmland on Earth is already under cultivation. And much of that is being lost, acre by acre, as the world becomes more urban and through soil erosion.

Then there's the water issue.

To grow food, you need water, and lots of it. About 70% of withdrawn fresh water today is used in agriculture.

About 80 countries already suffer from water shortages. That is only going to get worse, in some cases, much worse. Five years ago, 12 percent of the world's population was not assured of the water they needed. In another 15 years, that will triple.

And this isn't just a problem that affects developing or Third World countries. We can see it right in America's breadbasket. In the Midwest, the Ogallala Aquifer supplies 80 percent of the irrigation water for the top-producing grain states is rapidly becoming depleted and there is no readily available source to replace it.

Water is the single biggest factor limiting our ability to feed a growing population. The amount of water on the planet is fixed. Whether it is frozen or liquid, salt or fresh, above ground or below ground, it is a finite resource. Desalination is fantastically expensive and energy intensive. So we are going to have to make do with the fresh water our planet provides.

Finally, even as the world struggles to feed its people, we are increasingly looking to renewable fuels to power our economies and decrease carbon emissions. How do we possibly grow it all?

As I say, it's a tall order.

One of the key findings of Vision 2050 is that we can get there from here. We can do it with the knowledge, skills, science and the resources we currently possess.

I'll give you some "for instances."

Take agriculture in America.

Starting from a very high base-line, with some of the most advanced agricultural practices in the world, the United States has been able to continually increase the productivity of many of its staple crops.

From 1987 to 2007, corn averaged gains of 2.2 bushels per acre per year. That amounts to a 41 percent increase in productivity. Cotton productivity per acre increased 31 percent in the same 20-year period, and soy yields climbed an impressive 29 percent.<sup>1</sup>

These dramatic productivity increases occurred in tandem with lessening stress on the environment. Consider soil run-off, which the U.S. EPA identifies as the primary cause of water pollution. Over the past 25 years, soil loss in corn farming has declined approximately 70 percent. Irrigation in corn farming has declined nearly 30 percent; and energy use has decreased by almost 40 percent.<sup>2</sup>

Of course, modern agricultural technology applied to less advanced regions can produce even more dramatic results.

Some Russian and Ukraine farmers have shown they can increase their winter wheat yield by 75% if applying a program using modern crop protection technology.

Technology can relieve our water stresses as well.

You're probably all familiar with those picturesque views of Asian farmers bending over to plant their rice shoots in flooded paddies. That flooding is done, in part, as a means of controlling weeds which can be controlled much more efficiently with tools such as herbicides.

Together with new and efficient irrigation technology most of these farmers could reduce their water usage by more than half.

A large number of productivity-enhancing plant technologies are presently in the R&D pipelines of the major research-based seed companies, and some are already here.

Take a look at Brazil where they are experiencing almost miraculous increases in productivity as it applies modern technology to the landscape.

Ethanol from sugar cane has been a huge success there, replacing 50% of the gasoline used in light vehicles. Sugarcane ethanol also produces about 75% less greenhouse gases than oil.

Soon those numbers will get even better. Just last year, we introduced a breakthrough seed protection and planting technology which will improve sugar cane efficiencies by at least 20%.

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<sup>1</sup> Field to Market: The Keystone Alliance for Sustainable Agriculture, First Report, January 2009.

<sup>2</sup> Field to Market: The Keystone Alliance for Sustainable Agriculture, First Report, January 2009.

Advances like these will allow us to grow twice as much food, fuel and fiber without using more water – and without clear-cutting rain forests and devastating natural habitats.

When it comes to getting maximum value out of minimal resources, we have the ingenuity to do it right. The question is: do we have the will?

One of our prime concerns in Vision 2050 was addressing the problems of governance that are holding us back from a sustainable future.

The world has come a long way because people with ideas have been able to make them realities.

Increasingly, however, we are seeing needless barriers to progress being put up by our governmental and regulatory agencies. A good example of this is the emergence of a new article of faith in some quarters – the “precautionary principle”. This has served to move us away from the science-based frameworks that have successfully enabled much of the innovation we have today.

Obviously, we must always show prudence. But our path to the sustainable future will be fatally blocked if we allow unreasonable fears to stymie needed innovation.

If you want to get a clear picture of a farm economy that uses little technology, take a look at Africa. It has the least amount of technology in farming and is easily the least productive. That’s no coincidence.

I’ve seen farming in sub-Saharan Africa and it’s painful to watch.

I daresay that most people in the developed world don’t spend a lot of time thinking about weeds.

In Africa, however, weeds are like the fifth horseman of the apocalypse. Yield losses there range from 25 percent to total crop failure. And controlling them is almost all done by hand.

Weeding a typical one-hectare smallholder farm requires about 200 hours of backbreaking labor.

And most weeding is conducted by women. To weed a single hectare, a woman must walk 10 kilometers in a stooped position – for many leading to permanent spine deformities. More than two-thirds of farm children are forced to abandon school in order to help with the weeding.

So weeds are choking Africa’s future – literally and figuratively.

The fact is that the only sure path to development is enabling these smallholder farmers to increase agricultural productivity enough to escape the trap of subsistence farming.

Technology can do that. A pilot program we’re currently running in Kenya shows corn yield improvements of more than 50 percent and bean yields by almost doubling. They

did this through simple soil conservation technology. The results allowed these farmers to do something they had never done before – make enough of a profit that they could begin to lay away savings in the bank.

Don't we want to empower women, educate the young, and break the cycle of under-development? If so, the answer must surely lie in technology and innovation.

But development also depends on open markets, with developing countries free to export to industrialized nations. The EU's commitment to the precautionary principle threatens to act as a non-tariff barrier, literally blocking trade with Africa.

Politicians in the EU may see banning pesticides and GM as a life-style choice. To millions in Africa, however, it's a choice that some people far away are making for them.

Unfortunately, we are seeing calls for the precautionary principle take on increased momentum even here in the United States. This has been true for some time among environmental activist groups, and they seem to be having greater influence on our regulatory agencies.

The irony is that the critical environmental goals they wish to achieve will be rendered impossible by such "precaution."

Just take a look at climate change.

The UN estimates that nearly 30 percent of all greenhouse gases are released from deforestation, which is brought about by the need to feed a more prosperous global population, but it's not necessary. Left unaddressed, the problem will only get worse. And as a warming climate decreases agricultural productivity, we will be caught in a vicious cycle of deforestation, warming and declining agricultural yields.

In this light, the precautionary principle, which moves us away from science-based regulatory frameworks, is the first-best prescription for a less sustainable world.

Now, despite all this, I am still an optimist.

While Governments in developed countries might shirk their leadership responsibilities, I am hopeful that business will see the opportunity and will themselves create new models which incorporate sustainability as a key plank. Further, I believe people in developing and undeveloped countries will embrace it out of sheer necessity.

As part of a science based company, I know our society now has the knowledge, science, skills and financial resources to achieve this.

Time is the one thing we are running short of though and we must start soon, if not immediately to change our relationship with our planet.

To move toward sustainable prosperity that embraces our highest achievements in technology and innovation.

To move toward an economy that enables 9 billion people to live well and live long on a shared planet. Thank you.