

Global Green

2008 College of Engineering Awards Banquet

Two years ago, in this Engineering Awards Banquet, I talked about the world becoming flat.

In a flat world, knowledge work can be done in any part of the world. Knowledge workers, such as engineers, compete globally in terms of their costs and values.

In this environment, American workers need to be able to innovate, and to generate higher values.

One fruitful area for innovation, I pointed out, is to develop renewable energy sources, such as biomass.

Last year, I talked about global warming. One serious consequence of global warming is its impact on water: Too much water, sea levels rise, flooding coastal cities - such as San Francisco; too little water, drought, hurting billions of people around the world.

Whether the world is becoming flatter, or hotter, it is becoming smaller. Our lives are closely linked with those across the globe.

As we enter the second decade of the 21st century, we become more interdependent - more than ever in human history.

Consider the global food crisis that is taking place now. The price of wheat reached its highest level in 28 years. The price of rice has doubled in the past three months.

Now, 100 million people are starting to go hungry because they cannot afford higher food prices. The crisis set off violent riots in Haiti, Indonesia, Egypt, and many developing countries.

What we have witnessed is a horrific despair and catastrophe.

You may ask what caused rising food prices. One reason is that we are using food crops for fuel instead of for food.

For instance, the U.S. government encourages farmers to grow corn for ethanol by providing them subsidies.

The result is less food, higher prices, contributing to the global food crisis. That compels us to take concrete actions in what I call **global green**.

What is global green?

It means we don't use more than what we can produce, what is given to us by nature, now and into the future, whether it is energy, water, or food.

We must create a sustainable world, and work globally. If we don't -- it would fail as we breathe the same air and live on the same planet.

This is the right place, the right time, and the right thing to do.

Let me explain why.

The right place. Silicon Valley. The technology capital of the world. Its clean technology investment nearly doubled to 1.1 billion dollars last year, accounting for 21% of all clean tech investment in the U.S.

The Pacific Rim location, the growing nexus of global commerce with Latin America, India, and China which is also the biggest energy user and carbon dioxide producer besides the U.S.

The right time. The global food crisis caused by diverting food for fuel, global warming, higher demand by developing countries, --and quadrupling of oil prices in the past six years.

The right thing to do. We have to make sure all human beings have enough food and water, do not starve, have their human needs met, now and in the future.

IT IS OUR MORAL IMPERATIVE.

Tonight, I offer three thoughts on global green.

The first has to do with education, the second with renewable energy, and the third with energy efficiency. Let me begin with education.

First, we need to focus on educational programs that educate our students and help us to use our resources more wisely and creatively. The programs should cover topics in ethics, business, technology, and public policy.

The College - under the leadership of Professor Pat Backer, working with the Colleges of Business and Social sciences, will start a new green engineering minor degree program this year. Professor Len Wesley is leading similar efforts in the graduate area.

At the university level, 42 students and seven professors from all seven Colleges of the university are collaborating on the climate solutions initiative, thanks to the

support of Provost Sigler, my fellow deans, and the leadership of the institute of Social Responsibility, Ethics, and Education (ISREE).

In this initiative, faculty and students will work in interdisciplinary teams to develop comprehensive action plans.

Second, we need to undertake projects to develop renewable energy sources such as wind, solar, and biomass.

Wind energy is a well established, proven technology. It has recently experienced a resurgence of deployment in the U.S., China, and the rest of the world.

Professor Tai-Ran Hsu and his students will work on a wind studies project with the IBM Almaden Research Laboratory.

Besides education and renewable energy, the third area for us to focus on is energy efficiency. Here, I would like to mention two projects among many projects that we are working on.

The first is what I call, **green airport operations**.

We all have this experience: at the airport, waiting impatiently for our plane to take off, while the engine is idle, burning much fuel and producing carbon dioxide.

If we could make improvements in scheduling planes for using the runway, we can save much energy, as well as make passengers happier.

This is the research undertaken by Professor Wenbin Wei of Aviation, and Professor Jacob Tsao of Industrial Systems and Engineering. It is a 1.5 million dollar NASA project. Their work can help save energy not only in existing airports, but also in new airports –that are being built around the world.

The second energy efficiency project is **green electronics**.

Have you ever wondered what is the electricity cost of the desktop PC that you are using? Would you buy a PC that costs less in electricity even though it costs a little bit more to buy? I think you would, if given the information.

This is what Professor Morris Jones of electrical engineering is working on. His results will be presented in the upcoming U.S.-China Green Energy Conference in Beijing this Fall.

Think for a moment.

If we can save 3 watts for each desktop PC --and there are one billion desktop PCs out there in our homes and offices around the world, then we can save 3 gigawatts, equivalent to 3 nuclear power plants!!

Whether it is green education, renewable energy, or energy efficiency, let us bring these projects to middle schools and high schools, to motivate young people, to inspire them, to save the planet, to be part of the global green mission.

This year, we will reach out to Burnett Middle School, Leland High School, Pioneer High School, San Jose High Academy, and East Palo Alto College Preparatory School. This is part of the CSU 16-campus engineering academies led by President Kassing.

We all talk about "saving the planet." It has become a cliché.

The other day, I heard George Lucas of Star Wars fame say something like this.

"'Save the planet.' We've got it all wrong. The planet will be just fine. It is us in trouble. The planet may not have human beings on it."

The planet without human beings! The planet where civilizations built over thousands of years disappear. What a horror picture!

A picture that we refuse to envision.

What we envision instead is global green, to use our heads, our hearts, and our hands to create a sustainable world, now and into the future, for ourselves --and for our children.

Tonight, I have shared with you a few ideas on global green. They have an impact not only on the university community, but also on the larger communities and beyond.

We cannot do this alone. We will need the help of the diverse brain trust of talented and resourceful individuals we have around us in the Valley --and in the global community.

We look forward to working with all of you in the days to come.