

Challenges of Sustainable Development

(transcript)

Speech at EEG Eurobank
Athens, Greece
May 19th, 2005

Professor Jeffrey D. Sachs

Director, The Earth Institute at Columbia University
Director, The U.N. Millennium Project

I am grateful for your invitation and for the opportunity to meet with business leaders from Greece and neighboring countries. I will briefly discuss the history of economic development, and then I'll try to work my way back to the present and summarize the challenges of sustainable development for the planet today.

Sustainable development has two parts to it, both with which humanity is still struggling. The first is development: the question of economic growth, of wealth and poverty. It's the question of how Greece, one of the richest countries in the world now, can narrow the gap with those countries that are richer still. But, perhaps more dramatically, it's the question of how countries that are the poorest of the poor can get on the path towards development. There is a global challenge of economics, which is the same challenge that Adam Smith described about 229 years ago when he wrote "The Wealth of Nations" in 1776 and asked "What makes some countries rich and others poor?"

Then there is the second part of "sustainable development" – the challenge of sustainability. There is an economic dimension to sustainability: How do we keep going with what we have? How do we avoid a massive economic crisis like the Great Depression? Where's the hidden economic risk? Those are questions that should always be on our minds. The other dimension of sustainability, which we sometimes don't see as a serious one, is the environmental challenge that accompanies economic development. The planet is under unprecedented environmental strain because of how we manage our economies. The Millennium Ecosystem Assessment report, which is a very serious scientific effort to assess the world's ecosystem—its oceans, its atmosphere, tropical forests and coastal regions—found that what human society is doing to the physical environment in each of these areas is destructive in many ways. That makes me realize how close to the edge we are.

There is one particular challenge—of manmade climate change—that I will talk about briefly. Climate change is not just a scientific hypothesis; it is already underway and it will get worse. Since it involves our use of energy, its implications reach the very core of our economic system. Without energy, we don't move, and without massive consumption of fossil fuels, we don't have a modern economy. The sustainable development challenges we face are very deep, and I think it is worth saying at least a few words about them.

Maybe the right place to begin the story is 500 years ago, with the two most significant advances in the history of the world (according to Adam Smith): Columbus' discovery of a sea route between Europe and the Americas in 1492, and Vasco da Gama's 1498 discovery of a sea route between Europe and Asia. Smith saw those discoveries as significant because, for the first time in human history, they created a world in which the continents were interconnected. I think it

would be fair to say that globalization really began in 1498. Looking back at Smith's quite remarkable statement about the importance of those two discoveries, I think he really was onto something, as he was in so many of his writings. In 1498, when globalization was in its infancy, China clearly was the world's dominant economy. From roughly 500 to 1500, China was by far the world's leading economy in absolute size, its population was already in the hundreds of millions, and it was responsible for most of the world's major technological innovations, such as paper, gunpowder, and the compass. It is rather interesting that 1500 marked not only the birth of globalization, but also the relative apogee of China's development.

I mention this because of its relevance to what is happening today. China made a bad policy mistake then—in fact the course of world history probably deviated fundamentally in the year 1433—when the Emperor decided to shift his priorities away from the great navy that China had developed, including the exploratory expeditions that had been taking place for some years, in order to focus on a more inward-looking form of rule. By the time Adam Smith wrote about China two and a half centuries later, in 1776, he observed that China was a rich country that had gone as far as it could go given its constitution, which was based on the concept of a closed economy. Two hundred and twenty five years ago, Smith had already noted that China had denied itself the benefit of gaining from the technological advances made by other countries.

Because of its withdrawal from international commerce, China was wealthy but had become stagnant. What this means is that, beginning in 1500, Europe, which was outward-oriented both economically and militarily, was given an open door to Asia just as Asia was turning inward. In addition, Japan introduced its closed door policy at about the same time, at the beginning of the Tokugawa Shogunate. As a result, what was the fringe of Eurasia at the time was able to begin to dominate Asia. None of this happened because of intrinsic economic superiority, but rather because of China's retreat from international waters.

Interestingly, Smith wrote in "The Wealth of Nations," that Columbus' and da Gama's discoveries are wonderful because they allow all parts of the world to satisfy the wants of all other parts of the world. But he also was enough of a humanist to know that in the short term, they had devastating effects on the native populations in the East and the West Indies because the imbalance of military power between the indigenous inhabitants and the European conquerors was so great that Europe did not truly engage in trade with local peoples. Instead, Europe crushed those societies, and eliminated any potential local benefits to trade. That was the situation until approximately 1800, and even then, economic historians argue, income levels in China and Europe were not all that different, although Europe was certainly on the ascendancy, while China stagnated.

Then, what I see as the single most decisive economic event took place, and it plays both to the sustainability challenge and the development challenge. I am referring to the discovery of coal as an energy source. Until then we required relatively small amounts of energy; we lived from what we could grow and what animal traction could sustain, and from some wind and water power. After globalization, the use of fossil fuels was the decisive breakthrough for the world economy. In my view, the modern world is shaped beyond any other technology by the huge reserves of fossil fuels that were initially exploited around 1720 with the first steam engine, but really gained in significance in the early years of the 19th century with the British Industrial Revolution.

Of course, it is important for many reasons to recognize that those nations with natural endowments of coal pulled far ahead of those which had none. It just so happens that 300 million years ago, coal was deposited in temperate mid-northern latitudes, not in the Tropics, not in Africa,

not in much of Asia, but in Britain, in Germany, in the United States, in parts of China and Japan. And so industry developed only in those regions where massive amounts of energy could be mobilized. Many of the wonderful accomplishments we pat ourselves on the back for in Western Europe or the United States really boil down to the accomplishment of sitting on top of a large share of the world's coal deposits.

In fact, there were some great, modernizing leaders of, say, the Islamic world, such as Mohammed Ali in Egypt, who knew in the 1840's how important it was to industrialize. Ali imported entire factories and the most modern machinery for Egypt's textile industry. Yet because Egypt has no coal of its own, he had to import the coal as well, and in so doing he bankrupted the whole operation, and the factories were forced to shut down after ten or twenty years. Much of the Middle East could not industrialize for the same reason. By the time the internal combustion engine had been invented and the importance of oil as an energy source had been recognized, the Middle East had already lost its sovereignty to the European powers and so was unable to take advantage of its vast petroleum resources.

The timing was very unfortunate for the Middle East, because if the internal combustion engine had been discovered in 1820, and not in 1890, the Middle East would likely be a modern industrial economy. Instead, by the time the internal combustion engine was discovered, it was possible for France, the United Kingdom, and then the United States to impose imperial control over the Middle East and make a mess of the politics in the neighborhood for most of the 20th century. The timing of all these energy resource issues therefore played a very big role in determining who got ahead and who did not. It's a long and fascinating story, and I teach entire courses about it, how it all unfolded between 1820 and now. It's the story of who succeeded and who did not, and of how economic development takes place.

There are a few more points I would like to make. China and India were very unfortunate because they did not industrialize in the 19th century. Instead India fell under colonial rule and China was a de facto colony after the Opium Wars. The lack of political control shaped a lot of the delays in the onset of economic development in those countries, and by the time China gained some measure of political independence after its revolution in 1910, it was already in a kind of chaos and its national revolution was followed by civil war, Japanese invasion and then by Communist take-over. By my count, China had 500 years of bad luck, which began when it made a policy mistake and became protectionist in 1433, and then failed to have any reasonable policies under sovereignty until 500 years later, in 1978. That's a long stretch of bad fortune. By the time China got out of this long mess, its income levels were a tiny fraction of the rest of the world's. China was an impoverished country after having been the leader of the world economy.

Another point is that in 1910, if someone like me were giving a speech and had to predict where the world would be in 1915, that person would have said, "We are in the age of globalization, we are in the age of European leadership, we control the world and we believe in free trade, international capital flows, and technological progress." But nobody would have predicted in 1910 that an era was about to come to an end, and that in four years there would be a cataclysm whose impact would last 30 years. Europe went into massive upheaval in August of 1914. It entered a civil war that did not really come to an end until 1945, a conflict that led to tens of millions of deaths, the Great Depression, the Holocaust and the rise of Communism.

I mention this to emphasize that we should never take for granted our capacity to avoid disaster, and we should never go to war as casually and on the basis of so many lies as the United States did a few of years ago. That kind of undertaking has unpredictable consequences. The war

we started was launched under completely false pretenses, in my view, and we don't yet know its consequences, because it could still spin out of control. That's the lesson of 1914 and it's a lesson we should never forget.

By the end of World War II, what did the world look like? The picture was that a part of the world had achieved industrialization, mainly those places endowed with coal, and that remains true today. The Imperial Age was coming to an end, because Europe had bloodied herself for two generations. India was about to achieve independence, China was nearing full sovereignty, albeit under a disastrous Communist system, the Non-Aligned Movement was about to take shape. But by then, the world was divided between the haves and the have-nots, based on an accident of history, and at that time most post-colonial states were have-nots.

Two economic phenomena are discernable from the end of World War II to the present. The first is the reconstruction of a global economy based in principle on national sovereignty rather than on imperial power. It took a long time for the world economy to rebuild itself, because Communism had to collapse and the self-imposed protectionism of newly independent states also had to come to an end. When those states became independent, they refused to trade with and receive investment from wealthy countries. Rich countries had stolen their sovereignty, and so they chose to manage their economies themselves this time. It took 60 years from the end of World War II to really reconstruct the world economy, based on a system of sovereign nations open to trade and financial flows.

The second phenomenon has to do with economic catch-up. Countries that were lagging economically have caught up to an extent, but the degree to which they have done so depends on a complex mix of politics, history and geography. Generally, countries that caught up early and quickly to rich countries were able to import technology and make economic progress if they successfully hooked into the world economy. China began this process as early as 1978, India really only began it in the 1980's and early 1990's, while Korea, Taiwan, Malaysia, Indonesia, Singapore, and Hong Kong began as early as the 1950's. The post-communist countries were only able to begin integrating the world economy after 1989. Countries like Greece and Spain had their own tumultuous histories, including civil war and the alternation of military and civilian power, which also had short term effects on the ease with which those countries were able to integrate into the global economy.

Finally, by virtue of geography, some places in the world have not joined the process at all, not for lack of will or effort, but because they are in the toughest, most marginal environments in the world. Globalization is a very powerful force, so that if a country is part of the world economy, it is pulled along by global growth, unless it's so isolated that no market force can reach it. Those places tend to be landlocked and mountainous, such as the Andes or the Himalayas. Globalization is not a powerful force in countries such as Nepal, Mongolia, Afghanistan, or Tajikistan, nor is it in Chad, Mali, Niger, Rwanda, Burundi, and Malawi. What I found in my own work for over 25 years and did not truly understand until I worked in more than a hundred countries is that the ease with which a country's economy grows is shaped by where it is on the globe, and that is difficult for most of us to imagine. There are people who are burdened by geographic isolation, by adverse conditions for growing food, by frequent draught and serious diseases. Much of Africa faces these conditions.

Therefore, in my view, Africa's extreme poverty is not due primarily to bad African leaders, which is what many in the rich world believe, and it's not due primarily to exploitation by the West, which is what many Africans believe. It's due mainly to environmental factors such as

drought, geographic isolation, and malaria. The point I make in my recent book, *The End of Poverty*, about places such as those I've just described, is that now we have the science and technology to help those places break free from the trap they're in, by helping them build roads, fight malaria, use drip irrigation and other improved agricultural techniques. We now know how to help them get started, and we know that once they've started, they grow. But if they're not on the ladder of development, getting on the ladder can be a very big first step. The places where I'm working in Africa are isolated, rural communities that have nothing, and no market is swooping in to save them. They command no market power, so the market does not respond to their needs. That's why I think we have to help these people, and not just leave them to die, as is happening right now.

That brings us up to the present. There is about one sixth of the world, namely the European Union, Japan, Korea, Taiwan, Israel, Singapore, Hong Kong, Australia, the United States, and Canada, that is the high income, high technology world. Of course, there is variation within it, but from a global perspective that's not very interesting. What is interesting is that the high-income economies are growing by roughly 2% or 3% per year, at quite a regular pace. The progress is science-based. (By the way, that's why I recommend that Greece expand its science and technology sectors, where the future growth lies. The difference between Greece and Finland over the last 25-year period is that Finland now has Nokia, a global high-tech firm. Greece is still involved in more traditional sectors, such as shipping, agriculture, and tourism, all of which are fine. But Greece needs a greater presence in other sectors, and some science and technology sectors are very important.) So one sixth of the world is growing at a modest rate, but it is doing so relentlessly, and if a country achieves 2% growth at a constant pace, income doubles every 35 years.

Then there is another part of the world that is catching up because technology has truly become available worldwide. I say technology, but really it's not so much about machines as it is about ideas. That's what's happening with China and India right now. Asia, which makes up almost 60% of the world population, depending on what exactly you count as Asia, is over 20% of the world's economy but is on its way to becoming 50% of the world's economy in the next few decades. So the world's center of gravity will move back to Asia for the first time in centuries. The idea that we could "contain" China, for example, is utter nonsense. In the United States, there are people who say we should "contain" China, but the reality is that we are 300 million people and they are 1.3 billion people. China's neighbors don't want China contained, they want a growing Asia. Furthermore, Asia is 60% of the world's population, so a lot of my fellow Americans are living in a fantasy world. This is not going to be the American century, because we don't have the numbers and because technology is for everyone.

The catching up of India and China is good news for the world, not bad news for the world. It's good news because it means that the kind of prosperity that we enjoy can be enjoyed much more broadly, and it does not come at our expense. It's mostly other people learning to do the good things we've figured out how to do. The countries doing the catching up are growing faster than we are, and that's a deep principle of economic development. If you're catching up and you have reasonable policies, you do grow faster than richer countries. It's not because you're an economic miracle, it's because you have something you can take from the richer countries, and that's advanced technologies.

The rule is roughly that a country with half a leading country's income can grow about 1.5% faster than the leading country, a country with a quarter of the leading country's income can grow about 3% faster, a country that has one eighth of the leading country's income can grow 4.5%

faster, and so on. All over the world, we see that kind of convergence taking place. Greece is still converging with its richer neighbors, but very slowly, partly because the gap is not so big, and partly because it probably is not doing everything it can to get its growth up to where it should be. I believe that if the world remains peaceful and if we avoid another 1914, the kind of catching up I'm talking about is essentially inevitable. It's a powerful force. I have to say again that it's all for the good. It's the great triumph of good science and good technology, and it's raising the quality of life all over the world, which is why I think it should be applauded.

However, there are three major caveats to that last statement. First, there is nothing to ensure that the success of a global open society will persist, because human beings have a very hard time cooperating with each other, and the fact that we are in some kind of religious fundamentalist revival in the 21st century is a very odd demonstration of how fickle human nature can be. A significant part of my country, for example, is abandoning basic scientific principles, or denying them outright. Once again, Darwin is at the center of the debate, with school districts all over the United States contemplating not teaching evolution as science, and preaching that the world is 10,000 years old along with many other falsehoods. Another question is whether we can stay peaceful. We certainly are not doing a good job of it right now. I find the mentality of the American leadership very dangerous, because one of many things they're trying to do is to maintain American dominance, but the U.S. cannot be dominant in the way they might hope. The numbers speak against it. The numbers say that the U.S. share of the world economy will decline over time. That is not to say that Americans will be poor, but our share of the world economy will decrease steadily.

My second caveat is that, as I said, there are parts of the economic catching up I've described that are not inevitable. The poorest of the poor are not a part of it. Every time that globalization—which I obviously support—is treated as a powerful cure-all solution, or when markets are treated as such, I have my doubts, and my doubts are based on a lot of evidence. I argue that, even in our rich countries, we need mixed economies, a public and a private sector. But what we also need globally is assistance from the rich countries for the poorest countries, to help them get on the path of development. There are, by my estimate, eight million people dying every year of poverty. That's a really shocking fact – 20,000 people dying every day. They're dying because they don't have safe drinking water, they're dying because they don't have safe cooking fuel, they're dying because they don't get immunizations, they're dying because they don't have bednets to fight malaria, they're dying because they don't have pills to stay alive when they're infected with HIV. It's eight million people every year, and it's a horrendous stain on civilization.

Then there is the third big caveat, which is sustainability. Remember that everything we've done since 1800 has been based on mining coal, and extracting oil and gas. We are living off of fossil fuels, which presents us with two issues. The less important of the two is that we will run out of oil and gas in the next few decades (less important because we still have centuries' worth of coal). Some people say we will run out of oil and gas within the next 10 years, others say the next 30 years, based on our technologies and geological knowledge. In fact, just under 70% of proven oil reserves are located in the Middle East.

There is a more immediate issue concerning fossil fuels, which is that we have known at least since 1986: burning fossil fuels is threatening the Earth's climate system. Carbon dioxide allows all ultraviolet rays to pass through it, but it captures infrared radiation. Because of that, it's a greenhouse gas, which means that if the carbon dioxide concentration in the atmosphere rises, we get global warming. The Earth Institute, which I direct, is filled with climatologists who are convinced that while we don't know the exact details, the world is on a path of serious and

unsustainable manmade climate change. Europe has recognized this; the United States has failed to do so. Europe has adopted the Kyoto Treaty as a starting point for solving this problem, but the United States is not a signatory.

This problem is serious because there are many possible solutions, but we are not on track and none of them is easy. We need to find ways to have a truly sustainable energy system, but wind power is too limited, solar power is too expensive, and nuclear power is too dangerous in terms of safety from proliferation and disposal of nuclear waste materials. We don't yet know how to burn fossil fuels and capture the carbon dioxide and dispose of it safely. All of the big ideas about how we're going to solve this problem exist in theory, not in practice.

My colleagues and I estimate that approximately half a century of technological advance is required make the global energy system sustainable. It's a long-term process because it goes right to the core of our economies and we have trillions of dollars of infrastructure invested in the way we do things right now. That's going to have to change in some way that is not yet clear. And it's also going to require a level of cooperation from India and China and the developing world that is not easy to put together. We're going to have to ask them to stop adding carbon dioxide to the atmosphere, because it's ruining the Earth's climate. They could respond that we ruined it for the first two centuries, and they haven't caught up yet. Needless to say, we have some challenging geopolitics ahead of us.

I think this is where the world is right now. We have an economic model that looks better to me than anything we've had for a long while. Within the next twenty years, I believe we have a chance to help the poorest of the poor, who are excluded from this economy, to actually get on to the ladder of development. But that requires financial help from the rich countries. We also face the challenge of managing our environment in a sustainable manner. There are ways to solve the sustainability challenge, just as there are ways to solve the development challenge, if we act cooperatively, sensibly and scientifically.

The good news on sustainability is that the world population, after increasing six fold since the mobilization of coal, is finally leveling off. It will probably level off at around 9 billion people by the middle of this century. This is heartening, because the growing size of Earth's population is putting ever-increasing pressure on our physical environment, and that pressure must be alleviated. A leveling off of population growth will raise the quality of life for future generations. A second piece of good news is that the world is becoming more urbanized, and with modern technology this actually removes strain from the physical environment. The third part of reducing the pressure that we're putting on the oceans and the atmosphere is coming up with truly sustainable economic practices. That too is going to require global cooperation, a lot of wisdom and a lot of good science.

Are we going to make it? It's certainly within reach to have a world that's both prosperous and sustainable. I think we can now see how to achieve that goal, and we have a more complete and scientifically-rooted view of the world than any generation has had before us. I think that in the end, however, the question is going to rest less with the mind than with the human heart.

Thanks very much.