

country in the next 20 years is negligible.

World primary energy is another issue at which we ought to look. This is not to say that alternative fuels are destined for failure. I agree with the President that we need to diversify our energy sources. I believe promoting technology of these sources is the right approach to take, not for the near term but for the future.

We as a government should continue to invest in providing grants and incentives to move forward with some of these alternatives. Over time, we have learned advancing technologies is perhaps the single most important factor that contributes to long-term productivity and economic growth. For example, we have clean coal technology available that we could use for burning coal. We need to move forward with that.

This chart is a little complicated, but it shows how energy sources have peaked in the world: Oil going down, gas going up, and we are seeing nuclear at the bottom of the chart. This little bit is the increase in renewables.

Again, if you look at the world picture, we have a problem. Today, China imports oil. They used to export oil. We are seeing that all over the world. The economy is getting better for all people. Their standard of living is going up and they are using more. We need more energy.

On petroleum production, the United States is the world's largest energy producer, consumer, and net importer. It is no secret the United States is becoming more and more dependent on foreign oil imports. This chart reflects what we have to look forward to by way of dependence through the year 2020. This is petroleum production and consumption, which is going up. Imports in the month of April as a percentage of petroleum delivered was 62.4 percent. This time last year it was only 60 percent. The total petroleum products delivered to the domestic market in April was over 19 million barrels per day. In the same month last year, it was 18½ million barrels per day.

Scarce petroleum resources is not a problem experienced only by the United States. The energy crisis is being felt across the globe; so much so that inevitably, as foreign countries realize an increase in their own energy needs, they will be less willing to accommodate the growing energy demands our country places on them. With the increased reliance on foreign oil, we will not get far if we do not work to expand the current oil and natural gas pipeline system.

Our Nation's 200,000-mile pipeline system is the world's largest. These nearly invisible ribbons of steel deliver more than 13.3 billion barrels of crude oil and petroleum products in a typical year. Without them, it will take thousands of trucks and barges clogging the Nation's roads and waterways to do the job. The capacity of the system, however, is being seriously eroded and the

future of oil and natural gas transmission does not appear promising.

If we refuse to act, the alternative will be a continued capacity squeeze and higher transmission costs, passed on to the consumer. That is one of the problems we had last year with the big spike in gasoline. We had a break in two lines, one coming from the Gulf of Mexico, the other coming from Canada. That had a dramatic increase on the cost of oil to the people living in Ohio and other parts of the Midwest.

On conservation and its impact, this chart shows what we can expect under three different energy production scenarios through the year 2020. The top line assumes constant energy use with respect to economic growth, and it is going up. Hopefully, the economy continues to grow. This means if a nation continued along the same path we are traveling, through 2020, with energy demands rising with proportion to growth, and there were no technological advances made, consumption would increase dramatically.

The bottom line represents energy production growth without significant change. If we stay the way we are now, we are in very big trouble. The second line shows what the Department of Energy predicts will happen when or if consumers are offered a menu of available technologies from which to choose. An example would be a family replacing a vehicle after several years of usage for a more fuel-efficient automobile. This menu of options makes a big difference when compared to increased energy intensity and consumption in the first line. We need to move forward in order to meet our demand.

The third path reflects the impact of conservation at its height. This includes nonuse and the use of the most competent and efficient technology combined. This chart shows an "available technology" consumption curve by barely 20 percent. There is still a considerable gap between consumption, even at the greatest levels of conservation. We need to be concerned about it.

The point I am making this morning is that we have a challenge to meet the energy needs of this country. Those people who advocate conservation and alternative fuels, renewables and so forth, as the answer to the problem, frankly, are not being intellectually honest or facing reality. That means the Members of this Senate and the House of Representatives are going to have to face up to the issue of how to harmonize this Nation's environmental needs and this Nation's energy needs so we can come up with a realistic energy policy.

It is very important for the future of our country. I happen to believe, in terms of issues that need to be dealt with, we need to face this head on as soon as possible. President Bush should be given a great deal of encouragement for coming up with a comprehensive energy policy that is being quarter-backed by the Vice President of the United States. It is long overdue to get

on with the issue of debating how it is that we are going to confront this energy crisis that is having such a negative impact on the people in my State of Ohio, the people who live in our inner cities, our small businesspeople.

I had a meeting this week with small businesspeople, manufacturers. I asked the question, How many believe we are not in recession? There was not a hand that went up. Part of the reason they are being negatively impacted is the fact that the energy costs are skyrocketing. We have a very large plastics industry. We have more jobs in plastic than any other State. Because of the high cost of natural gas, they are now in a noncompetitive position and are laying off workers. For farmers in our State, natural gas is used in fertilizer. As a result, our corn crop will be 25 percent less this year because of the cost of fertilizer.

Some fertilizer companies are not manufacturing fertilizer this year but selling their natural gas contracts and are making more doing that rather than selling fertilizer.

The point I am making is, the energy crisis is cutting across my State and, I am sure, the State of the Presiding Officer and all other Senators. We owe it to our constituents to make sure we do not duck, take a walk, be unwilling to make the hard decisions we are going to have to make to deal with this problem, including the issue of what do we do with waste from our nuclear energy plants in this country. There are still people who demonize nuclear energy, for example, and fail to recognize our entire nuclear fleet has had not one problem since Three Mile Island, very little problem whatsoever. It is a safe way of producing energy. Europe is into it. We have had it in limbo because of the fact it has been demonized.

More important than that is how to deal with the nuclear waste. It is time we moved on with this. I hope this energy appropriations bill puts in enough money so we can intellectually move forward in resolving that issue. If it is not Yucca Mountain, what are the alternatives? We have to come up with a solution for what we do with our nuclear waste, to take advantage of nuclear energy in this country.

I suggest the absence of a quorum.

The PRESIDING OFFICER (Mr. FEINGOLD). The clerk will call the roll.

The legislative clerk proceeded to call the roll.

Mr. REID. Mr. President, I ask unanimous consent that the order for the quorum call be rescinded.

The PRESIDING OFFICER. Without objection, it is so ordered.

#### EXTENSION OF MORNING BUSINESS

Mr. REID. Mr. President, I have been advised that the Senator from Tennessee, Mr. FRIST, wishes to speak for up to 20 minutes in morning business. I ask unanimous consent that he be allowed to do so.

The PRESIDING OFFICER. Without objection, it is so ordered.

#### STEM CELL RESEARCH

Mr. FRIST. Mr. President, I rise to speak to a topic that is very much on the minds of the American people as well as policymakers in Washington, DC; that is, the issue of embryonic stem cell research. The issue of embryonic stem cell research is one that has captured the imagination of people all over the world in the last 2 to 3 years. It wasn't that long ago that the idea of taking cells very early in life and having their potential captured and set in different directions to help treat disease—to help make diagnoses—was really just a pipedream. Literally, it was 2 or 3 years ago.

Now, because of the advances in science, the advances in technology and the tremendous research that is being conducted in this country and, indeed, around the world, a whole new frontier has opened—the frontier of what is called stem cell research. I will mention a little bit about what that is, but what captures people's minds so much is the promising aspect of this research. What has inspired such interest in this is the fact that people with numerous diseases, for really the first time in their lives, can look ahead and say there is the potential for a cell at its earliest level to be channeled in certain directions to make the care of that disease easier, and possibly even cured.

The same hope—I hear it daily—is expressed by people with diabetes, Alzheimer's disease, or Parkinson's disease, and for spinal cord injuries. Indeed, this stem cell research—both adult stem cells and embryonic stem cells—has opened up a new frontier that is full of potential, full of hope, and full of promises.

The issue is being addressed by the leaders of our country. It is being addressed in amendments on the floor of the Senate. It is being addressed by groups considering the ethics among the think tanks. It is being considered by the administration as we speak.

I would like to make four points.

No. 1, in any of these arenas where we are talking about life—and indeed I believe upon fertilization—there is a continuum from a sperm and an egg, to a blastocyst, to a fetus, to a child, to an adolescent, to an adult. That continuum is indeed life.

As policymakers, we will be injecting our own feelings and our own beliefs into this debate as we go forward. Therefore, I wish to make it clear to my colleagues that from my perspective I do value life and give moral significance to the embryo and to the blastocyst and to that full continuum.

I, indeed, am pro-life. I oppose abortion. My voting record on the floor of this body is consistent with that. Those beliefs are based on the very strongly held spiritual beliefs that I have. They are based on my medical

understanding, having spent 20 years in the field of medicine, and in science—that medical understanding of this process of life and of living tissues. I do give moral significance to the embryo, as I mentioned earlier.

Second, I am a transplant surgeon. I had the opportunity to serve on committees that looked at the ethical considerations surrounding the use of tissues and the transplantation of those tissues. I have served on committees sponsored by the United Network For Organ Sharing—the registry that oversees transplantation in this country. I have served on the board of local organizations and tissue procurement agencies. I have served on the ethics committees within hospitals. I have had the real privilege of writing scores of peer-reviewed papers in the field of transplantation and scientific papers in the field of transplantation—both basic science and clinical transplantation of living tissues. I wrestle on a daily basis with these decisions surrounding life and death and health and healing. I have had the opportunity to routinely deal with many of these end-of-life tissues.

I have also been blessed with having had the opportunity and the training to transplant tissues myself—to take a beating heart out of an individual who has healthy lungs, a healthy heart, healthy kidneys, and to take that beating heart from that individual that, yes, does terminate the living function of the lungs and the kidneys and the other organs, but to take that heart and give it to another on really a weekly basis before coming to the Senate, and allowing that individual to live in a new life, a better quality of life; an individual who without that transfer of tissue otherwise had no hope.

I mention that, because the ethical construct and ethical and moral decisionmaking that we are having to face today in a much earlier point on this continuum of life is very similar to what we debated and talked about—what our scientists debated and talked about—what our ethicists did—what our medical scientists did about 30 years ago in transplantation. To whom do you give scarce resources? To whom do you not give a heart or a lung because we have this shortage? Which organ tissues are suitable for transplantation?

I have had the privilege—really the blessing—to be able to see the rigorous consent process we have now established in a very solid fashion surrounding the use of tissue taken from one source and given to another source. Again, it is not an exact parallel, but it is similar from the large ethical construct in transplantation 30 years ago to what happens after birth, to the moving of tissues, or cells in this particular case, in a period much earlier along the time line, at a time 5 to 6 days after a sperm and egg come together.

I am convinced, based on this personal experience, based on professional

experience, that we can address this use of living tissue, living tissue that otherwise would not be used. It is critically important that we understand, and in our moral and ethical framework ensure, that this tissue otherwise would not be used. It is similar to the fact that when I do a heart transplant, that heart otherwise would not be used for anything useful. That individual would likely be buried 6 days later or 10 days later.

To use that tissue that has no other use—and that is where this informed consent process is important when we are talking about stem cell research, to benefit other people, people with diabetes and Parkinson's disease and Alzheimer's and spinal cord injuries, who may potentially benefit from this new research.

It was not easy in transplantation 30 years ago, but we did it. And through organizations such as the United Network for Organ Sharing, a national registry, strong Government oversight, full transparency, full public accountability, discourse among not just the scientists—because they are going to push for it hard—but discourse on the public square, where you get the input of the theologians and the ethicists and the philosophers and the medical doctors and the clinicians, and the parents, as well as the scientists themselves—the consent process; I will come back to it very briefly—but the consent process must be comprehensive.

That is the only way we can avoid the potential abuse, the potential for overcommercialization of this process. We have to make sure the consent process protects against coercion. We can look back to that transplant arena because we addressed it 30 years ago. Again, this is much later in the continuum of life, when we are doing heart transplants and lung transplants, but we must come back and superimpose a comprehensive consent process much earlier in time.

The third issue is research. As I mentioned, this is new research. It is exciting. It gives hope to millions and millions of people. But let's not oversell the potential. This research is new. It is uncharted. It is evolving. It is untried and untested. Therefore, we cannot predict exactly what is going to come from this research. So let's not oversell the research in order to build public support for whatever position we take.

We should not let the potential of this research drive the moral considerations themselves. Thus, we must set up a very important, strong, transparent, ethical construct in which this decisionmaking can be made, and needs to be made, on an ongoing basis. We do not know what the next great discovery is going to be 6 months from now. We cannot lock into place either the moral considerations or the way we consider whether or not it is appropriate to look in a new field of science.

So the oversight process has to be responsive, has to be ongoing. It has to