



Stanford eCorner

A Portfolio Approach to Energy Solutions

Kristina Johnson, *Enduring Energy*

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Former U.S. Undersecretary of Energy Dr. Kristina Johnson discusses how her current venture is seeking to solve energy challenges that she encountered during her time in government. There is no silver bullet for solving the world's energy problems, says Johnson, so she embraces a portfolio approach when it comes to developing solutions.



Transcript

One of the things that I think there - a thread that went through whether it's academia or government or industry is really trying to take an organization and make the whole grade in some of the parts. So one of the things that we looked at is in terms of energy policy, often times you will see fossil people look at fossil energy by themselves. The nuclear people, wind or solar, geo or hydro, they look at their little piece together in energy efficiency and we ran a Strategic Technology Energy Plan called STEP. And we had 100 different people in Department of Energy working on this. And the goal is to see how do these different pieces work together and it's really important to take - as the President just announced even a week ago and he said consistently throughout the administration, you need a portfolio. And there's not going to be a silver bullet. And if you look historically about how energy has migrated over time, wood was our main energy source until a few hundred years ago and then we migrated from wood to coal to oil. And each one of those migrations has taken anywhere between 60 and 100 years, well we don't have that kind of time now if we are going to address some of the really pressing energy issues facing this country and the world. So we did this plan, it was a portfolio approach and when I left the administration I was real committed to carrying out the plan and some part of the plan appeared in the President's Day, the Union addressed a year-ago, which is what's the pathway to get to 80% clean electricity by 2035. So I started a company called Enduring Energy.

Our focus now is enduring revenue. I hope that resonates with all the entrepreneurs in the room. And we're looking at what pieces of that energy plan that we could really undertake and make a difference. So the first step is looking at hydro power. A lot of people don't realize that there are already 80,000 dams in the U.S., and 97% do not produce electricity. So they're there for navigation, they're there for recreation, they're there for flood control, but many of these could be powered and produce dispatchable energy. So what I mean by dispatchable is it's there on demand when you need it. So what happens when you put up a wind turbine and the wind doesn't blow? Or you have a solar panels and the sun isn't shining, cloud comes over or at night the diurnal variation? So hydro power is one set of reliable energy that allows you to fill in, and create other sorts of services, which I can get into or not. So a lot of our consulting work right now is helping companies expand their hydro power. And look at ways of exploiting really clever ideas in energy efficiency and one of the most clever ideas that I found is right here at Stanford, not unusual, and one of the professors in Electrical Engineering Economics, Professor Balaji Prabhakar, has done some really clever work about how to move people and provide incentives towards changing the way they commute and healthcare and we're looking at maybe there are other avenues in energy to get, because this is a big problem, it's going to require all of us to contribute.

So we're working across a bunch of these different fields within the plan. So that's what we are doing now.