

Wyoming and Shanxi: A Clean Energy Partnership

Speech by David Wendt

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Good afternoon, ladies and gentleman. I am also from the state of Wyoming, and I am joined by three others in a delegation organized by the Jackson Hole Center for Global Affairs (JHCGA). JHCGA is a non-governmental organization, and is Wyoming's only bipartisan, independent public policy research organization concerned with global issues.

Wyoming and Shanxi are the two largest coal-producing states in the two largest carbon-emitting countries. Coal is the most carbon intensive fossil fuel. Together, Wyoming and Shanxi produce 17.7% of the world's coal supplies.

That's a lot of carbon emissions. In the next few minutes, I'm going to talk about how Wyoming and Shanxi could work together to solve this problem. I'm going to paint a picture of a **Wyoming-Shanxi clean energy partnership**—what it would look like, how it would work, how it can be achieved.

Realistically, coal will continue for the foreseeable future to be a mainstay of the world's modern industrial economy. As Dr. Wang of the China Coal Technology and Engineering Group mentioned this morning, even China, the world's largest coal consumer, will still use coal for 50% of its total energy supply by 2030. So the way to reduce carbon emissions from coal is not to stop using it, but to find cleaner ways of burning it, while at the same time bringing sources of renewable energy on line.

Cleaner ways of burning coal – that involves capturing the carbon dioxide from the waste stream and doing something with it – either finding a productive use for it, or storing it underground. That process is called carbon capture, utilization, and storage, or CCUS.

The problem is, it's very expensive. So if WY and SX could combine their comparative advantages, they could do it more cheaply. Shanxi has comparative advantages in coal gasification, coal conversion, and carbon capture, which they have been doing for years. Wyoming has expertise in geological site characterization, carbon sequestration, and enhanced oil recovery, which it has also been doing for years. In addition, Shanxi has experience building large-scale energy complexes, while Wyoming knows how to combine multiple technologies in smaller-scale hybrid systems.

These capabilities create openings for collaboration. For example, Shanxi has invested billions in carbon capture technology. What better way to showcase this technology to the world than to demonstrate it in Wyoming, using coal from Wyoming's Powder River Basin? Wyoming, in turn, could demonstrate its capabilities to utilize this captured carbon to flush residual oil from depleted oil wells, in a process called enhanced oil recovery (EOR). As Dr. Northam of the University of Wyoming mentioned in his presentation this morning, Wyoming has a shortage of

carbon dioxide for this purpose. Carbon dioxide captured from a facility built with Chinese technology could help fill this gap.

On the renewable energy side, we all know that wind power is variable. Wyoming is examining how to compensate for this variability through hybrid systems such as gas-fired gensets. Shanxi could use methane recovered from coal mines to fire these gensets, as a means of evening out power generated from wind turbines when the wind is not blowing. Our group visited one such facility yesterday – the Xi Shan facility – which used coalmine methane recovered from an adjacent mine to generate power for the mine from 7 gensets, each producing 18 MW.

None of these examples involves new technology. What each of them has in common is that real process of innovation takes place outside the laboratory, through the process of deployment. As Mr. Tan and Mr. Akiewicz from the U.S. Department of Energy have both emphasized in their presentations this morning and this afternoon, it is through deployment that we discover new ways of bringing the costs down. If the technology is not deployed, this process will not occur. *But deployment involves investment* – it involves investors who are willing to take a risk. That is why joint investment between Wyoming and Shanxi is so critical – it provides an opportunity to share risks.

For example, Wyoming plans a new Integrated Test Facility that will capture carbon dioxide from an adjacent coal-fired power plant and seek ways to transform it into productive new uses. Shanxi could participate in this experimental process and join with Wyoming in conducting feasibility studies to explore the full-scale deployment of its results.

Clean energy development may also require new innovations in policy. Wyoming and Shanxi could share experiences in trying out these new policy approaches.

One such policy innovation is emissions trading. I was glad to hear Gov. Li Xiaopeng in his presentation this morning include emissions trading in Shanxi's next set of plans to reduce carbon emissions in the province. As Dr. Northam mentioned in his presentation, the new Clean Power Plan for the reduction of carbon emissions in the U.S. also allows Wyoming to meet its emissions reduction targets through emissions trading between renewable energy developers and electric utilities. By sharing their experiences with this new approach, Wyoming and Shanxi could help each other navigate its opportunities and risks.

This happened previously in 2006, when officials of the Shanxi Development and Reform Commission joined U.S. policy experts in a meeting on carbon capture and storage (CCS), organized in Wyoming by the Jackson Hole Center for Global Affairs. Several of these officials learned about this approach for the first time at this meeting, and they took it back and shared it with their colleagues. As Gen. Richard Lawson, former Chairman of the National Mining Association and a member of the Advisory Board of the Jackson Hole Center for Global Affairs has said of CCS, "We (the U.S.) need to develop it, take it over there (to China), and share it as our investment in peace in the second half of the twenty-first century."

So – what would it take to make such a partnership work? First, it would take a *sustained presence* in each other's capitals. Each state/province must be able to be there to represent its

government's and businesses' interests, build contacts and relationships, identify opportunities, and organize activities. Such an office could provide a platform for institutions and enterprises on each side to communicate with each other and improve their collaboration.

Second, the partnership needs to entail a significant degree of *private sector involvement*. Governments can lay out a framework of policy goals, but the private sector is best at figuring out how to get the job done within that framework. That is the importance of market-based approaches to environmental management, which draws on the ingenuity and initiative of the private sector. I'm so glad that my old friend Ben Yamagata is participating in these discussions on behalf of the Coal Utilization Research Council, which represents all the main private sector players on the U.S. side.

Third, this partnership cannot exist in a vacuum. It requires public awareness and support. The public needs to be involved at every step of the way through media interviews with senior government officials and enterprise managers, media coverage of high-profile events like energy summits, and opinion pieces by policy experts like myself. Another member of our delegation is Leigh Paterson from "Inside Energy," an organization that helps the U.S. public understand energy issues. She will help to explain to people in our state what we have learned on this visit and what Shanxi province is doing to reduce its carbon emissions. Without backing from the public, policymakers cannot lead with confidence.

And that gets into the most elusive dimension of the partnership -- confidence. Transforming energy systems is a huge undertaking with enormous risks, as you well know here in Shanxi province. Through a Wyoming-Shanxi clean energy partnership, both sides can give each other confidence and encouragement to make hard decisions, learn from each other's successes and failures, and forge ahead for global change. Linkages between enterprises on each side can facilitate this learning process, as managers, scientists, and engineers develop relationships with each other, share experiences, and understand each other's organizational cultures. Just yesterday in a visit to the Ruiguang Power plant, I learned that Gemeng Energy has lent one of its senior engineers to West Virginia University for this purpose. Through these kinds of exchanges of personnel and other trust-building activities, both sides can achieve together what neither would be able to accomplish separately.

Is this vision of a Wyoming-Shanxi clean energy partnership a fantasy in these days of international rivalries and economic competition? I think not. We all face a common enemy, which is the threat to the planet posed by growing carbon emissions. On the issue of the global environment, we have much, much more to gain than to lose from cooperation. Olivia Meigs and I are proud to attend this conference to represent JHCGA's 12 years of involvement with Shanxi province in promoting clean energy and to embody this vision of Wyoming-Shanxi cooperation for the future.