

Transcript: When Water Systems Crumble

Reported by Laurie Howell

Susan Hassler: It may be the 21st century, but it seems America left its water infrastructure behind in the 20th century. It's time for a paradigm shift. We spoke about that with civil and chemical engineer John Crittenden, who's helping engineer new attitudes as well as new solutions.

John Crittenden: We expect in the next 35 years to double the urban infrastructure, and it took us 5,000 years to get to this point. So we better do that right. We better have a good blueprint for this as we move to the future, so that we can use less energy, use less materials, to maintain the life that we have become used to.

Susan Hassler: John Crittenden directs a sustainable systems research center at Georgia Tech that advises urban planners, among others.

John Crittenden: What we're trying to do is develop tools, technology, and knowledge that allows them to visualize what the future might be and then make choices among those future scenarios to see which one is more sustainable and more livable. So you just have to think a little bit broader out of the box, and lots of interesting solutions can come forward.

John Crittenden: But in complex adaptive systems like urban infrastructure, the outcome depends upon the social, economic, and environmental conditions all working together. The economists, as part of our group, they help us understand what people's willingness to pay is. They help us understand the market structures that might lead to a more sustainable future. And the social scientist can say, "Hey, what will really matter to people are these aspects," and then the engineers can say, "Well, yes, we can design our technologies to meet those requirements."

Susan Hassler: Crittenden's sustainability research in Phoenix looks at ways to combine urban design with integrated energy and water systems to increase efficiency--and ideas such as multiple distribution systems for water.

John Crittenden: One for recycled water, one for toilet flushing, another for shower or hand washing, another one for drinking--that would require a variety of technologies and it would save, I think, a great deal in terms of the chemicals that we might use.

Susan Hassler: It takes water to produce energy and energy to produce water. Decentralizing water and energy production and placing facilities near one another could produce mutual benefits and reduce costs. Decentralized water and power may also be more responsive to users and more resilient to natural disasters. But Crittenden says better planning and technology are only part of the solution--changing our attitude about water is the other part.

John Crittenden: Yes, it's free when it comes out of the sky. However, we've got to gather the water, we've got to treat the water so it's safe and deliver it to your tap at 80 pounds per square inch. That's what costs the money.

John Crittenden: So we also not only have to worry about the technological supply side of making things more sustainable or greener--having a smaller impact--but we also have to think about the demand side. So we have to control both.

Susan Hassler: John Crittenden is director of the Brook Byers Institute for Sustainable Systems at Georgia Tech University, in Atlanta.