ELI 2016 Corporate Forum: The Business of Water

Summary

As climate change alters global weather patterns and the earth's population continues to grow and urbanize, water resources are poised to become an ever-increasing catalyst for volatility, even in regions where water scarcity has not historically been an issue. Water law and policy is complex, varying regionally, country by country, and even within national borders. As more stakeholders compete for decreasing or increasingly stressed water resources, businesses around the world are changing the way they view water within their business model, and policymakers are looking at new levers to ensure responsible use of this increasingly precious resource. On October 25, 2016, ELI convened an expert panel of business leaders, legal scholars, and nongovernmental advocates for an in-depth discussion about the law, policies, and private initiatives that will play important roles in the future of water resource governance. Below, we present a transcript of the discussion, which has been edited for style, clarity, and space considerations.

Alexandra Dunn (moderator), Executive Director and General Counsel, Environmental Council of the States (ECOS) and Adjunct Associate Professor of Law, American University Washington College of Law
Stewart Leeth, Vice President, Regulatory Affairs and Chief Sustainability Officer, Smithfield Foods
Michael Mahoney, Vice President and Assistant General Counsel, Chief Environmental Compliance Counsel, Pfizer Inc.
Betsy Otto, Global Water Program, World Resources Institute
Dawn Rittenhouse, Director of Sustainability, DuPont Company
Vail Thorne, Senior Managing Environmental, Health and Safety Counsel, The Coca-Cola Company

Introduction and Opening Thoughts

Alexandra Dunn: Good afternoon, everyone. I'm Alex Dunn, the executive director and general counsel of the Environmental Council of the States, or ECOS. We are an organization of the 50 states' and territorial environmental commissioners who are appointed by their governors or chief executives to run the state DEPs, DNRs, DECs, pick your combination of letters. So, I'm very privileged to spend a lot of time thinking about all media—air, water, waste, land. But I have a law background working in water areas, and so I'm really honored as a member of the ELI Board of Directors and executive committee to be able to be here and facilitate this incredible panel.

We are going to structure this panel discussion like a real conversation, which we find is much more rewarding and interactive. I will very briefly introduce our speakers. They are amazing, and I am going to presume that you can find their full bios on the ELI website, including mine.[1] So, I'm just going to give you some highlights about these individuals and why they are well-equipped to be here today to talk to us about the business of water—a very interesting way to phrase today's conversation. In fact, I think the title of the program itself may be a bit thought-provoking, in terms of: is water something that can be associated with business transactions or is it something that should be viewed in more of a human rights context? We have a lot of ground, or river, that we plan to travel this afternoon.

Vail Thorne is the senior Environment, Health, and Safety (EHS) counsel at the Coca-Cola Company. His responsibilities include company EHS issues, sustainability issues worldwide, company policy, legal compliance, transactions, litigation, and administrative proceedings. He also advises their green advertising and green policies in marketing, and he's counsel to the government affairs group. That is just a part of his full set of responsibilities. I remember hearing Vail in a talk many years ago saying when water is your number one ingredient, you care a lot about water. So, we're thrilled to have Vail here from Coca-Cola.

Betsy Otto is the Director of the World Resources Institute's Global Water Program, no small portfolio of work. Over the past number of years at WRI, she has led development of a global risk assessment and mapping tool for water called Aqueduct.[2] It is designed to inform the private and public sectors in their investment decisions and water management decisions. She looks to engage across sectors.

1. Visit ELI's website at https://www.eli.org/award-dinner/business-water-2016-corporate-forum for additional information about the seminar and the panelists.
2. WRI, Aqueduct, http://www.wri.org/our-work/project/aqueduct.

When I first met Betsy, she was at American Rivers. So, you went from the U.S. waters to the globe's waters, Betsy.

Stuart Leeth is the Vice President of Regulatory Affairs and the Chief Sustainability Officer for Smithfield, the world's largest pork producer and pork processor. He leads companywide regulatory and compliance initiatives and directs the company's sustainability program. He also focuses on environmental performance, animal welfare, worker and food safety, and community development. He's responsible for legal matters for the company's pork production business and serves as Vice President of the Smithfield Foundation, which provides educational scholarships to the dependent children and grandchildren of Smithfield employees.

Dawn Rittenhouse is the Director of Sustainability for the DuPont Company. She joined DuPont in 1980 and has held many positions, including in technical services, sales, marketing, product management within the packaging and industrial polymers business, as well as the crop protection business. In the late 1990s, she began working in the corporate organization to look at sustainability issues, integrating strategies for sustainability into business management. She currently leads DuPont's efforts at the World Business Council for Sustainable Development and United Nations Global Compact. She is on the Sustainability Council at Penn State's College of Business and plays many other consulting roles.

Michael Mahoney is the Vice President and Assistant General Counsel and Chief EHS Compliance Counsel for Pfizer, a well-known pharmaceutical company. He joined Pfizer in the late 1980s, and in addition to being EHS counsel, he has also worked in and led Pfizer's sustainability program. In his current position, he is responsible for EHS compliance, oversight, and support to Pfizer operations across the globe. He is a member of Pfizer's Environmental Sustainability Steering Council and provides strategic advice on its programs and directives. He also launched Pfizer's climate change program in 2000 and continues to be involved in its development.

Again, I hope you all are as thrilled as I am to have such an incredible panel. Let me first start by asking each of the members here to reflect a little bit on something that might be the most obvious question, which is how water management intersects in your work. How does it intersect at Coca-Cola, Vail?

Vail Thorne: It intersects every day and all day both internally and externally. As Alex said, we are a water company. I mean we may produce almost every kind of non-alcoholic beverage, but all of those products require water, so we are constantly thinking about water in terms of resources, risks, economics, social impacts, and the law. That's the internal perspective.

Externally, because we use a lot of water and we are visible in that respect, and because we have one of the most recognized brands in the world, people want to talk to us about water, whether in a positive way, such as when a government comes to us and asks us for our perspective, or in a negative way, such as when a nongovernmental organization (NGO) targets us for a campaign. So, water is something that we think about every day all day long.

Alexandra Dunn: Betsy, how about at World Resources Institute? How does water management fit into your day-to-day thoughts?

Betsy Otto: Well, obviously, that is what I work on as I direct our freshwater program. So, maybe I'll just flip it a little bit and talk about how we see business having an impact on water resources in the work that we do. This is something that we do a lot of work in at WRI, which, by the way, is an environment and development think-tank. We work in a lot of thematic areas, water being one of them.

I think what is really interesting in the work that we do with companies—including Coca-Cola and all the companies who are up here—is that companies are really seeing the impact of poor water management on their businesses, on their direct operations, on their supply chains, and even at the other end of the value chain and how consumers are using water or not as it relates to their products. Investors in companies are very much interested in where they see water-related risks and are beginning to pay a lot of attention to this and to ask very pointed questions of companies about where they may be facing water challenges.

The other thing that I think is really important is that businesses will take action in ways often that governments can't, either because the governments are politically gridlocked, or they don't have the capacity to do it, or they don't know what to do, or they don't have the political will to do things differently and manage water more effectively. So, we think there's a real opportunity to engage with business and government within watersheds and within river basins to manage water more effectively.

Alexandra Dunn: That makes good sense, and it is interesting that businesses are making choices where politics prevent the government from doing so. Stuart, feel free to phrase the question however it suits you. Water management, the business of water, how does it play into your work?

Stewart Leeth: I think the question is good. I can't say that water is our main ingredient; that is actually a great phrase. Meat is the main ingredient for us. We make ham, bacon, and sausage. If you don't know anything about the production of that type of food, freshwater is critical to food safety and quality. It's also critical to sanitation. Every day after a plant shuts down from production, there's a sanitation shift that breaks down every piece of equipment and cleans to U.S. Department of Agriculture (USDA) specifications. We have USDA inspectors in meat plants every day, and so the supply of clean water is absolutely essential to running the next day. We think about it all the time, just like at Coca-Cola. The same thing is true on our farms all across

the United States where we raise a lot of animals. They drink water just like our employees do, and a fresh and clean supply of water is critical.

Those things intersect with and are right in the heart of our sustainability program, which encompasses environmental issues, food safety, and animal care.

Alexandra Dunn: I think what's interesting is how you have food safety, animal care, and water stewardship all together. It might be that each company has to package its water portfolio differently depending on its line of work.

Stewart Leeth: Absolutely.

Alexandra Dunn: So, Dawn, how about for DuPont? As chief of sustainability, how are you thinking about water management/water business in your day-to-day work?

Dawn Rittenhouse: Unlike other panel members, DuPont is a very diverse company. We have everything from seeds, to polymers, to fibers, to specialty chemicals. So, there is not a "one-size-fits-all" for our businesses. We are also very global. We operate in over 90 countries. So for us, it's become a challenge as to how we think about the complexity of that. Our company was very early in terms of setting voluntary commitments around things like reducing greenhouse gases. So, in 2005, when we set our water goals, we kind of took that same approach—we will just reduce. However, we realized very quickly that while that might make sense for greenhouse gas emissions, it doesn't make much sense for water use, since that is a very local issue. You have to think about the kind of water you're using, where it is, and the impacts on the community where you operate. Hence, a lot of the work we have done with WRI is to help us much better understand that. So, that's how DuPont is now trying to think about water impacts.

Alexandra Dunn: Excellent. And that diversity of products probably presents some challenges in getting each business unit thinking about water the same way that corporate as a whole wants to think about water. So, that might be something to explore. Michael, how about for Pfizer? A big ingredient in drug manufacturing is water, I would assume.

Michael Mahoney: Not as big as water is with Coca-Cola, but it is obviously a critical ingredient. The intersection for me really has come through my work in the sustainability program. I'm very fortunate at Pfizer that they have given the environmental attorneys an opportunity to be strategic partners with our technical people. We've been working with our global EHS group for years on the strategic direction of the program. I was very fortunate to be able to work closely with the team that started our climate change program and then a number of years later to establish our sustainability program. In fact, the lawyers actually developed the program and then ran it for a year. So, I was able to experience building a program and then running it.

But we recognized after years of working on climate change and seeing the impact of climate change on health that water was critical for good health, and so water became an important strategic pillar in our sustainability program. I think it's really more than just the intersection in my work. It really intersects with our company's mission as a health care company. There are so many diseases that are the result of a lack of access to clean water, so it really intersects with the company's mission to work together with others for a healthier world.

Corporate Social Responsibility and Access to Water

Alexandra Dunn: I really appreciate, Michael, that you were the first to use the words "climate change." I don't think anyone intentionally avoided using them, but that was a good thing to bring in here. The flyer for the program talks about some of the drivers that are making us have to think more critically about water, climate certainly being one. I'm also intrigued at the connection between health and access. So, you have done a fabulous job of transitioning us into the next area that we wanted to explore: Access to water.

We hear so much every day about women, children, families around the world who don't have access to clean and safe water and children who die of waterborne illnesses daily. So, the concept of access to water is a conversation very much embedded in the human right, the human dignity of life. What is the connection between that and corporations who are out making products and building businesses? How do we connect corporate social responsibility and access to a supply of clean water? And I'm going to ask that of Betsy first since you're working with a lot of companies.

Betsy Otto: First, I'll say that WRI works more on water resource management issues than we work on water sanitation issues. There are dozens or maybe hundreds of NGOs that do a really, really good job of working on those issues. But that's actually, I think, an interesting point of departure because you cannot really separate the two. If we don't manage water resources and water availability more effectively, what happens is that people lose the access to the water that they do have.

But just to provide some context, many of you are familiar with the Millennium Development Goals that were developed by the United Nations and put into effect in 2000.[3] By 2015, they were 15-year-old goals, and we had made very significant progress on better access to clean water. Now, there has been some backsliding. Some of those projects actually don't endure; they don't continue to

3. *See* United Nations, Millennium Development Goals, http://www.un.org/millenniumgoals/.

provide clean water. We didn't make nearly as much progress as was intended or hoped on sanitation.

So, the new Sustainable Development Goals (SDGs) that go from 2015 to 2030 continue to address those issues.[4] And for the first time, the goals address some of the broader water resource management questions. This was honestly in part at the behest of the private sector that saw how closely interlinked those two were. Many governments and NGOs were making the case as well. So, that's just something I would like to underscore.

I first want to paint a picture for you of what many of you are familiar with in the developing world. We know the problems that we have in this country with Flint, and the lead in water, and failing and crumbling infrastructure. Many of you are well familiar with that. But imagine if you were in a major metropolitan area, a major business center like Mumbai or Bangalore, and only 15% or 20% of the population is connected to any kind of formal water infrastructure. So, imagine if that were Washington, D.C., and there was no formal sanitation system, and there was no formal water access system. Everything is self-provisioned, including for multinational companies and for other big companies that are based in those cities. It's kind of a Wild West or free-for-all in how you're going to manage that. Unfortunately, sometimes it's a bit of a race to the bottom of the watershed or the aquifer because it's whoever can get to the water first. So, that is, I think, a really, really big challenge, and businesses operate within that context.

The last thing I would say—and I think it affects some of the businesses here, but certainly affects others that have large work forces, especially large female-centered work forces like apparel manufacturers—is that access to water and sanitation is a huge issue. With respect to the impact on health, if there is a lot of absenteeism, either for mothers or for their kids, or there are personal hygiene issues, lack of access to sanitation and clean water creates a lot of problems that actually directly affect those businesses.

Alexandra Dunn: Those are some great points. So, when you talk about it becoming a race to the bottom of the aquifer, one would think that corporations could outpace the average citizen living at the borderline of poverty. So, Vail, how have you at Coca-Cola looked at this issue of corporate social responsibility and access?

Vail Thorne: First of all, we are also members of the United Nations (U.N.) Global Compact.[5] There are about 10 principles that companies sign onto when they commit to the Compact. One, of course, is environmental responsibility, but another is about respecting human rights. The human right to water has not yet become implemented by treaty, although the U.N. General Assembly has recognized it in the last several years, but it is still very much a part of the equation. So, in line with the U.N. Global Compact, we take what we call a human rights approach to our water access, use, and other things. I'll give you some examples.

First, we do our own due diligence when we are deciding where we're going to locate a plant. We have an internal standard, and one of the first things that we do is examine the water resources both in quality and quantity. That examination is not just about our usage, but a part of it is about the community and whether there will be a negative impact. So, our internal policy is we will not a site a plant anywhere that would negatively impact the community.

Once we've decided we can be there, what do we do? The Coca-Cola system has 863 production facilities, I think, around the world. We operate in 200 countries. So, we are pretty much everywhere. Each one of those production facilities has to do two things. First, the facility does what's called a source vulnerability assessment that is performed periodically and that examines a lot of factors about the water in both quality and quantity. The assessment encompasses not just our issues, but also the community's.

Once they have done that assessment, they have to do what is called a source protection plan where they come up with a way to make sure that the resource stays sustainable for everybody. They work with the community, whether it's tribal leaders, government leaders, NGOs, or whoever that is.

Then, there's another component—there are many more actually, but I'll just stop with this last one. When people look at a Coca-Cola, a lot of people say, well, I'm selling water for profit and I shouldn't be allowed to do that. There are a lot of people in the world that believe that. So, we have a program called Replenish where we are replenishing all the water we use in our global sales volume. Whatever water we use is actually going back into the community and our support of locally focused community water projects helps balance out our use of water in the product. Water access and sanitation is a big part of that as well.

Alexandra Dunn: It's making me think a little bit about forestry and the idea that as they took a tree, they would replace a tree. There are probably arguments about how fast that little tree would grow compared to the large one they took down. But I like that concept: what you take, you replenish so that it is there for future generations. Anyone else on the panel want to comment along these lines? Dawn?

Dawn Rittenhouse: I think Betsy raised an interesting point about the issue of employee safety and health. Recently, within the last two years, the World Business Council for Sustainable Development (WBCSD) has created a pledge called the Wash Pledge.[6] That is basically a commitment for companies to provide access for their employees to adequate safe water and sanitation in the work area. I think it was real eye-opener for a number of

4. *See* United Nations, Sustainable Development Goals, http://www.un.org/sustainabledevelopment/sustainable-development-goals/.
5. *See* United Nations, Global Compact, https://www.unglobalcompact.org/.
6. WBCSD, The WASH at the Work Pledge, http://www.wbcsd.org/Clusters/Water/WASH-access-to-water-sanitation-and-hygiene/WASH-at-the-workplace-Pledge.

CEOs who are members of the WBCSD to see how big an issue that still is for companies globally. I think they've got about 45 companies who signed onto that pledge. But I think it is still a big challenge, particularly as you go to places like India and other developing countries.

Alexandra Dunn: Michael?

Michael Mahoney: The only thing I would add is that I think the SDGs will guide our program. Goal number three is focused exclusively on health, but we see health associated with all of the goals either directly or indirectly.[7] We are fully supportive of those goals, and we have a lot of efforts underway that currently are focused on goal number three, the health goal, and goal number 17, which recognizes the need for partnership and collaboration between the private sector, the public sector, and other stakeholders in order to implement the goals.[8] So, we're looking at what we've done and looking where we can do more in those two areas and in the other goals. I think it energizes the company. It really does. We've been discussing how employees can become engaged in implementing the goals. There's a big effort now to engage employees at companies so they can have a part in the effort to meet the goals.

Alexandra Dunn: Stewart?

Stewart Leeth: So, let me just add, and this is sort of a western viewpoint, our company sells globally, but most of our plants and farms are in the United States, Europe, and Mexico. The challenge for us when we started out working on sustainability issues was creating a mindset that water is a resource instead of a utility bill that must be paid or a capital expense for a new well. The sustainability program set up measurement tools to look at that.

So, the challenge for us was to make that shift, because water was plentiful, particularly in North America. There are challenges here as well, but we don't have some of the challenges India does, for example. But that shift was sort of a game changer for us. We now have whole teams of employees at plants who are focused voluntarily on figuring out ways of reducing water use, and they have succeeded in reducing it by tens of thousands of gallons a day. It's neat to see that sort of effort come to fruition from a grassroots level.

Alexandra Dunn: I heard through most of the responses about voluntary pledges, campaigns, the SDGs. In my day-to-day work, I work with people who write highly enforceable and rigid permits. They're about numbers and making sure things are actually happening. And if they don't happen, there are consequences; there are penalties; there are actions; there is enforcement. Generally, how do you make something real and make it happen when no state actor is going to hold you to it if you missed it? Any of you want to comment on that?

Dawn Rittenhouse: You mean how do we make the company feel committed to it voluntarily?

Alexandra Dunn: Committed to it, yes. But if you miss it, will something bad actually happen to you?

Dawn Rittenhouse: Well, I would say that there is a belief that when the CEO makes a commitment in front of an external audience, it becomes a brand issue and there are consequences for missing it. Now, that being said, I think it all depends on how aggressive the company is in trying to meet its commitments. A company that makes a really huge voluntary commitment and misses it by a little bit, but took a lot of steps to meet it probably isn't going to have as many issues as a company that misses it but apparently didn't do anything, in which case there are reputational concerns. More and more we are getting questions not just from customers, but from investors and others asking, "What are your commitments and how are you doing in meeting those?" They are starting to look at that as part of their expectations for how they are investing or who is in their supply chain.

Betsy Otto: You really raised a good point here. It's very challenging in a lot of places, including the United States. Under the Clean Water Act (CWA)[9] we have a process for setting very good water quality standards and for enforcing those standards. But we don't have that on water quantity. Quantity is to some degree built into ambient water quality standards and even into some permits. But it's kind of remarkable that, unlike many countries, we don't even have a Ministry of Water. We have over 20 separate agencies across the federal government that are supposed to be addressing this.

And it is challenging for the states too, even in places like California, which is in the fifth year of a bad drought. They were finally able to pass some initial planning through the Sustainable Groundwater Management Act effort to come up with some strategy for figuring out what is sustainable yield in sensitive groundwater basins.[10] But that is a long way down the road. I mean they've now got a process in place for getting to something that's actually enforceable.

So, I think what's really challenging about this is for companies to set targets that are actually context-based. Part of what we're lacking here is a cap and an understanding of what is the sustainable yield, either for surface water or groundwater, or conjunctively between the two. That's really challenging to understand the hydrology of that. In most places, we have no idea. It's like withdrawing money

7. Goal number three is to "ensure healthy lives and promote well-being for all at all ages." *See* http://www.un.org/sustainabledevelopment/health/.
8. Goal number 17 is to "revitalize the global partnership for sustainable development." *See* http://www.un.org/sustainabledevelopment/globalpartnerships/.
9. 33 U.S.C. §§1251-1387, ELR Stat. FWPCA §§101-607.
10. The Sustainable Groundwater Management Act is comprised of three bills: AB 1793, SB 1319, and SB 1168. For more, see http://groundwater.ca.gov/legislation.cfm.

out of your banking account when you have no idea what the balance is. And we're doing this all over the world, right? Until you actually are willing to say, this is what we're going to say the balance is, and then we're going to look at how we're withdrawing from that balance, and who is actually withdrawing what, it doesn't really become real. So, we've begun a project with Mars Incorporated and with some other companies to set context-based targets that are actually developed around the SDGs. So, companies are setting their water reduction targets but are also asking *where* should we be doing that and *where* should we be doing the replenishment efforts so that it's meaningful at a global corporate level but that it also makes a difference on the ground.

Dawn has made a reference to the Aqueduct tool, but we haven't really talked about it. Part of why we developed Aqueduct, a totally open source tool that's using the best globally available data sets, is to provide a tool that everyone can use—NGOs, academics, governments. Many, many companies do use it. Right now, about 50% of the companies that report water disclosure under the Carbon Disclosure Project—and kudos to them, it's a voluntary initiative—use Aqueduct, although they may be using other tools as well, to understand what is the available sustainable water yield, what is available, and what is the total demand in any given watershed across industry, municipal, and agricultural use. The other factor here is that any individual company is operating in a broader competitive landscape, trying to get water, just as farmers and individuals are. So, it's a very complex picture, but what we need is a willingness to actually set those targets.

The last thing I would like to mention is something very interesting that China is doing. China, of course, is really, really challenged around water—it's got 20-plus percent of the world's population and less than 8% of the total water resources. Climate change is really having a major impact, and China has huge water quality problems so a lot of the water that they do have is utterly unusable. They have set what they call their three red lines. They have said we are going to reduce water demand per unit GDP to "X." In certain basins, they've set a cap—a limit on how much water can be withdrawn. So, they are actually trying to figure out how to do this, and companies and others are going to have to operate within those limits.

Alexandra Dunn: Vail, please comment.

Vail Thorne: I was just going to say I agree with all those points. There are many pressure points for companies, whether they are internal, about brand, what your chairman can say, or about investors. But governments are starting to take action. They are starting to figure out and understand that water is key, whether because of climate change impacts, or their populations are exploding, or, as in China, where they reengineered a lot of water resources that prevents the water from going to the places they used to go. So, governments are starting to take action and we have some clear, great examples.

In this country, we have the Great Lakes Compact, which basically says: "Don't steal my water and take it somewhere else."[11] All those states have to figure out how to decide, for example, between the farmer in Ohio who needs water versus the Pfizer plant wherever it may be up north. The European Union has taken action. It has a directive called the 2000 Water Framework Directive, which requires all the member states to rethink their water abstraction laws and to control abstraction.[12]

Another approach is that a number of countries are putting water rights into their constitutions. Mexico and South Africa are great examples where they are guaranteeing their citizens a certain amount of water and where they are establishing, as mentioned before, water ministries. Just to tie it up, governments are starting to take action, and the industry is starting to pay attention and to try and work with the governments to be part of this solution and not the problem.

Alexandra Dunn: In just thinking about the role of ELI, which "makes law work for people, places, and the planet," the evolution of law governing water extraction strikes me as a burgeoning field that ELI can investigate, and there are probably a variety of ways that it can be structured. Let's turn to our first question.

Audience Member #1: I have a question regarding the Mekong River and the water situation all along the Lower Mekong Basin, which is affecting millions of people in many different countries. It has to do with the use of water from China at the upper part of the river. Betsy just mentioned that China is well aware of its own water problems and that it has set the red lines for its own use of its own river. However, China is already putting dams and diverting water from the lower Mekong River to their areas. Is there a law that would allow oversight by the global community to help the people in the lower Mekong Basin? Because this is an existential situation. It's their livelihood downstream.

This year in particular, the lower basin has been very affected—including Laos, Cambodia, Vietnam, and Thailand, especially Vietnam at the lower basin. We have no water in the rice paddies and all the fish are dying. We have salt water that comes in. There is no way for a livelihood there, so this truly is a cry out for help. Is there anything that has been observed and is being done?

I would also like to ask a question of Vail. I know that Coca-Cola has been working with some of those countries, China and Southeast Asia. Have you been in Vietnam? Is

11. For information about the Great Lakes-St. Lawrence River Basin Water Resources Compact, visit http://www.glslcompactcouncil.org/Agreements.aspx.
12. Directive 2000/60/EC of the European Parliament and of the Council Establishing a Framework for the Community Action in the Field of Water Policy, *available at* http://ec.europa.eu/environment/water/water-framework/index_en.html.

there any concern, anything in particular that you have set as prime leaders to help the people there? Also I'm not sure if Smithfield now is under the control of China or is still a U.S. company. If it is a U.S. company, I would beg you to implement our values, but if it is now under Chinese governance, I would also ask you to ask the owner of Smithfield to think about the long term of the company.

Alexandra Dunn: So, what I'm hearing are some specific questions, and I don't know if the panel will be able to address those specifics. If you are, feel free. But I'm also hearing about intergovernmental cross-boundary water management issues at the heart of this question. I know our wild, wild west in the United States has dealt with this by simply saying, "Use as much water as you want, and too bad for the person downriver." But that is obviously not sustainable. So, whoever feels like they want to chime in here, please do.

Betsy Otto: I'll take an initial crack. Thank you for your question. These intergovernmental issues are really challenging. Really this question should go to the experts at ELI who may know far more than I about the legal statutes or legal opportunities. So, I'm not going to speak to that; I'm not an attorney.

I will say that from a water resource management perspective, interestingly, the history is better than you might expect because there is actually international transboundary cooperation through river basin organizations. These organizations are helping to create collaboration and cooperation and reduce conflict. That's little solace in a situation like you're facing right now in the Mekong, however, where China is not a party to the Mekong River Basin organization. China is at the headwaters, and it has very strong plans for what it wants to do, certainly with water management and with energy development.

China is not alone in this. Egypt and Ethiopia are in the midst of a very big fight over Ethiopia's building of the Renaissance Dam, a huge hydropower dam at the headwaters of the Nile River. Egypt has at various times even threatened to bomb the dam. Right now, they are in the midst of cooperative talks about how that will be managed.

So, there's no simple answer to his. But all I can say is that, honestly, these conflicts are going to continue to get worse because of climate change and because of growing demand. We're going to have to find a way to continue to manage this well.

The Jordan River actually is a really interesting case that is instructive. Because of some actions that Israel has taken on water management as sort of a circular water economy, it has taken some pressure off of its demand from the Jordan River and it's made it somewhat easier to manage that as a transboundary basin. But it's a complicated question.

Vail Thorne: With the international issues, everyone needs a rational and reasonable share of the resource, but that's between the nation states and the U.N. So, I'll leave that. But I'll tell you what our company, Coca-Cola, is trying to do in the Mekong. We have a very large worldwide partnership with the World Wildlife Fund, and we are working directly in the Mekong to try and support that watershed and preserve it and enhance access and agriculture, as you mentioned. So, we are trying to assist in this area, and we're working with the World Wildlife Fund to do that.

Stewart Leeth: In terms of companies looking at their resources, the same can be said about our parent company. You asked about the ownership of our company. My company, Smithfield, is an American company. It's owned by a publicly held company based in Hong Kong. We have a sister company in mainland China that does the same thing Smithfield does here in the United States. We interact with that company to discuss what we do at Smithfield and we compare and interchange ideas and information about how we access our resources. So, that's what's happening in China, at least with respect to our company.

Alexandra Dunn: We are going to talk later about social values. We are talking now about managing water around the world and the business of water. Different cultures and societies value water differently, and they have different approaches to managing water. Does that present a challenge to a company that has operations in multiple nations? How do you work with the culture of that country and their people around water issues? It's probably an imprecise art, but please elaborate if you can.

Dawn Rittenhouse: I liken this back to safety. For DuPont, safety is critical. It is such an important part of our culture, but as we went global, we found it was not an important part of a lot of other cultures where we worked. So, you have to go in saying that every life is important and every injury is preventable; therefore, this is the way you work if you are going to work at DuPont. But you also at some level have to respect the local customs. So, how do you work that out with them? I think water is a very similar thing, in terms of you have to bring the value system that connects the corporation, but you have to be able to implement it in a way that works locally with the culture.

Vail Thorne: Let me add to that. There is a body of law called "water rights" all over the world. You have to understand what the local basis is for the water right. Sometimes, the basis is tribal, sometimes it's religious, and sometimes it's state. Sometimes, it is landowner-based like our riparian system here in the United States. Understanding the basis for the water right is very important because that will help guide you in interacting with the local folks and giving you a better appreciation for what that resource means to them and then how to manage it.

Alexandra Dunn: We have another question.

Audience Member #2: I have a question about data. It's nice to see that at the corporate CEO level, the importance of water and the risks associated with water are really getting some serious attention now, even at the investor level, as Betsy said. But you all have acknowledged that water is local, complex, and multifaceted. When you take those local, complex, and multifaceted issues and bring them up to the CEO level or the investor level, how do you use data to simplify it down so that you have clear metrics you can track that are meaningful? As Dawn mentioned, you can't just track water use and say we want to reduce, because it is more complicated than that. So, what data are you all using to report at the senior level and at the investor level your sustainability in water?

Alexandra Dunn: Who wants to take that first? Mike?

Michael Mahoney: We have actually set kind of a global target for reduction, but we have recognized, as others have, that it is a local issue. The focus really needs to be on those areas where there is current stress and on where stress is anticipated. We have worked with WRI to map our operating facilities. We have about 80 facilities around the world, and we've plotted those on the Aqueduct map to understand where the current problem areas are and where they will be years down the road. That allows us to focus our efforts on those sites that are stressed or predicted to be stressed. It really has opened up a number of different ways of approaching it. It has forced us to require our facilities in stressed areas to do very detailed water assessments and look for opportunities for reductions, and they are also required to bring those projects up to management.

But the other key thing concerns business continuity and the potential impact on our business in those areas where the system is so stressed that you might not be able to get product out the door. That scenario has occurred in areas like Brazil recently, where we actually were looking at options to deal with the issue. So, that gets the attention of senior management, but it really is all about understanding where your facilities are and the adequacy of the water sources in those areas.

Stewart Leeth: Let me just add to that. Smithfield has published an integrated sustainability report for about 14-15 years. It includes data that our team collects on topics such as resource reduction targets, analyses and assessments that we do for water stress, and many other things. We report every year, and it is integrated with all of our public reporting. That's basically a function of that report. It goes to the c-suite, and the CEO reads it as do the senior business managers. It is a tool that we use internally; it's not just an external report.

Dawn Rittenhouse: Ours is similar. We use Aqueduct, and beyond just determining whether water is scarce and an area is stressed, it allows you to add in other things so you can look at the social dimensions in that community. Do they have the economic ability to solve water problems? Have there been droughts? Are there other regulatory issues? So, it's a more robust risk tool. We've highlighted 21 sites that the senior level tracks as to how they are making progress.

Vail Thorne: In terms of the data we bring upstairs, we track what we call the 4 R's. Reduce, which is all about water use efficiency; we're constantly putting pressure to reduce water use. Reuse the water that you have in the plant; don't let it go out the door, reuse it. Replenish, we talked about replenish earlier. And then Risk. As I mentioned before, we do periodic risk assessments all around the world and it's multifaceted. We bring that data upstairs so that leadership can start making decisions based on data about where to put pressure and where to act.

Betsy Otto: That's a great question. When I talked about Aqueduct earlier, I should have said that we are now heading toward Aqueduct 3.0. But the original version, Aqueduct 1.0, was actually based on data that was donated to us by the Coca-Cola Company. They had done this assessment globally and after they used it thought it would be useful as a public resource. So, we were able to take that data as a starting point. While we've gone well beyond that now, it was very helpful to have at the beginning.

I've been surprised, honestly. Companies have very good information and data. What's often lacking is the contextual information and data, even with Aqueduct. We take advantage of the best global data sets. But, for example, on the demand side, we use demand data that's reported by countries to the Food and Agriculture Organization, an organization under the U.N. aegis that has a big water data center called AQUASTAT.[13] We then disaggregate the data spatially based on some methodologies that are described on our website. You can see how we do it. We know it's imperfect.

For example, we did a comparison of the analysis we did for China with actually reported withdrawal data—official Chinese data that they won't let us release, although they will let us release the maps that come from that information. We had way underestimated demand in most catchments relative to what they actually gave us in terms of withdrawal data. A lot of countries don't track withdrawal data very well, or they don't even compile it, so this is a really big ongoing challenge.

Two last things. The frontier now is remote sensing information. Work is starting to happen on groundwater management through the GRACE satellites. These are the NASA satellites that orbit the earth and send signals back and forth. They are able to take really sensitive measurements of the earth's gravitational pull, and based on that,

13. For more on AQUASTAT, visit the U.N. Food and Agriculture Organization's website at http://www.fao.org/nr/water/aquastat/main/index.stm.

they are able to figure out what's happening to groundwater levels, which is amazing. They've done some analysis on this for California, the Middle East, and India. So, we have a long way to go, but I think that's going to be the Holy Grail.

Another thing that may be helpful in the future are the SDGs. For the first time, all countries, not just developing countries, will have to report against these. The U.N. is about to wrap up the methodology and the indicators for what countries have to report on, what the metrics are, and how they have to track those metrics. The United States and European countries are going to have to report against these, and so, for the first time, there will be a kind of a data set, a report card, if you will. We're not there yet, but within five years, it could be very interesting to see what that provides.

Dawn Rittenhouse: I would like to add that there are 169 of those SDGs, so it's not just a few that we are going to have to be reporting on in every country.

Betsy Otto: No. Fair point. It's a lot.

Water Infrastructure

Alexandra Dunn: We're going to now talk about infrastructure. Depending on where your company goes, you may find the infrastructure in varying states or conditions. Certainly, a business can build the infrastructure that it needs to produce the best product, the most reliable product, the safest product for its customers. But you may be doing that in a place where general infrastructure for the population is lacking. While it is not necessarily a corporation's obligation to build infrastructure for people in countries where they are doing business, I wonder if any of you are exploring or partnering with NGOs that might be working on what we might call an infrastructure gap.

Stewart Leeth: I can offer up an example. I know there are companies worldwide that do this same sort of thing, but this actually happened in the United States with our company. In North Carolina, we have the largest pork plant in the world in a town called Tar Heel. It was built in the 1990s, and was initially built with groundwater as the water source. The plant needs about 4 million gallons a day to process the products that are made there, and the water system there was stressed. Soon after the plant went into operation, the state and local authorities, localities, and company officials came together and drew up a memorandum of understanding that we conduct an assessment and come up with a long-term alternative. That was a multiyear process.

In the end, we helped the local water authority build a freshwater plant that would take the place of the groundwater system. We staffed it as an independent contractor. It's on our property, but the local authority owns the water treatment plant. It treats water from the Cape Fear River. The idea was that we would be their largest customer, but it also would serve that whole region, so other localities could tap into it. It's a 30-million-gallon a day plant, and it has become a resource for the whole region, not just for us. So, that's an example right here in the United States. I'm sure that happens everywhere, but it's a great example of localities and authorities working together with a company to solve an issue like that.

Betsy Otto: By some estimates, there is a $10 trillion to $50 trillion water infrastructure gap globally. You also have countries like the United States where the infrastructure is really aging. If you add that in, the gap becomes really mindboggling. So, we are going to see more public and private partnerships of the sort that you're talking about.

I would also like to highlight another interesting area involving partnerships, and that is natural infrastructure. We are doing a project with The Nature Conservancy, a number of different organizations in Brazil, and FEMSA, the largest Coca-Cola bottler in the world with business ventures across Latin America. Essentially, the project is to identify high-value areas in the watershed for restoration and protection to reduce downstream sedimentation and water quality challenges. This is just dealing with water quality. Opportunities surrounding quantification of water flow are tougher challenges, although we also know that can be really substantial. So, projects involving natural infrastructure is an area that I can think we're going to see much more interest in. As Margaret and others know, there's a lot of interest among investors in making investments in those upstream areas, whether they are private companies or institutional investors.

Another area involving partnerships that I think is really burgeoning involves wastewater treatment. There are a lot of cogeneration and other co-located business opportunities associated with managing wastewater differently. Right here in Washington, D.C., DC Water has put in a new CAMBI system, which converts sludge left over from treated sewage into electricity using a very efficient way of capturing and reusing methane. The project is at the point now where they can completely run the Blue Plains plant based on their own methane capture. In their plans, they would bring in organic waste from restaurants and food processors to add to that. DC Water is Pepco's largest customer, and it is eventually going to go off the grid and potentially sell power back to the grid. When you think about what that would mean for greenhouse gases, energy demand, water demand, and also the potential for water reuse and replenishment, it's enormous.

In China, WRI is working with the Ministry of Water Resources and with the Housing and Urban Development Agency, which manages wastewater treatment plants, to develop a policy that they will only put into place sludge-

to-energy plants.[14] They have a pilot program for 100 cities because they can do things in a big way there. Just the climate and greenhouse gas benefits alone are enormous. Plus, businesses take that compressed natural gas, the additional natural gas that can be developed from that technology, and run taxi systems and vehicle fleets. There are a whole lot of things that can be done that we're seeing more and more companies and businesses interested in partnering with municipalities on.

Alexandra Dunn: As I listen to Betsy and others, I am thinking that we often are very siloed in the way we approach issues. Even this panel is slightly siloed, although one of my colleagues calls them "cylinders of excellence" as opposed to siloes. Here, we are talking about the business of water as if water sits by itself as a business question, separate from energy, product, sustainability, and other impacts. So, when you all think about the business of water, is it truly integrated into a much broader portfolio? Mike?

Michael Mahoney: From our view, it is. Again, the example that I think that is probably a good one is how water is so important for sustainable access to medicines and to cures. For years, we've been working with other stakeholders to eradicate trachoma. Trachoma is a bacterial disease that causes blindness. Trachoma affects potentially 200 million people in the world. There are about two million people that are blind because of trachoma, so we have been working with other stakeholders to help eradicate that disease.

The World Health Organization has come up with an approach to address trachoma called SAFE. The trachoma bacteria actually damage the eyelid, which causes the blindness. So, the "S" in SAFE stands for "surgeries" that are needed to correct the damage. The "A" is for "antibiotics," and that's really our role. We provide an antibiotic that is very effective in treating the disease. The "F" and the "E" are both related to sanitation and clean water. F is for "facial cleanliness," and there is a whole effort to teach people in developing countries proper hygiene practices to properly cleanse so they don't spread the disease. E is for "environmental change," and it involves sustainable water and sanitation supplies.

We are working really hard to help end the disease by 2020. We've donated over 500 million doses of the antibiotic, but what we and others who we are working with recognize is that to have something that is sustainable, the E (environmental) part of it and the F (facial cleanliness) part of it really have to progress further. So, we're working with our partners to come up with ways to bring more people into the alliance so that we have a sustainable program where we're just not donating the antibiotics and yet the disease keeps coming back in the future. We want something where the E and the F are dealt with as well. It's a huge effort, and it's all connected.

14. For more, visit WRI's website at http://www.wri.org/our-work/top-outcome/chinese-cities-begin-turning-sludge-energy.

Water Source Protection

Alexandra Dunn: So, it is connected and involves a preventative approach as well as treatment. One question that may be related to this is source water protection, which would also include quantity protection. Would any of you like to comment on how you ensure safe and clean sources of water for your products, but also how you prevent the deterioration of existing water sources?

Vail Thorne: I won't tell you what goes on inside the plant, but basically we take the water we get, wherever it is from, even if it's from a municipal pipe, and we strip it down to like it was before dinosaurs even walked on the planet to make sure that it's safe for everybody. Externally, we do protect existing water sources. The company has invested over a billion dollars over the last number of years in wastewater treatment. Even when we are not legally required to do it for our plants overseas, our internal standard requires that every plant has to have a wastewater treatment system that treats to a certain level, at least to support aquatic life. Our company facilities were all compliant, but some of the bottle facilities weren't, so we have invested in that.

We're investing as well in our program called Sustainable Agriculture. As you might imagine, we have a massive agricultural supply chain all around the world, so we're working with lots of farmers to make sure that they are not impacting water, whether it's quantity or quality. I will give you an example that does not really involve freshwater, but shows how we are working with our farmers, and that involves the sugarcane fields in Australia, a massive industry for Australia. A lot of the bleaching that's going on in the Great Barrier Reef is caused by the runoff from those sugarcane fields. We are working with those farmers to try to prevent that runoff. It's part of the equation.

Dawn Rittenhouse: We initiated a conservation program, probably in 2007, called Clear Into the Future. It was focused on the Delaware estuary, which was where DuPont was founded, but it was holistic and looked at the whole watershed. We invested in fellowships to universities to do research on the estuary and then grants to NGOs to actually do projects that would protect the estuary, going all the way up to New York to the headwaters of the Delaware. We established initiatives to educate youth so kids would start to have a better understanding of the impacts of what they do and the effects on the river. We also got our employees engaged in volunteering, planting trees, and other activities. So, we tried to think holistically. Now that we have developed this template of how to do a project, we are looking to go out to other water systems and places where we are involved to duplicate that effort, maybe a bit smaller since Wilmington is the headquarters—it has 5,000 people there—but in ways that we can take the best learning from this project and figure out other places to invest.

Alexandra Dunn: I like that idea of build it once and then replicate it in other places and maybe even share it with other businesses. Betsy, any thoughts here?

Betsy Otto: I just think we need to get more creative—these are some really good examples, and I think there are others—on how to rely on the interest of the downstream company or municipality to help the upstream landowners or water rights holders. It's not simple, but we do this all the time in other endeavors, and we can do it here too. If we want to have source water protection, and if the downstream beneficiaries are willing to pay or provide some mechanism for some kind of transfer payment to change the activity, the land management, or the water management that happens upstream, there are many examples of how this can work and is working now. I think the challenge is to figure out some mechanisms for scaling it up.

As I mentioned before, many folks are looking at how to bring financing into this picture. There are a lot of financial entities that would like to issue green bonds that have more cachet in the market. There are institutional investors that want to make a decent return on pension funds, but also have a really strong environmental screen and so want to invest in something greener. How can we bring those resources to bear? I think that's a very rich area for the future.

Alexandra Dunn: Let me ask if any of you all have a question in the audience.

Audience Member #3: A lot of the issues we have with water quality and quantity can be arguably a negative externality in the marketplace. Do you believe it's feasible or beneficial to evaluate business performance beyond financial indicators to also include environmental and social impacts too?

Alexandra Dunn: You're asking are there other metrics besides financial, like social metrics?

Audience Member #3: In the 21st century, should we be looking at business performance beyond financial indicators and how companies influence the environment and society?

Vail Thorne: Can I ask a question about that? I think that's probably already going on to a certain degree with the carbon disclosure or the water disclosure project we talked about. Are you talking specifically of the concept of Integrated Reporting?

Audience Member #3: That's one way to do it. There are natural capital protocols and natural capital evaluations, but I would say it's not mainstream yet among all businesses, and it's definitely not mainstream within small and medium-sized enterprises. Of course, you've explained how your company is already working toward this, to include environmental assessment beyond financial metrics. How can the private sector or corporations also stimulate leadership on this issue within the industry for small and medium enterprises?

Vail Thorne: We've been talking about metrics other than financial. But there is also a movement called Integrated Reporting, which is basically that a company not only reports its financial result, but reports its impact on the environment and society. We are quite a long way from that, not just for the community that's in this room. Integrated Reporting changes the way the accountants and the financial people do things and think about things. But it's on the table and being discussed. Where it's going to go and how fast it will develop, I'll leave that to the other panelists.

Dawn Rittenhouse: For publicly traded companies, Bloomberg tracks a lot of data. You can go to a Bloomberg terminal and look up a company's greenhouse gas emissions, water consumption, disclosure ratio, and other things like that. So, data is being collected from various places from reports we all put out—whether it's our sustainability reports, or our Carbon Disclosure Project report, or other reports—and is being consolidated. There is also, like the Integrated Reporting project, an initiative called SASB, the Sustainable Accounting Standards Board, which has gone through and worked on creating specific metrics relevant to about 70 different sectors.[15] They are working with the Securities and Exchange Commission (SEC) in promoting the position that the SEC already has the legal authority to require companies to do this kind of reporting.

Betsy Otto: I'm glad you mentioned SASB, which I think is good because it is sectoral. The questioner was asking also about small and medium-sized enterprises. I think you just have to look at what some of the larger corporate leaders are trying to do in this space. I'm not aware of an initiative that really speaks directly to those smaller companies, although there well could be. But I think the SASB kind of strategy that looks in sectors to determine some good sustainability indicators would be a good place to start.

Alexandra Dunn: Thinking about those small and medium-sized entities, we're here with people who have not enormous departments, but resources to make sure you're doing the reporting, to make sure you're getting the information into the different places to do the analyses. Small and medium-sized entities may not have that capability, but I wonder if through the supply chain, or your partnership, or agreements with entities that you do business with in other places, you are able to bring them to a higher level of accountability or performance because they have the opportunity to do business with a Pfizer or one of the companies here.

15. To learn more about the SASB, visit their website at http://www.sasb.org/.

Vail Thorne: Yes, we have something called the Supplier Guiding Principles that go into every contract that we have with the supplier. One of the principles is about environmental performance and environmental compliance. We have a sustainable agriculture guide that goes even further. So yes, that started in trying to make sure who we do business with is doing good.

Dawn Rittenhouse: Another interesting program along these lines that was initiated by Walmart is something called the Sustainability Consortium that was meant to be kind of a report card that buyers for retailers, such as a Walmart buyer, would use to assess their suppliers. And that gets pushed up through the supply chain so that the big companies have to answer for their suppliers as well. So, it becomes a business imperative if you want to be able to sell through Walmart.

Michael Mahoney: We at Pfizer have gone in the same direction. We now have a program in which we survey our larger suppliers every year requesting data on their water use, their greenhouse gas use, and waste use. The expectation is that in a few years, a certain percentage of our larger suppliers will be asked to set targets for reduction. So, we have a program that first looks at quantifying our suppliers' footprints and then looks for opportunities to reduce. We also do capacity-building with the suppliers to help them along that journey.

Stewart Leeth: Like Coca-Cola and Walmart, we are part of the global supply chain. So, virtually every major company that buys our products has similar tools like Walmart in terms of questionnaires about our sustainability issues. It's becoming the fabric of being part of a global supply chain. You're reporting on your performance to your most important customer. Many members of my team spend a lot of time answering questions and then, as you pointed out, pushing those questions out to our own suppliers. So, it's happening whether it's government-mandated or not; that's the way things now operate for us.

Alexandra Dunn: So, we will take a question from the gentleman here.

Audience Member #4: I'm with a global environmental consultancy that's worked for several of your companies, and they are great companies. My question goes to all of your programs, your global sustainable goals, and your business goals. How do you factor in the realities of competition? For example, there's a place in Brazil that is a very desirable area. Coca-Cola's there; its primary competitor is there; major commercial laundry folks are there. It's a place where there is no public-sector inventory that has been developed with respect to water resources. It's a place where permitting and enforcement is borderline to nonexistent. But I know that all of the industrial entities there need water. As part of their business plans, they are trying to figure out if there is enough water still there or do they have to move their operations? So, in the absence of a U.S.-style regulatory scheme, how often or typical is it that you reach out to your competitors to try to figure out how everybody can try to meet certain business objectives? Is that part of your thinking and program, or from a sector perspective is there still a step or two that needs to be taken?

Dawn Rittenhouse: I can say it's a work in progress. Again, going back to the 21 sites that we have highlighted as being at highest risk, that's where we've been able to get some attention. As I said, we initially set just a straight water consumption goal for the sites, but then we had some sites come back to us and tell us that there was no way we can compete and reduce our water use because our competitors don't have to. We are asking our sites to think holistically and whether the best way to reduce risk is just reducing our own water use. It may be, but many times, it's being more engaged in the broader community and reaching out and understanding who is using the water and what is the most effective way to make sure that everybody's got access to it. Getting back to the cultural question, it is a change in culture for a lot of people to try a holistic approach. That's what we're trying to push for, but I wouldn't say it's out there in any great quantity yet.

Vail Thorne: I have three points on this issue. First, it doesn't work within our organization anymore to say, my competitor is not doing this, why do I have to do it. We got over that hurdle long ago. You have to do it. The second point is that our internal standards are applied across the globe. They are companywide, Coca-Cola systemwide. Even our independent franchise bottlers are required to follow our processes. It's a uniform approach; there is no distinction because the plant is in a certain jurisdiction or because this geography is different. Of course, in the corporate world, we do consider the reality of what's going on around the world.

The third point is what I mentioned at the start, which is that one of the things that we think about when it comes to risk is determining the social as well as competitive issues that are going on in the community and then trying to engage. That would include engaging with competitors and the government.

Betsy Otto: It's a great question. I'm seeing a lot of examples where that is happening. It needs to be happening more, and more effectively, but I think it's a role for NGOs because often the government doesn't know how to step up. Companies are interested in doing this holistic approach, but it is difficult, as pointed out by Dawn and Vail and others.

Vail Thorne: The NGOs can be a convening authority.

Betsy Otto: Yes, for sure. But we really need a holistic watershed stewardship approach to this. Any smart com-

pany realizes you cannot insulate yourself from risk alone. You are living in an environment where other things that are happening around you are going to affect you. You have material risk associated with either your social license to operate or your actual ability to operate. So, companies do want to step up, but they often can't do it alone.

Alexandra Dunn: Another question.

Audience Member #5: Thank you. I have a question for Mr. Vail Thorne. I was wondering if you could elaborate on and give some specific examples of your efforts, successes, and challenges with working with the sugar growers in Australia.

Vail Thorne: The first challenge is getting them to talk to you and to recognize that it is in their own interest to start thinking about what they need to modify and how much water they use. Australia is probably not such a good example because Australia is a very developed country, so they are already into drip irrigation and things like that. India would be a much better example because they do flood irrigation to the max in a lot of places. You have got to engage with them and show them why this is in their best interest to do this. That is a challenge.

The successes are that we have actually been able to talk to them about these things, and they've been receptive to what we've said. A lot of times, these changes save them money. If they use less herbicide, that's saving them money. If they are using less water, there's more water for other sources. So, there have been challenges, and there have been successes, whether in Australia or someplace else.

Water Management

Alexandra Dunn: That question actually leads us to our last area of discussion, water management. What are the different models that you are seeing or employing on watershed-wide management? Getting to Betsy's point that unless you have this holistic watershed-wide view, you really are not going to solve or address the problem. Anyone thinking about watershed solutions or management solutions?

Stewart Leeth: I can lead off. What we've done is a little different. I mentioned before about our operations—in the United States, Poland, Romania, Europe, and in Mexico. So, we are not worldwide. But we use a couple of different tools to assess water risks. We use the WBCSD's Global Water Tool (GWT) that focuses more on a country-by-country basis.[16] Then, we use a local water tool, the Global Environmental Management Initiative's Water Sustainability Tool, that dovetails with the GWT.[17] It looks at the local level. We've taken that and looked at all of our plants and all of our farms and assessed them based on scarcity. We're going to do that again in 2018. Most of our facilities, even the ones in the desert, are not water-challenged, and that is fortunate for us. But each one of those challenges I mentioned before, like with the large plant in North Carolina, is localized, and we deal with it on a localized basis. That's the way we're looking at it now. We're going to look at it again in 2018 into the future.

Alexandra Dunn: Betsy, I know you've thought about market-based management approaches and it is an area that WRI has looked into. You talked earlier about a cap. Were you alluding to cap and trade for water?

Betsy Otto: WRI has for over 10 years now been involved in developing really robust water quality trading programs. One that is in the very early stages is being implemented in the Chesapeake Bay through a cooperative agreement among EPA, the six watershed states, and the District of Columbia, that all are under group pollution limits, a TMDL or total maximum daily load, for the Chesapeake Bay. So, that's something that we've done a lot of work on. There is, by the way, a tremendous interest globally on how that could be applied elsewhere, although there are some pros and cons to that approach, and there are some controversies around it.

On the water quantity side, there's some very interesting work that's happening in China right now that we're involved in. We are doing a pilot project in a small northern province called Ningxia that's just below Inner Mongolia. It's one of eight provinces across China where the government is going to pilot water quantity trading. It's not really trading in the way that we would think about it. It's a government-mediated system. We are helping to develop their water rights allocation system, because right now, villagers just get whatever water they can get. In Ningxia, all of the water is from flood irrigation through canals from the Yellow River. The Yellow River is really the only source of water with the exception of some shallow groundwater. It rains very little there and it is extremely arid. Yet, it's actually part of the bread basket for China. They grow a lot of really important foodstuffs for the country.

We are helping to set up that water rights allocation system so that farmers who are very poor can actually get a right to that water, or even potentially more water. Because they're using flood irrigation, there's a huge amount of opportunity to improve the irrigation efficiency, even by just putting in sprinkler irrigation, which we think of as very inefficient in this country. But by just doing that, we'd save 70% of the water that they use per bushel of crop that they produce.

So, it's a really interesting approach in which companies and cities that are really stressed for water pay for the on-farm irrigation improvements and then receive access to a portion of the saved water. A portion of the water would go back to the river for ecological purposes. Some

16. For more information, visit the WBCSD's website at http://old.wbcsd.org/work-program/sector-projects/water/global-water-tool.aspx.
17. For more information, visit GEMI's website at http://gemi.org/water/.

of it would go into a bank that would actually increase the water that farmers could access to help increase their livelihoods. So, we're in the process of helping to develop that with the Chinese government right now. But the reason it works is that they have set a cap on Yellow River abstractions for Ningxia and the other provinces. Without that, there wouldn't be a mechanism to create a market, even a government-mediated one.

Alexandra Dunn: Are there other examples?

Dawn Rittenhouse: At DuPont we think a lot about the fact that controlling water use on our own operations may not always be the best place to really make a difference. So, in our case, we are very involved in agriculture, and 70% of freshwater is involved in agriculture. We are doing some interesting work in Iowa on the Boone River in partnership with The Nature Conservancy (TNC). Our business model is that our sales people go and actually work directly with the farmers. TNC members train our sales people on better conservation measures so we can tell the farmers. TNC feels that our sales people have better credibility in giving advice to the farmers than the TNC members. It's been an interesting model. We are the direct provider of the information to help them think about how to take a more systems approach to this watershed.

Alexandra Dunn: So, we have a systems approach, a market approach, and partnerships.

Michael Mahoney: I would add to all these great comments something about the role of colleagues. We operate, again, in a lot of different places where colleagues become passionate about an issue. As a health care company, our colleagues are going to really be passionate about what we're doing or what we're trying to do to help implement the SDGs. I think there are opportunities both at a corporate level and at the operational sites for colleagues to get engaged in communities that really need assistance. I think it's a wonderful opportunity for colleagues to volunteer and to help the communities that we operate in, and that's the type of thing we're trying to get going through colleague engagement on the SDGs.

Alexandra Dunn: Have you mentioned Pfizer's fellowship program?

Michael Mahoney: We've had for years what we call the Pfizer Global Health Fellows. About five or six Pfizer colleagues each year take six months to a year off and do work on a health project in a developing country. It's just been a wonderful opportunity for the company and for the colleagues. The colleagues that have been involved in the fellows program have a very different perspective on life as to what's important and where the needs really are. Through the success of that program, we see the power of colleagues volunteering. We've been involved with other companies to launch an initiative called Impact 2030. It's really getting all the colleagues that work for private companies to get engaged around the SDGs. The initiative is in its early stages, but we drew from the success that we had through the Pfizer Fellows program.

Alexandra Dunn: We're going to take two last questions, and then I'm going to give each member of the panel the chance to tell us something you thought about on your way to this panel that you wanted to make sure you said and you might not have had the opportunity to say.

Audience Member #5: I think either Betsy or one of the other panelists mentioned green bonds. I'm wondering how many of you all on the panel have used or know of companies that have used green bonds for water projects. What kind of projects have there been?

Betsy Otto: It's a really rapidly growing area. WRI was part of a consortium with the Climate Bonds Initiative, with the Alliance for Global Water Adaptation and Ceres—it's a group that many of you might know—to create some standards for what should qualify as a green bond. There are a lot of bonds that are being issued that I would argue are not so green or sustainable. The initial tranche or the initial set of those standards was focused on climate-related green bonds. DC Water just released another green bond. So far, the green bonds are not providing a cheaper cost of capital either to water utilities or to companies that are issuing them, but what the evidence says is that they sell out very quickly and they bring new buyers to the market who have previously not been that interested in just normal municipal bonds. It's growing by magnitudes every year and we think it will be growing more. We're starting to develop new standards with the same consortium for natural infrastructure and green infrastructure investment projects, which I think will be really interesting.

Alexandra Dunn: Final question.

Audience Member #6: I'm actually surprised in almost two hours I heard one oblique reference to the country that's probably most successful in the use of its water resources, and that's Israel. I heard some mention of the Jordan River, but Israel doesn't have a water shortage. They can export water to their neighboring countries. They're consulting to African nations, and I even understand that California is beginning to consult with Israel on water issues. I'm wondering what has gone on among the companies and organizations on the panel in consultation with Israel on these matters.

Alexandra Dunn: Great question. Anyone working in Israel or with Israel? Anyone with operations there? Betsy, has WRI studied their models?

Betsy Otto: WRI has done some work with Israel on upstream source water protection and reforestation through a natural infrastructure program. You are right; I think Israel is frequently touted as a model for how you work in an area that is very arid. They don't get a lot of natural rainfall. Israel has invested very heavily in desalination and water reuse. Over time, they have effectively increased the size of the reservoir of water that they can draw from. This has taken much pressure off the Jordan River, which has its own climate change impacts and growing populations. In Jordan, which has a huge Syrian refugee population, there are really serious challenges. Israel has also, through its pricing approaches, pushed farmers and other industrial users toward reused water, not freshwater resources.

Closing Thoughts

Alexandra Dunn: We thought we would talk about many more things than we were able to cover today, and so that's why I want to give the panel an opportunity to weigh in on something that they had hoped that we would get to that perhaps we didn't.

Betsy Otto: Thanks. Pricing. We way, way, way underprice water. It's not just the cost of pumping it, moving it, and treating it; it is the underlying value of it. We know the value of water when the well runs dry, or whatever the Benjamin Franklin quote is. The marginal cost of water is actually increasing, but we don't price it that way in many, many places. We need to protect the human right to water, and, as you were saying, it's now built into many constitutions. There are all kinds of ways to do that very effectively, but really ratcheting up pricing in such a way sends much stronger signals for where we should be making investments. I think it's absolutely crucial. The examples I gave before about sludge-to-energy are really smart strategies, and they are all based on the fact that energy is expensive. It's not based on the fact that water is expensive, which in fact it should be. Because once you run out of water, the marginal cost goes vertical, and it gets really expensive. A lot of places are in that position. We need to get out ahead of that and really start thinking about how we value and price water.

Michael Mahoney: Thanks for inviting me. Great panel, great discussion, and a really important topic, obviously. I just feel that by preparing for the panel, I am more energized than ever to think through strategies for Pfizer. We did it with climate change and then linked that to health. We know there's that link with water as well. I think there are so many opportunities, especially as we set off on the journey to meet the SDGs, not only for Pfizer, but for the companies that we work with and for our suppliers. There are so many places that we touch and companies that we touch that we can have an influence. You have to be optimistic about that. Climate change and water sometimes are really tough. The challenges are really, really hard. But a panel like this and connecting with the right people give me a reason to be optimistic that we can fix it and make the world a better place.

Alexandra Dunn: Well said. So, water's the next opportunity for opportunists and for optimists. Dawn.

Dawn Rittenhouse: We talked a lot about not having access to enough water and water quality, but another issue that we're really going to see more of from climate change is too much water in places—flooding from storms. Too much water at the wrong time is actually a much bigger risk than too little water. We're learning how to do drought tolerance, but we haven't had much success on flood tolerance. So, I think we have to take that into account as well on how to get more resilient on both sides of the issue.

Stewart Leeth: That's a great point about resilience, water volatility, and flooding. We have covered a lot of points, but I think the main thing is that we're a very diverse set of folks up here from different companies and organizations, and you can tell that water is a top priority. It is good that so many companies have so many resources being placed into this area and it is a high priority. You don't see a government official here with a hammer behind us saying you have to do this. These are companies that realize there's an issue and that this issue needs to be solved. There are a variety of ways to solve it—whether it's through partnerships or whether it's interacting with competitors or other companies. It's a positive thing and something to feel good about.

Alexandra Dunn: I think this is feeding into private environmental governance, what is driving the choices that companies are making. Vail.

Vail Thorne: I agree with Betsy about the pricing of water. I think that is an issue that everyone needs to pay attention to because, you're totally right, it's either massively subsidized or it's essentially free. Those days may be coming to an end, so everyone needs to engage. That leads me to my last point, which is whether we are talking about water scarcity or water quality, like climate change, it's a massive issue around the world. The solution doesn't just lie with corporates. It's the golden triangle that everyone's heard about: corporates, NGOs, and governments. Everyone is going to have to work together, and that's going to be the key—figuring it out in terms of managements, which we've been talking about. We need to figure out how best to manage that process as much as getting the actual data, if you will, because that process can get off kilter pretty quickly because of politics and other things. That's my comment.

Alexandra Dunn: I hope that you will all join me in thanking this incredible panel.