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Brookings Cafeteria Podcast:
The water problem

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DEWS: Welcome to the Brookings Cafeteria, a podcast about ideas and the experts who have them. I'm Fred Dews. I have a two-part show for you today. First up, the United States faces a water crisis from California to Miami, as critical as the energy crisis that once dominated headlines. In a new book from the Brookings Institution Press titled *The Water Problem: Climate Change and Water Policy in the United States*, experts explore the problems and solutions. In today's show, my colleague Bill Finan interviews the book's editor, Pat Mulroy, a senior fellow at Brookings and former general manager for the Southern Nevada Water Authority. Pat Mulroy appeared in an episode of this podcast two years ago if you want to learn more about her experience with water out West.

And then, I spoke with John Villasenor, a nonresident senior fellow here and a professor at UCLA. He's a coauthor of a new report on health governance capacity that explores how to enhance private sector investment in global health. You can listen to an episode of this show from last August in which John discussed with me his report on digital and financial inclusion.

And now, here's Bill Finan.

FINAN: Thank you, Fred, for that introduction, and hello, Pat, nice to see you again.

MULROY: Nice to see you too.

FINAN: I want to start with a very broad question. What is the water problem we face, not only here in the United States, but globally, because of climate change?

MULROY: I think it is a, actually, collision between two factors that each in and of itself would be problematic, but when the two collide it becomes really difficult. It is a

burgeoning population, and a dramatically altering climate, and when you put those two together, there are some pretty dire consequences that can ensue from it. We—we in this country even suffer from it. I mean, there is an ever-enlarging footprint in our urban areas. That's where the jobs are, that's where the people are moving. The urban areas are in zones that are climate-sensitive, and I'm not sure you could find a place in the United States that's not climate-sensitive. I mean, whether it's tornadoes, whether it's hurricanes, whether it's drought, whether it's, you know, large storm events—I think each has its sensitivities, and—

FINAN: So that old picking-on Phoenix versus New York as a growth center doesn't work? I mean, each is equally at risk in some way.

MULROY: Absolutely, and I think that's what, partly what, the book highlights. I mean, if you're sitting in New York and Hurricane Sandy comes along, then you are about as vulnerable as you are in Phoenix. They're just different types of disasters. One is a slow-moving, evolving disaster, which in all frankness is really easier to deal with than the unexpected, dramatic event. Everybody loves to point to desert climes as being the ones that are the most vulnerable, and it's actually not the truth. I don't think there is an area that is protected from this.

And so when you have these two phenomena of this ever-increasing population—and the World Economic Forum says nine billion by 2050 and a food supply that has to go up by 50-60% by 2030, and the amount of water being used for energy going up 80% by 2050; then you add—and this is something that we're only beginning to wrap our arms around—the water footprint that technology brings. I mean,

it takes 1,300 gallons to make a single cellphone batter. The water footprint for technology is enormous, the manufacturing of battery technology.

And so, each one of these factors, when they compound, are really going to strain the freshwater resources on the planet. So I think it has the potential of causing huge migrations. I think it has the potential of causing enormous conflicts as we all admit we have a problem and then turn around and blame our neighbor for being the cause of that problem. I think it's overwhelming to most people.

FINAN: In your book you mention that in 2007, a decade ago, a number of larger water agencies got together in the United States to discuss the water problem in light of climate change. The problem, you point out, is that in the past water management experts could look to the past and see what happened and learn from it, but now we have to figure out what to do without any data from the past to guide future actions. So what do we do?

MULROY: We in the water business and come to call it the cone of uncertainty. It's not a novel concept anymore, and it requires a very close working-together with climate scientists. And what you establish are the side boards of possibilities. I mean, where we sit in the Colorado River Basin, it is kind of—it can either get wetter or it can get drier or it'll do both within a 20-30 year span. But that doesn't mean you're not in the midst of a decade-old drought, and it's stressing infrastructure, it's stressing resources, it makes everything that much harder. So, yes, in 2007 we all got together and it was everyone—West Coast, East Coast, across the country—those of us who said this is not going to go away, this is not just a temporary weather phenomenon, we're seeing a substantial and permanent shift in the climate on the planet. How is it affecting our

infrastructure, how is affecting our resource picture? I mean, it affects everything from water quality to water supply.

And I know that here at Brookings, we've had any number of discussions about aging infrastructure and the strain that this country has placed upon infrastructure that was built in the early to mid-20th century, with the water and wastewater infrastructure some of the most fragile. It really was built as these cities developed, and some of it even dates back to the late 19th century, or mid to late 19th century. And we build it, we bury it, and we never think about it again. If we don't come to grips with it, being able to survive events like Hurricane Sandy or a major storm event on the East Coast, because most of the systems have combined storm sewers, is becoming increasingly difficult. And for some communities, like in New York City, it threatens the water quality to a city with a population of multiple millions.

FINAN: So that's an example of some of the old ways of thinking about how to deal with a problem that we can't use anymore; that the infrastructure that we would have relied on the past to deal with an issue is just inadequate beyond repair, decayed, et cetera, and it needs to be dealt with.

MULROY: Well, two weeks ago we had the issue of the Oroville Dam, and we saw a dam that for a long time, the engineers have been saying there needs to be some work done on this dam. This dam is not going to withstand a major storm event. And people ignored it, and they pushed the issue out in front of themselves, figuring it wouldn't happen within their span of influence or during their time when they're there, and lo and behold, it happened. And I read in an editorial, which kind of surprised me, that part of the reason that the water was held back behind Oroville for as long as it was

and not released was that there were scientists desperately trying to save some salmon at the other end. These are some very difficult choices for us, and you could—whole communities were being evacuated because a couple of salmon had to be rescued, so I guess I struggle with some of the choices we've been making on some of the infrastructure that we've ignored for so long.

FINAN: That issue of the salmon brings up a theme that came up in the book through its various chapters, I think—at least for me it came up—the issue of regulation and the tension between regulation and what we need to do. How important an issue is that?

MULROY: I don't think you will be able to build the infrastructure we've all been talking about unless there is a real shift in attitude in the regulatory structure. We have set up a structure that is very adept at saying no. It is very adept at finding every single problem and difficulty that could potentially arise. It is not very good at finding a pathway forward to allow for a certain amount of risk in infrastructure construction to be taken. And I think part of the difficulty with that is that there is this mindset that once we make a decision through a regulatory process, that it can never be amended, it can never be tweaked, it can never be—it's not adaptable. And so, we have created this environment of regulatory paralysis. I mean, ten years for a desalter to get permitted on the California coast?

FINAN: That's the desalinization plant in San Diego that has a chapter in the book, right?

MULROY: Right. My friends up in Denver—for fifteen years, they have been trying to raise a dam in order to be able to store additional water for these long dry

periods that we're going to go through, and after fifteen years there still has not been a permit issued. This is in order to enhance existing infrastructure. It has become impossible. When I think of the millions and millions and millions that are spent on the regulatory process, the cost of construction itself becomes negligible. I mean, they've estimated that the regulatory approvals for Governor Brown's big fix in the delta—

FINAN: Which is?

MULROY: To replace the old, existing intakes with two tunnels that go underneath the delta that stop interfering with the flows of the fish and bring water in from the river system before it enters the delta. The regulatory process for that is going to cost billions before we ever put a single shovel in the ground.

FINAN: When you're discussing the regulatory process, you're talking about regulations that emanate from Washington, D.C., state regulations, a mixture—?

MULROY: Oh no, they're both.

FINAN: They're both, ok.

MULROY: They can be both, but for the most part, it's—I mean, California has its own CEQA process, they're unique. For the most part, the Western states and the Eastern states struggle with the federal regulatory process. Now—and it's so diffuse. You have the Corps of Engineers, you have the Environmental Protection Agency, you have Bureau of Land Management, you have U.S. Fish and Wildlife, you have the National Park Service, you have the U.S. Forest Service. It is a limitless array of regulatory agencies functioning in silos, and those of us who have struggled with this for so long have become convinced that we will not be able to survive or be able to adapt in a way that we have to, given the change in our climate, unless we can find a way to

adopt coequal goals. It has to be coequal goals for human existence and for the ecosystem. That, in my mind, can only happen if you create processes, not finite approvals. In other words, you could put a model together today that shows you the possibilities of how it could function under certain conditions. Well, all that model does is say if these conditions exist and you operate the system in this way, these will be the consequences. If the conditions aren't such, if you operate it differently, the consequences are different. So to be able to have a more iterative process, a more stakeholder-driven process, that allows you to be able to adapt how you operate new infrastructure as conditions change, is all-important.

I mean, it's not without its precedent. The Colorado River has an annual five-year operating regimen. So every five years, Interior and the stakeholders develop an operating regimen for the Colorado River, and it sets parameters, it sets goals, it accepts the conditions as they exist at the moment. Well, five years from now those conditions are going to be different, and so it's appropriate that as we step into changing conditions, that they are ever-evaluated. But it should not be the reason that we build nothing, we repair nothing, we rebuild our facilities to be more robust in light of what is coming down the pipe, just because we hit a regulatory roadblock.

FINAN: One of the changes you highlight in the book—and I'm going to go off on a different tangent here for a moment, but it relates to this regulatory issue—is that water is no longer a local issue when it comes confronting climate change. Why is that? I think you've given some sense of why that is the case when you look at the infrastructure issue and the regulatory issues.

MULROY: Well, it becomes really apparent in the West from a resource perspective. Look, for example, at the Colorado River Basin. There's no way you could manage that river basin state-by-state, as seven or eight discrete pieces, any longer. They have to work in tandem, and it becomes even more complicated when you look at the way we've plumbed the Colorado. We bleed water out of this watershed in all directions. We cross the Continental Divide, from the west slope of Colorado through the Rocky Mountains to the Front Range, to Denver and Aurora, and all those communities that are in the Kansas-Nebraska and the Platte and the Arkansas flood plains. Then you move down to Utah. Hundreds of miles of aqueduct move the water to the Wasatch Front, to Salt Lake, Provo, Orem—not in the Colorado River system. Come across to New Mexico. We move the Colorado River down to Albuquerque and the Rio watershed. And obviously in Southern California, we move it over the coastal cities of California, and even down in Mexico we move it over to Tijuana. So we are bleeding water in all directions outside. Well, we really create a much larger community of interest around water supply that extends well beyond even the basin. Everybody who is affected, you can't push a button and tweak this system in the Denver area without it being felt by Metropolitan. And because the Metropolitan Water District is also connected to the Bay delta—50% of its water comes from Northern California, 50% of its water comes from the Colorado River—the two are connected. What happens in the Bay delta matters on the Colorado, what happens in California matters in Denver. It is a completely intertwined system with communities that have very different origins, very different cultures, very different economies; and yet they are absolutely interdependent.

FINAN: So you spent many years managing allocation of the water from the Colorado River as general manager of the Southern Nevada Water Authority, and as you just mentioned, several states and even Mexico are part of this. What are the lessons you've learned from working on the Colorado that others can use to deal with water and climate change?

MULROY: Probably the single biggest lesson that I learned is that the future is about strategic partnerships. And, you know, it's interesting, it's not just those of us in the Colorado River Basin that are beginning to realize that. In the chapter in the book about Miami, Doug Yoder talks about a new concept that the South Florida agencies have entered into, and I'm mesmerized by it. It's called the Climate Compact, and all these communities down in Southern Florida have agreed that all their laws, all their policies, are going to be complementary, to where you don't have communities that are going on off in directions that aren't going to help the general area adapt. I mean, they're very vulnerable. The storm surges—they now have what they call those king surges, those large tides, king tides that come in that are inundating the streets. They have storm events. They're dealing with rising ocean levels. And so for these communities to have come together and have entered into a climate compact, to me, opens a door of possibility for cooperation and working toward a common goal without destroying the basic governance structure that exists in each one of these communities and separating the elected officials from their constituencies. It is an incredible concept.

FINAN: You mention that—just going out and looking globally—you mention that some countries have taken the lead on water management, too, when it comes up to

climate change, and those include Israel, Singapore, Australia, even China. What is it that makes them leaders?

MULROY: Well, probably because they have recognized that for their countries ability to be economically viable, to be able to survive in some instances, water has to become a national strategic initiative. Israel made it such. They have a national wholesaler, and the national wholesaler is responsible for all resource issues, from desalting to groundwater wells up in the northern part of Israel, and they conjunctively manage all those water resources. PUB knows that Malaysia will be cutting off its supply on their shared river, and so they have become extremely aggressive in developing ocean desalt technology, reuse technology, and they've become an international hub, as a result, for technological innovation and research and experimentation to be able to take that to the next level. China is looking to develop a national policy on water resilience and being able to have their water supply—they've got huge issues around water quality, not to mention water quantity in this country that is building more cities every single year. So, I mean, you have areas that have recognized it. We in the United States have been so fortunate. I mean, we're one of the few places in the world where virtually every area has reliable, 24/7 water.

FINAN: We take it for granted.

MULROY: We take it for granted. There are so many large cities that we can't even imagine would have difficulty, that don't enjoy 24/7. Not every part of the Rio de Janeiro has 24/7 service. Not every part of any number of South American cities has it. Many cities in India don't have, in most parts, 24/7 service. And so the World Economic Forum that I was fortunate enough to work with, on the Global Agenda Council for

Water over the last three years, and we've put together a set of recommendations on how to try to make the Sustainable Development Goals for the United Nations come to life by actually bringing 24/7 service, some form of 24/7 service, to large communities and to developing countries around the world. And it will be quite a challenge, but it will be a mosaic. There'll be various approaches in various areas, because it's not a cookie-cutter. One size will not fit all.

FINAN: Pat, I want to thank you for coming by today to talk about your new book, *The Water Problem: Climate Change and Water Policy in the United States.* I enjoyed the conversation.

MULROY: Thank you, Bill, it's been a pleasure.

(Music)

DEWS: You can learn more about the book, *The Water Problem: Climate Change and Water Policy in the United States* on our website, brookings.edu.

And now, here's my conversation with John Villasenor.

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DEWS: I'm here in the studio with John Villasenor, a nonresident senior fellow in the Center for Technology Innovation at Brookings, and a professor of electrical engineering, public policy, and management and a visiting professor of law at UCLA. Welcome, John.

VILLASENOR: Thanks very much for having me on.

DEWS: So you're here to talk about your new report, which is co-authored with Darrell West, the VP of Governance Studies, and Jake Schneider. It's titled "Health governance capacity: Enhancing private sector investment in global health." If you could

talk about some of the contextual items in the title, I think that's a good way to start. You've got health governance, which is generally a public-sector government function, and you've got private sector investment. So you talk about the meeting of these two items in your report.

VILLASENOR: One of the fundamental premises of not only the report but the project that this report is a part of is that there is an important need to identity ways to get increased private sector investment to address some important global health challenges. And the premise is basically that public sector financing, while certainly a critical aspect of the problem, alone isn't enough, and there's some really good opportunities, I think, to increase private sector investment. And this particular report, which is the first of about half a dozen that are going to be produced over the next year or so—a little less than that, actually—under the project, is looking at what we've called health governance capacity, and it's an attempt to look at some of the factors in a set of low- and middle-income countries that can either help promote and attract private sector interest in global health investing, or not, and we feel that's an important part of the overall set of factors that a private company will make when deciding whether to make an investment.

DEWS: So what kinds of activities does the private sector engage in, in terms of public health?

VILLASENOR: That's a great question. So the private sector, obviously—I mean, one of the examples that many people find readily very familiar is pharmaceutical companies, for example, will make investments to develop new drugs and vaccines, and the target drugs and vaccines aren't always relevant in a global health context, but

sometimes they are. So that's an example of private sector investment. An additional example would be when a company invests in developing a new diagnostic tool that can be either directly targeted for at least relevant in a global health context. So those are activities in which private sector investment can be just really beneficial.

DEWS: So the report focuses on, as you said, low- to middle-income countries that include Vietnam, India, Liberia. But why isn't spending more on public health by the government a viable solution in these countries?

VILLASENOR: Well, I think efficient, targeted public spending is, in fact, one of the things that we think is an incredibly important part of the equation. But it alone isn't enough, for multiple reasons. One is, in many of these countries, there are very significant resource limitations that, just as a practical matter, you know, limit the amount by which public health spending could be increased. And secondly, the public sector alone, again, while a critically important part of addressing global health challenges, is not in and of itself the entire solution to those challenges, and that is true in different ways in more developed countries than less developed countries, but it's true—generally speaking, it's true across the board.

DEWS: I think this a key passage, and I'd like you to comment on it after I read it. "For business entities to invest in emerging markets, they must be confident in the institutional and governance infrastructure of the country such that political and economic forces will not undermine their investment."

VILLASENOR: Right, and that quote is attempting to say that if a company is going to put hard-earned dollars into investing with the goal of developing drug, vaccine, or diagnostic tool that can then be deployed in a particular set of emerging markets,

then the ability to get a successful outcome for that investment will be either facilitated, if the countries involved have good institutional and governance infrastructure; or on the contrary could be impeded, and you know, all the good solutions in the world, if they can't actually be delivered to the people who would use them, won't actually—not only will they not have a good global health impact but they won't recoup the investment for the company that developed them in the first place. That passage is attempting to kind of convey that, I guess, is the best way to say it.

DEWS: So what are some of the specific aspects of what you call health governance capacity? What is that?

VILLASENOR: Yeah, that's a great question. So what we've done—one of the challenges of measuring something like this is that there's, you know, you could give ten different people the assignment of coming up with a way to measure that, and they might come up with ten very different answers. The answer we came up with, while certainly one of multiple ways you could answer this question—and we don't claim that it's the perfect answer, but we think it's a good answer—is to consider it in five, you can call them dimensions. And so we looked at what we've called leadership and management capacity, we've looked at policies we've looked at regulations, we've looked at infrastructure and financing, and then we've looked at health systems. So these five components or dimensions, however you wanted to call it. And then we further subdivided those, so there's a total of 25 indicators spread across these five dimensions. So you have these 25 things that you evaluate, and in the aggregate that allows you to come up with a score for what we've called the health governance

capacity index, which is the thing that we've actually tabulated in the report for the 18 countries.

DEWS: So in the report you have a chart, and everyone loves charts and rankings, that is the score for each country, the health governance capacity index. Tell me about which country ranks the highest and why does that country rank the highest?

VILLASENOR: Well, Vietnam ends up at the top of our ranking, and again, just for context I'll mention that we evaluated 18 countries, so not all the countries in the world. We evaluated a set of 18 of low- and middle-income countries, and of the countries that we evaluated, Vietnam ends up at the top of the list, and Vietnam earned, according to the system that we set up, earned very high scores across the board in general, but particularly so in the health system dimension as well as for some of the other dimensions. And that's why, you know, Vietnam was the one that was the best, really, across the set of five, in the aggregate.

DEWS: When you look at a specific country and you come up with the score like this, I mean, do you hear from representatives of Vietnam who say, hey, how did you come up with that score and we'd like to learn more?

VILLASENOR: We felt very privileged that in the event we held associated with the release of the report, we had the ambassador to the United States from Vietnam actually come and speak at the event, so that's an example where we had engagement at very high levels. We just published this very recently in the end of March, so typically when we publish things like this we do hear from the countries that we've looked at and I expect that that'll happen here, although it's just been live for a day so it's still new.

DEWS: So let's move from policy analysis to policy recommendations. What are some of the things that you and your co-authors recommend?

VILLASENOR: So we identified a set of four recommendations that we believe can be useful for improving health governance capacity. The first of those is improving transparency and strengthening management capacity, with respect of course to health issues. A second is to lower or eliminate tariffs on medical products and expedite regulatory reviews of new drugs. I mean, those are—the tariffs and slow regulatory processes—are two factors that directly work against the ability of a business to recover their investment, so those are both things that if they can be mitigated, or at least partially mitigated, then the investment climate can improve. Third, to invest in healthcare infrastructure, and that includes things like medical facilities, diagnostic systems, medical service delivery systems, and so on. You need an infrastructure through which you can deliver the results of investments related to global health, and if that infrastructure is improved then it stands to reason that your ability to get those products and the things that you developed, get those into the market, is going to be better, and means that you're going to have a better chance of recouping your investment. And then finally, last but certainly not least, to increase spending on healthcare, but we're also very careful to say it's not just throw money at the problem, it's to make sure that it's very efficient and highly targeted to ensure impact. And so, we're trying to strike the balance where money does matter—and so in the absence of sufficient critical foundation of healthcare spending then, you know, it's just very hard to come up with a really good investment climate—but at the same time you want to be, you know—we're certainly not just issuing a recommendation that says, you know, just

throw money at the problem. It's really, really important to make sure that money is directed in an efficient way, you know, specifically targeted towards these health issues, and ideally in the context of the project we have here, in a way that is complementary to and spurs related private sector activity.

DEWS: So I know this is only the first report of this project, so what is the next step?

VILLASENOR: So we're hard at work, working on the next report, which is going to be issued in probably early July or approximately then, looking at basically spending, and you know, not only public sector spending, which is quite well documented, but also we're aiming to get a better idea of private sector spending. And that includes not only the pharmaceutical companies but also venture capital and private equity and charitable and impact investors. And so there's a whole set of non-government entities that are making investments in this space, and we think there's a good opportunity to document it and explain it, and then put it in context. And subsequently to that, we've got some reports on impacts of investments and identifying specific steps that governments can take—including governments like, you know, our government—can take to spur more investment activity by the private sector in global health research and development.

DEWS: Well, John, thanks for coming on the show to talk about this research.

VILLASENOR: I really appreciate the chance to have spoken with you about it.

DEWS: You can learn more about the report, "Health governance capacity: Enhancing private sector investment in global health," on our website at brookings.edu.

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DEWS: Hey listeners, want to ask an expert a question? You can, by sending an email to me at bcp@brookings.edu. If you attach an audio file, I'll play it on the air, and I'll get an expert to answer and include it an upcoming episode. Thanks to all of you who have sent in questions already.

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DEWS: And that does it for this edition of the Brookings Cafeteria, brought to you by the Brookings Podcast Network. Follow us on Twitter @policypodcasts. My thanks to audio engineer and producer Gaston Reboredo, with assistance from Mark Hoelscher. Vanessa Sauter is the producer, Bill Finan does the book interviews, and our intern is Kelly Russo. Design and web support comes from Jessica Pavone, Eric Abalahin, and Rebecca Viser; and thanks to David Nassar and Richard Fawal for their support. You can subscribe to the Brookings Cafeteria on iTunes and listen to it in all the usual places. Visit us online at brookings.edu. Until next time, I'm Fred Dews.