

Margaret Davidson:

It is a hard thing to follow experts like Zoe Johnson, Gerry Galloway and just now Kate White, so I am not going to pretend to be a subject matter expert. I have been asked to talk about national level policy issues and local, state, and tribal-level policy issues.

There are no real national policies that incentivize coastal resilience.

Let me talk about national policies first. The reality is that there are no real national policies for resilience of any kind. If we are talking about policies in the traditional legislative sense, we don't have anything that is of the weight and magnitude as the Clean Water Act. Yes, we do have the Coastal Zone Management Act and it includes a lot of language of the paradoxical impossibility of coastal management while fostering economic development. I have to point out that it hasn't been reauthorized in about 15 years. So what we have been doing for quite some time in this country is what I call "National Policy Through Executive Order." The problem with "National Policy Through Executive Order" is that it's just like having an etch-a-sketch. The next administration comes in and they shake that etch-a-sketch and those policies are nowhere to be found. The current policies we have in place in general haven't been any sort of incentive for coastal or any kind of resilience.

The National Flood Insurance Program (NFIP) has not reduced the cost of flooding in this country; it has actually encouraged people to live in flood-prone areas and to rebuild on the same site.

So I will talk about one that has actually morphed a lot over the past few years: the NFIP. In fact, historically (meaning the last 20 years) the NFIP has actually been more of an incentive for the wrong kinds of behavior. Not only have we not reduced the cost of flooding in this country (we have increased it because we actually encouraged a lot of people to live in flood prone areas), but also many aspects of the NFIP actually encourage people to rebuild on the same site, on the same footprint. We all recognize that there's a problem with this and I was among the many surprised — heartened but surprised — when we passed Biggert-Waters in the dark of the night a year and a half ago. But as we have often seen when these kinds of galvanic events happen — we're not actually so hot on Biggert-Waters right now because it would actually cost a lot of money.

There are some national programs that encourage coastal resilience.

We do have national programs in place that do encourage resilience. The Silver Jackets program was the Army Corps' first foray into local-state partnerships. It was about trying to leverage our joint capabilities and specific geographies. The Federal Emergency Management Agency (FEMA) has a few groups such as the Mitigation Framework Leadership Group and the Recovery Support Leadership Group. These are very important government groups in which we talk about how we can leverage each other. However, if it's a zero sum game, there is not a whole lot of leveraging we can actually do of each other.

I remember when the first outline came out for what the Department of Housing and Urban Development (HUD) Hurricane Sandy Rebuilding Task Force was going to tackle and there was a big header called "Infrastructure." It was tailor-made for civil engineers but I will have to say that HUD was very open to thinking about a larger framework for infrastructure than just more concrete structures. How do we actually encourage and incorporate weather and climate resilience into the community development block grants and the Department of Transportation (DOT) Transportation Investment Generating Economic Recovery (TIGER) grants? I think that is extremely important, especially now that DOT actually has an emphasis on the maritime highway, the blue highway.

We must establish a National Infrastructure Bank, which we are capable of doing. This is crucial for our economic, social, and community resilience.

One of the things I think we need is a national infrastructure bank. We have talked about it for a number of years, and I actually think we could get it done because it is a bipartisan issue and because if we don't tackle this issue we are going to be a third world country. The discussions on a national infrastructure bank have actually been driven largely by the private sector contracting companies. It's actually really important for our economic resilience, which in turn is important for our social, community and every other type of resilience.

Let me explain one other thing. Under that infamous budget reconciliation act, every time we approve an emergency supplemental we have to find an offset somewhere in the domestic program. There are the Department of Defense (DOD) and Department of Homeland Security, and then there are the domestic programs. (The Army Corps does not count as being part of the DOD; it is a domestic program.) So, actually the burden of the offset will disproportionately affect on domestic programs. This is going to be a challenge for us going forward.

We should look to the Netherlands as a model in coastal resilience.

Let me remind you of the Dutch experience because it is very important. First of all, the Dutch have actually been first in after every major coastal disaster for the last 15 years. For centuries, the Dutch have been at the forefront of water-related engineering technology. About 20 years ago, however, they realized they could not get by with what they had been doing. Elevating and building levees, that is what they had been doing for a long time. They began construction for the weir to protect Rotterdam, which was about a \$100 billion effort and designed to protect against the 10,000-year storm. Once they completed this weir for Rotterdam they realized that it was insufficient for other areas. So they decided to elevate, harden, build levees, and remediate and restore coastal forest and coastal wetlands where they could: a mix green and gray infrastructure. The Dutch have also begun to make plans to move people out of the low-lying areas.

A couple of things about this — it is in their cultural blood to do this. Secondly, the U.S. is actually the only country that has anything like the National Flood Insurance

Program. In the rest of the world, if you chose to live in a flood-prone place it is called assumption of the risk and nobody bails you out. The Netherlands is not a very big country, and the people who actually get to vote are fairly homogenous. They have a lot of immigrants but the voters are fairly homogenous. Having a cultural history of adaptation, being fairly homogenous, and actually having a history of massive public works — what about this doesn't sound like the U.S.?

The regional and local levels are extremely important for coastal resilience, because that is where most of the country's economic and infrastructure planning occurs.

So, let me talk briefly about the importance of the regional level because first of all that is where most of the country's economic and infrastructure planning takes place. That is where it happens. The coastal counties produce nearly 60% of this nation's GDP. So we are talking about the goose that lays the golden egg for the American economy. It is a national interest issue. It's also where planning and zoning happens.

The other thing is that the local level is where the building codes are. We adopt building codes at a state level but the enforcement is actually a local-level issue. Building codes matter. So you want resilient structures? Let's talk about how we get them.

Making communities resilient is challenging because it entails not only building resilient structures, but also forming resilient social networks.

Resilient communities — that is a little harder. Making communities resilient isn't just about resilient structures, be they gray or green. It's also about having intact social and community networks. After Katrina, one of the communities that recovered the fastest was the Vietnamese community — why? Well, they were sort of homogeneous in South Louisiana, they had a very vibrant social network, and one of the first things they did besides rebuilding was they started looking for alternative economies that they could be pursuing. They were actually doing some sophisticated aquaculture and hydroponics and some other things down there. So we're not just talking about making our structures resilient; we're talking about making our local communities and economies resilient. Context is everything. It is not just your geomorphology.

If you are on the coast of Maine, you have a totally different perception of risk than if you are in the bowl that is New Orleans, even more so if you are in South Florida where evidence of washing away is visible almost on a weekly basis. So we need to understand the geomorphology, that is why we need the Corps, that is why we need USGS, but we also need to understand the cultural and political context.

Local capacity building is extremely important because the local level is where return on investment is best appreciated.

It is at the local level where we will best appreciate the importance of the return on investment. The National Institute of Building Sciences told us that for every dollar we spend on making ourselves more resilient we actually save four dollars in downstream costs. But here is the fundamental reality — as a percentage of GDP, even with all of the recent storms, they actually have not cost us anymore than they did 30 years ago. Now that is not saying that they will not cost us more as a percentage of GDP in the future, and we have actually brought down the number of deaths in a general sense. So some people are wondering what is the imperative. Lloyd's of London wrote an open letter to the casualty loss insurance industry about a decade ago that said basically "if you don't think climate change is a reality then we highly suggest you get into another line of business." So I think it is important to understand those issues and I think local capacity building is a very important issue.

Investing in STEM (Science, Technology, Engineering, and Math) and human capital is critical.

Let me also make a pandering plea — I think STEM — Science, Technology, Engineering and Math, which we have been gutting in this country — is very important.

Due to the lack of public funding, we should look to public-private partnerships.

Let's talk about the money. You are not going to get money in the regular appropriations process. You may get some money in the emergency supplemental process but that hurts. This is why public-private partnerships are so important. We have done this before in this country; we have built bridges and toll roads through public-private partnerships. The city of Chicago is madly trying to resuscitate its port and, because it failed as a public venture, they are trying to do it as a public-private partnership. There are ways to structure these.

I am not the expert on it but I will say that it is going to take all of us. We need the public sector and the private sector at the table. We need the NGO community; we need civic and community groups.

Due to rising water levels, we are going to have to start thinking about relocating people, something our country has very little experience doing. The future of our coastal cities, particularly the future of cities that are not politically or economically well connected, is in danger.

In this country we have very limited experience in relocation. We have done it with a few small towns because it was necessary. The world also is very inexperienced about population relocation although there are countries that do know about massive relocation, usually under duress.

If water levels on the outer coasts rise by 3–5 feet in the next 30 years (and I know that is not what Kate White is telling you but that *is* what I'm telling you), then we actually have to be thinking about what are we going to do about 60 million people. This is what I do know — throw in emergency supplemental or otherwise, we will

find money to save New York City, Baltimore, Washington D.C. and maybe even Miami and Hampton Roads, but Wilmington, N.C., Charleston, S.C., and New Orleans are in trouble because there will not be any money. They are neither economically nor politically significant enough to matter in that same horizon, because there are going to be a lot of challenges on our horizon.

In some areas, we need to take into account the depreciation of land, just as we already do for infrastructure.

Everyone in this room who owns any kind of property is very familiar with the concept of amortization or depreciation of their infrastructure. Whether we are considering your residence, a building that you own, or even some capital equipment, in our country we assume that land lasts and that it is forever. That is not true in some places like South Florida.

So what if we actually began the process of allowing depreciation for the underlying land and the underlying estate? Not only do we need to create buy-out funds; we also need other ways to help people with the pain, particularly people who do not have savings accounts.

There should be a buy-out fund and tax credits in place for people who are ready to leave hazard-prone areas.

I have been speaking with the big conservation groups like the Trust for Public Land, The Nature Conservancy and the Land Trust Alliance about the next time they go lobbying for tax credits for acquisition. Let us also lobby for tax credits for people giving their land up for these kinds of reasons as well. I have been having this discussion in Southwest Florida where people are gone, not because the storm blew them out but because of the real-estate crisis. There are whole subdivisions of Southwest Florida that are half empty. So, could we imagine if we worked with the Treasury and HUD? Could we go to these places where people are ready to leave and not only help them leave that building behind but also give the land to The Nature Conservancy so there is a tax write-off for the land? We could work with HUD to bulldoze, remediate and restore the land to have natural defenses like there were before that subdivision was built.

We need a Natural Disaster Safety Board to investigate our response to natural disasters, and consequently use those findings to make our communities and infrastructure more resilient.

We all know about the National Transportation Safety Board (NTSB). That is the agency whose employees go in and analyze airplane or railroad crashes and determine what went wrong. We need an analog. We need the Natural Disaster Safety Board. We need people who actually go in and look at what failed in our communities and provide educational feedback about what needs to be improved. I believe that a board like this, which is comprised of subject matter experts, could also help us with thinking about how to make our critical lifelines — infrastructure — more resilient.

Spread the word.

Finally, as I'm inclined to say as we are talking about issues related to climate, we are a really small affinity group. There are not enough of us. We need to expand the ranks of the interested and informed. By the means available to each of us, we need to teach others who are not already on this train that we are on.

The views expressed in these remarks belong to Margaret Davidson and do not necessarily reflect the views of the National Oceanic and Atmospheric Administration.