

ERDC EL

Moderator: Julie Marcy
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Swathi Veeravalli: Hi. First, thank you very much both to Julie and to Courtney for helping Angela and I get coordinated with this group. Second, we will present to you some of our ongoing research that we've done to support military operations . Hopefully we have some time at the end of the presentation to really leverage the expertise that you all bring as we further proceed down this engagement with these international engagements.

I am a Physical Scientist and Angela is an Urban Planner and for the past five years, we have been working with the geographic combatant commands. We have been working the most with AFRICOM to better understand sort of the role that environmental security has in their respective AORs. So that's the sort of the flavor of our conversation today. Our research goal really stems from better understanding how environmental security impacts the DoD and all its missions and its partner nations.

Understanding how climate change and environmental security are considered wicked problems and then to deconstruct these wicked problems, we're using a tool called facilitated dialogues. We will also give you an overview overview of a current project that we have funded through the Army Study Proposal entitled "The Conceptual Model for Considering the Impact of Emerging Stressors on Future Disasters".

And then we'll hopefully end with enough time for conversation. What is our bottom line up front? Why are Angela and I here today and specifically why are we talking about climate change and the impact of environmental security? Now there was a paper published in 2011 in the

Journal Nature where they proposed the changes in the global climate could have been responsible for episodes of widespread armed violence..

What they tried to do in this research was to directly associate planetary climate changes with global patterns of armed conflict by examining the dominant inter annual mode of the modern climate specifically the El Nino Southern Oscillation arm or more commonly known as ENSO.

Historians have argued that ENSO may have driven global patterns of civil conflict in the distant past so their hypothesis was to test how conflict and climate change are related quantitatively. This paper used data from 1950 to 2004 where they show that the probability of new civil conflicts arising throughout the tropics actually doubles through the El Nino years.

The result of the paper indicates that ENSO may have had a role in more than 21% of all civil conflicts since 1950. And it's really a seminal paper and the first time that you saw the connection between the stability of modern societies and the correlation to global climate change.

Throughout the paper, what they found was that any 1 to 2 degree change in temperature (I believe it was an increase in temperature actually) had a corresponding increase in conflict. They actually defined conflict greater than 25 battle death per that specific area. Thus what we're trying to do here in our research is to downscale that analysis and test out that those relationships in various countries at local scales.

In order to do that, we have a conceptual model that demonstrates our research objectives: we want to understand how national security really affects human security at the local level and how water, climate change and in the environmental writ large- can actually impact the relationship between

national security and human security. This conceptual model that we've developed recently throughout our work here at GRL was to really focus on how do we model this relationship and how do we unpick the wicked problem of climate change and environmental security? And so the best way we knew how to demonstrate that information was with this specific graph. And here what we're trying to understand is how do vulnerabilities get created in local situations and those vulnerabilities really impact human security which is depicted as the break in the system.

We understand that there are many influences including both endogenous as well as exogenous factors that go into negotiating how the vulnerabilities affect human security. We think that the mission of the DoD is squarely in line with understanding how vulnerabilities are created. And it's probably more in the mandate of USAID and the State Department to understand how to facilitate resilience.

So that's where we're centered most of our work our research (towards the left on the conceptual diagram): understanding how vulnerabilities exist as well those that are induced by climate changes and climate in the environment. And in order to do that we need to understand adaptive capacity. Adaptive capacity we define as the ability to cope with change.

Now we know humans have evolved over millennia and part of our evolution required the innate ability to adapt to changes in our environment. So, adaptation or adaptive capacity is really nothing new. What is new is the frequency and the rate of change that occurs now in these global connected systems, that we are very concerned with. And so we center the crux of our research on better understanding how vulnerabilities negotiated in small scale local environments as well as adaptive capacity or the ability to cope with that change.

Now this is a great issue of concern for one of our major customers which is US Africa Command or AFRICOM and they see environmental security (abbreviated ENSEC) as a huge part of their mission set. And the J44 directorate specifically has a component of environmental security where the focus is really to build the capability to respond to the environmental contingencies by working with affiliates of the theater security cooperation programs.

What's important here is to understand that AFRICOM realizes that the environment affects security and simultaneously security affects the environment. Thus what we're trying to do as researchers is to create the tools that can feed into better developing the capability to respond to changes in the environment and those induced by climate change. What we as researchers suggest is (and this reinforced by AFRICOM) are that civil military partnerships are the most critical way to promote stability through sustainable social-ecological practices.

AFRICOM recognizes that environmental security and issues of climate change require a whole government approach and that we really need better dialogue or better relationships between both civilian entities as well as military entities in their AFRICOM AOR (which is basically the continent of Sub-Saharan Africa). And so, again as researchers, that's what we try to help them do.

I believe that this is hard because both the climate and the environment are exceedingly complex and mitigating solutions actually defy conventional solutions. We believe that these wicked problems (climate and the environment) will not be solved by the same tools and processes that are complicit in creating them. Neither will they be resolved by approaches short

on explaining the complex interactions of the multiple causes and consequences of the problems.

Climate change is probably one of the largest of wicked problems affecting or confronting AFRICOM and the other geographic combatant commands. Specifically in Africa, the physical consequences of climate change on Africa's resources are progressively worsening and at the same time existing institutional arrangements demonstrate weak capacity to tackle climate change related complexities in environmental and water management.

Therefore it warrants a very dynamic approach combining both complex and adaptive system thinking which capitalizes on instrumental gains from prior existing institutions. We suggest as researchers at GRL and CERL that focusing on developing better relationships between civil and military entities are exactly that type of response that are needed to deal with these wicked problems and are focusing on understanding vulnerability. In this way, climate change we suggest actually offers an opportunity for Africa to adapt its risk management system to a climate risk management system.

Current Chairman of Joint Chiefs of Staff General Martin Dempsey testified to Congress in 2011 on why wicked problem solving was critical for the military to have a better handle on. He said that too often as a military, we often have the dynamics wrong: we spend five minutes understanding the problem and 55 minutes solving the problem. In fact what we should be doing is spending 55 minutes understanding the problem and then five minutes fixing it if we can (that is if we're capable of fixing the actual problem.)

As we previously stated, because climate change and environmental security are wicked problems, we can't think statically, so we have to think dynamically. And because we can't think in stove pipes, we have to think

about the relationships between various entities. And finally because we can't really use the checklist approach, we have to think about the process of better understanding how climate change, as well as, environmental security are wicked problems.

Now the reason that we are talking to you today is because of our ongoing work with AFRICOM but we have also worked with both EUCOM a little, SOUTHCOM a little and now are engaging PACOM as a potential customer.

All of our research efforts have been focused on developing and incorporating multi-lateral civil military entities into promoting strengthened disaster risk management in various partner nations so that the DoD as well as the various combat commands can advance regional stability as well as reducing the risk of failed states which could occur because of exacerbated climate and environmental issues. Now we're not suggesting that climate and environmental security actually CAUSE conflict but rather there's a correlation there and that we need to better understand.

–All the geographic COCOMS that we're working with, conduct building partnership capacity activities where they focus on developing self-sufficiency of various partner nations that actually reduces the need for global assistance as well as international disaster aid. By utilizing this approach this provides opportunities for enhanced openness and cooperation not only within the partner nation entities between the civilian and military assets but also between regional partners.

In order to empower these nations to enhance their adaptive capacity we suggest that the civil military entities in those countries should really facilitate exchanges of information and expertise. They need to conduct enhanced and

increased training and capacity building on better understanding how climate changing environmental security affects their AOR.

We really need more research on the role of how civil military cooperation can facilitate risk management approaches to diminishing the vulnerabilities induced by climate change as well as environmental security. Additionally, this is perhaps outside the lane of research but often we find ourselves looking to doctrine to justify why the DoD needs to be concerned with environmental security and water security and climate change. What we found is that there is little to no doctrine on this yet.

Although there are many policy documents including the Quadrennial Defense Review as well as the Quadrennial Diplomacy and Development Review which all suggests that the impacts of climate change will affect national security as well as international security but doctrine still has to catch up. So even though that's not maybe not in the direct role or research we may need to help in that process to a certain degree.

I'm going to hand over the conversation to my colleague Angela Rhodes who's going to speak to you about a specific report that we're working on for within the Army Studies Proposal

Angela Rhodes: Hi good afternoon. I want to echo what Swathi said we thank you for having us here this afternoon and we're excited to share our work with this community of interest. I think there's great value in facilitated events and they're an excellent means to communicate across the disciplines while working complex problem areas that have multiple stakeholders.

At the facilitated events that I have participated in with municipalities and even recently with Fort Custer and Fort Watauga planning, have shown how

group effectiveness and problem solving increase dramatically by adding facilitated dialogue. I'm excited to be here to present to you today and hopefully become a regular participant in these Webinars. Thank you Swathi for the introduction.

What I'd like to share with you as Swathi mentioned is a research project we're working on with a team of individuals from multiple ERDC Labs as well as IWR. This is an Army study as part of the AR55 program if you're familiar with that. They're usually one- year long studies on a topic of current and immediate interest to Army leadership and they're funded by the Department of the Army. Our study report is titled Conceptual Model for Considering the Impacts of Emerging Stressors on Future Disasters and I think Swathi mentioned it's currently wrapping up this FY.

What I'd like to do here is just give you an overview of that study and share some of our findings so far. Essentially, the team studied the concept of climate change as a forcing function or threat multiplier that exacerbates other stressors that are pre-existing in the environment such as urbanization, migration, land degradation, and a lack of institutional governance to name a few. So what are these things that push the existing systems (social ecological systems for example) over their thresholds to adapt?

This speaks to a lot of what Swathi has already briefed. When do we see this happening within these systems and how do these systems cope? So when the effects of disasters are amplified by the co-occurrence of emerging stressors including climate change, urbanization and some of the others that I listed a minute ago it can result in building on marginal land that does not have essential services. - Population growth, other economic stress, poor governance.

There is a US objective of reducing calls for international assistance raising the threshold at which international assistance is actually required. So we believe one way to do this is by learning the adaptive capacity of these systems and better preparing for new and emerging stressors on those future disasters. In the next few slides I'll review some of our key findings from the study and describe what we believe to be a conceptual model or research design for future study in this space.

I want to talk a little bit about the study approach to set the context for everyone. We examined individual stressors through the lens of a disaster cycle which is what you see here. The disaster cycle has traditionally been considered to consist of four stages that you see on the slide – planning, preparedness, response recovery, and mitigation. More recently, disaster management has begun to speak of the last phase as mitigation and adaptation to be cognizant of the fact that we may not always want to use structural measures to reduce the impacts of future disaster events.

We may sometimes adjust in ways that accept the event is going to happen or occur so that we don't engineer a solution just because it's a cost saving measure or in recognition that natural forces may be best addressed through use of a quasi natural approach. The disaster cycle planning, preparedness response, recovery, mitigation and adaptation is used to examine where actions can be taken to improve the strength and the ability of the nations through interventions of the US government (including the military) in ways in which the resilience of a partner nation can be improved.

That sort of sets the context. What we did was look at each stressor through the lens of this disaster cycle and ask pointed questions of the literature we surveyed. A few examples of that are what is the stressor to the system (we give a basic overview of these individual stressors) as they relate to conditions

of climate change? What are the current mechanisms for adaptation to that stressor within the current system or context? Also, how do individual stressors create difficulties for the partner nation at the local and regional level?

What are the anticipated affects for climate change in this region? And are they being considered and how? The literature survey exposed culturally relevant disaster risk reduction and adaptation programs. We did find a lot of this occurring and we thought that those were pretty important lessons learned to capture. If there are existing technology methods available, what are they and how are they utilized?

And then, we really wanted to get an understanding of the adaptive capacity of these systems and how and if that is demonstrated in litigation and preparing for future events.

So if you go to the next slide with those questions and citings in mind, we clearly saw the need for continued engagements with partners and facilitated dialogue about climate change initiatives at the regional and local level. Swathi will get into more about why facilitated dialogues are important in this context. The study really brought home this message for us as well as beginning to define how we might conceptually consider multiple stressors for various missions such as disaster response and management assistance and emergency management exercises.

We can see in this graphic how climate change impacts have a compounded affect both direct and indirect on preexisting vulnerability. Some of our key findings for developing a conceptual model for understanding multiple stressors were that we learned first we need to gain a better understanding of those pre-existing vulnerabilities. And we believe that's part of a solid

research design that can lead to improving resiliency when we transition to the host nation or to other multi-national agencies.

By better understanding the adaptive capacities of these systems, systems become more resilient to those emerging stressors. Another finding is that our conceptual model really should consider the historic regional disasters that have taken place, as well as, consider emerging stressors for that region and evaluate how those stressors might exacerbate the disasters. For example, natural disasters and climate change can directly influence weak governance when a government is unable to meet the needs and expectations of a citizen and lives and property are lost or threatened.

The civil disaster management agency or ministry may not be able to bring sufficient numbers or responders or equipment into the response. So, this results in the possibility of a civil disturbance and in extreme cases, the possibility of the military overthrowing the government on the basis of its inability to serve its citizens and maintain order. Therefore, evaluating how these stressors might exacerbate the disaster is critical. And, what adaptation measures are possible.

Another key finding is it's important to evaluate the regional human capacity for dealing with these potential future disasters in light of the emerging stressors.

The final key point I want to make with regard to the conceptual model is that identifying changes and investments and new approaches for improving the adaptive capacity of local and regional is key. We capture that opportunity to help partner nations build their capacity to be resilient and prepare for disasters of the future with the ultimate goal of the United States to raise that

threshold at which international assistance is actually required. This would reduce the number of requests for such assistance.

There are future resource questions that we identified from this work that we need to better understand. First and foremost, interactions between some of these social ecological systems such as water, sewage, energy systems and what does that nexus look like? How should that be studied both for the Army as well as our multi-national partners? And second, what are the drivers to understanding this nexus such as population growth, urbanization and the society beliefs and behaviors.

Furthermore, what would be really useful to users is an Army tailored authoritative network model that integrates first the probabilities of disaster and their impacts on water energy and food and the ability of a region. Second, the social ecological system response to those existing and new stressors. This model would examine how added future direct and indirect climate stressors change the disaster and impact social ecological system response to stressors. .

To summarize, this identification of critical thresholds feedback processes and the capacity to adapt and mitigation measures is really the sweet spot for anticipating an adaptation. This raises that threshold we talked about earlier or regarding (key managing) assistance and international assistance.

With that said, we're interested in partnering as we move forward with our research. We're finalizing the study now and we're on track for publication in October. Email Swathi or I if you'd like to learn more about the study as it's published and we look forward to sharing those results. I'll turn it back over to Swathi to discuss the importance of facilitated dialogues for climate change analysis. Thank you very much.

Swathi Veeravalli: Thank you Angela. So this is a one year report we have spoken about had a geographical focus. We were looking at what was happening in Senegal from both the climate and environmental security perspective. And so like Angela mentioned we were interested in what long term climate trends and short term weather events were occurring in Senegal and coupling that analysis with understanding how the social system or humans were responding to those changes.

And obviously because it was a one year project, we did not have time to extensively look into and do a deep dive analysis of the problem. So we wanted to determine what were the other multiple methods in which we could use to understand how climate change and how environmental security are wicked problems. One method that we suggested for AFRICOM to use would be conducting facilitated dialogues.

And our definition of facilitated dialogue is on the screen. We really see it as a process and it's an iterative process in which members can all contribute to understanding, diagnosing, identifying what the problems are within the country (through the lens of climate change) as well as, identifying potential solutions and really focusing on problem identification similar to the report that Angela was leading, where we hope to identify some of those issues through facilitated dialogues.

What is unique here is that we're really relying upon local knowledge and incorporating what other subject matter experts have found to understand some of these issues. Obviously, since locals live in those countries they have a better understanding and analysis of what is going on.

Thus when conducting these engagements with host foreign nations, we have to ensure participation from both the civilian sector, as well as, the military sector to diagnose some of the local problems. In this way, we help create a regional network of civil-military people that when that disaster occurs, at least they know who to call on both within the country, as well as, between regions. And why are we using facilitated dialogues as part of these endeavours? And what's the relation to climate change? It is partly because the climate science is really overwhelming and often marketed by climate skeptics as being uncertain.

Scientific uncertainty is a familiar concept. So, it's relatively hard to understand how global climate change occurs if you don't have access to sophisticated global climate change circulation models and then the capacity to downscale those models to a regional level.

But again relying upon local knowledge, how can we use other mechanisms to understand uncertainty? Or what Rayner calls "uncomfortable knowledge"? Our thoughts were used in facilitated dialogues in order for people to make sense of the complexity of the world. In this manner, participating nations and their civilian and military sectors can develop effective climate change adaptation.

Using facilitated dialogues allows local knowledge to be incorporated when planning for climate change. And the process of doing so means that much of what is known about their specific landscapes ordinarily may have been previously excluded which can be uncomfortable. We see facilitated dialogue plays a role in incorporating that uncomfortable knowledge. And then uncomfortable knowledge can mean anything from the climate science to local indigenous knowledge.

And it's also a way to be more inclusive and facilitate relationships between both civilian and military sectors. In one particular paper by Steve Rayner from Oxford, he comes up with four implicit strategies on how facilitated dialogues can better use uncomfortable knowledge.

He suggests that by creating what he calls clumsy arrangements and if we sort of use the synonym of civil military collaboration as a "clumsy". What I mean is that it is often not neat and I mean not in any pejorative way, just not a neat arrangement. So, we can ensure that uncomfortable knowledge is not excluded from various conversations especially when dealing with wicked problems, whereby the accepted versions of the truth excludes knowledge that is crucial for making sense of and addressing that problem.

So in this way, we suggest to AFRICOM and I hope they agree, I think, they do, that facilitated dialogues can then become powerful tools. Not only for understanding climate change and understanding vulnerability associated with climate change, but also you can start creating effective climate change adaptation and more effective adaptive capacity measures. Thus, these engagements with host foreign nations can really help promote sort of participatory decision making and planning response and recovery activities which are critical. We know that more climate induced disasters will occur and reoccurring facilitated dialogues can help create that civil military collaboration to do better planning and response beforehand.

They also create sense of self sufficiency like Angela mentioned: the host nation is actually able and capable to respond to climatic changes as they develop those civil military collaborations to enable and support individuals and communities to assume responsibility for their own preparedness.

Finally, we're stressing more partnerships between not just civil military entities within a country, but also between countries. As we know, climate change and issues of water and environments often don't follow borders - there's always a transboundary component to this so when an event occurs, it is not going to neatly align with the country's boundaries. Therefore, more regional organizations are going to have to be more common when responding to these disasters.

So many of the facilitated dialogues will have a multi-lateral component where more than one country will be present. We are creating collaboration not only between civil military within countries, but also within the region itself.

I'm going to conclude here with examples of some engagements that we're doing in Ethiopia as a demonstration of how we're using facilitated dialogues. The government of Ethiopia requested AFRICOM to assist with the development and execution of regional environmental security seminars to be held in their country in order to do climate change adaptation and disaster response. And they have invited the country of Kenya as well because of how close geographically they are to each other.

The purpose is really to discuss and facilitate interests in engaging environmental and water security collaboration efforts between DoD assets which includes combined joint taskforce Horn of Africa or more commonly known as CJTF-HOA with its Ethiopian and Kenyan partners. During this engagement, there will be a variety of both Ethiopian and Kenyan, as well as, US government officials to determine interest in how to negotiate some of these issues associated with climate change and water.

AFRICOM wants to engage Ethiopians and Kenyans in water and environmental security issues, as well as, pursue funding in support of these activities through the defense environmental and international cooperation program hosted through the OSD (Office of Secretary of Defense).

Usually these workshops are about four days and attended by subject matter experts both from the US, as well as, the foreign nations. Historically, they had not been very interactive as they were more commonly just one or two days of high level subject matter presentations with very limited engagements with participants. Now with the participation of ERDC, we're actually helping change those conversations and from being more top down to bottom up and we see facilitated dialogues as a way to do this.

Our particular approach involves using the concept of triage in which we're borrowing an synonym - I'm sorry - an example for medical triage where you sort of do a quick assessment to know what the problem is then you follow up and you try to solve the problem or stop the bleeding and then finally you transition over the patient to a doctor that is more adequately equipped to deal with that situation.

So if we use the DoD in this analogy and understand that whatever the DoD does we'll need to eventually transition over to State, USAID and the foreign nation itself. I think the concept of a triage approach is very helpful. And so similar to triage, we have a three step approach. The first step is where we do a quick and dirty assessment by using the Internet to search for information where we understand what baseline indicators are within that country.

The University of Notre Dame created an index of every country in the world and gave them a vulnerability score as you'll see on this screen. Here is one specific to Senegal and you see that Senegal is more vulnerable than other countries, in fact it's the 39th most vulnerable country in the world and 53rd

least ready country. So obviously, they need a lot of help as the effects of climate change increase in the country.

Secondly, prior to going to conduct a country engagement itself, we like to conduct a pre-engagement survey where we start asking the participants some questions similar to what they will be asked during the facilitated discussion itself, but really to just sort of peak their interest and to understand how much knowledge the participants have of disaster management in that particular region. You'll see here one particular survey that we are doing for the Ethiopia event where we're asking participant's knowledge about their multiple hazard early warning systems.

And we use the results of this (we actually give it to the participants about a week to two weeks out). We use the results to do a further deep dive into our facilitated dialogue in country. Thus step 2 of triage is a stakeholder engagement and this is when we're actually in the country itself.

Right now, we usually approximate two hours to conduct the facilitated dialogue where we're really trying to create a shared understanding of various climate change terminology like adaptive capacity, climate change, vulnerability, mitigation, adaptation, and try to facilitate a shared understanding of how early warning systems (and this is an example of what we're doing in Ethiopia) can be critical as you foster dialogue both within the country between its civil military assets, as well as, between countries.

In those two hours, we'll conduct two academic question and answer approaches to define these terms and then we'll spend the latter half of it debriefing and understanding next steps. Participants in the room follow up that they can actually conduct climate adaptation themselves as it relates back to climate change and security issues.

The third step is conducted by the researchers ourselves where we do an in-depth adaptive capacity assessment where similar to the vulnerability index developed by University of Notre Dame. We do a sort of a deeper dive assessment similar to the analysis that Angela just explained with the Army's study's report where we're trying to integrate some of these analysis between the globally available data to information that we distilled from the participants both in the pre-engagement survey, as well as, during the stakeholder engagement itself.

We think that AFRICOM is pleased with this approach because what we found is that words really matter, especially when you're dealing with cross-cultural issues. So often this is the first time that civilians engaged with military and the military engaged with civilians. So there's a lot of protocol and body language and all of these things are almost hyper sensitized in these facilitated dialogues. And so as facilitators, we need to be very mindful of that.

We also find that the pre-survey is really critical to engagement because as I mentioned, we used the pre-survey to create the facilitated dialogue from a more demand based perspective. The stakeholders know that we're coming with a little bit of knowledge and we're not relatively fresh off the boat and so it gives us a chance to distill some of this uncomfortable knowledge information that we ordinarily would not have had had we not conducted the pre-survey.

And the dialogue is also critical when you're dealing with this uncomfortable knowledge as we are getting comfortable with climate change and environmental security issues as they are wicked problems. The facilitated dialogue really deconstructs some of those hierarchies that exist both within

countries and between countries and sort of gets everybody to a level playing field which finally leads to our fourth point that and that the this triage approach helps to create a foundational relationship between both the military entities, but it really goes back to the nations themselves to sustain that community of interest despite those cross-cultural competencies that I mentioned earlier.

Then, it may be outside the role of the DoD at that point, so that transition is over to the country itself, as well as, USAID and the State Department.

We've reached our concluding remarks. We think that climate change could have the potential for escalating conflict. But in this manner, we really see it as a way and opportunity to facilitate collaboration if we can do it right and if we can do it right now because the costs associated with disasters and war/conflict just keep rising.

By using tools such as facilitated dialogues and developing those relationships prior to those disasters occurring, we're actually helping to increase adaptive capacity and responsiveness in various countries.

Thank you very much for your time. We really appreciate it. Hopefully, we have left you enough time for questions and answers. As Angela mentioned, we really would like to participate in this community of interest, rely upon your expertise, and develop some good partnerships between civil works as well as what we're doing for the military section. So thank you again.

Julie Marcy: This is Julie. Thank you so much Swathi and Angela. Swathi, if you could stop sharing your desktop, that'll take us back to our regular interface and then Courtney will unmute everyone. Participants if you happen to be using your

individual Mute button on your phone, you will still need to deactivate that for the question and answer session.

So let's open up the floor to any questions or comments you have for Swathi and Angela. You can use either Chat or ask them verbally. I have a couple, but I'll give you all a chance first. Remember you may be muted and depending on your phone, you may have to do a Star 6 to unmute.

(Seth Cohen): I'll ask one Julie this is (Seth). Thanks for a great presentation first of all and I'm really interested in it from someone that's worked in kind of challenging cross-cultural settings in Africa. You answered some of my questions about how to design the dialogue in a way that it'll be more interactive. And I guess I'm curious about any of the challenges you had with getting people to participate since it was their first time in that kind of civil military mixed environment.

I would also like to know about inclusivity like getting the right people in the room so that some of those more marginalized voices or perspectives might be heard. Did you address any of those things other than that survey you used? Were there other strategies to design the stakeholder engagement piece with local input?

Swathi Veeravalli: Thank you (Seth) those are some great questions. So your first question about getting the civil military people to speak in a mixed environment. We usually have it on day two so some of the formalities are out of the way. And so the first day, we really rely upon the strength of the moderator. Day one is sort of high level and we do several icebreaking activities. By the time we roll around to day two, the ice is relatively broken and people are familiar with each other, they've seen each other before.

But we do other icebreaking activities during the facilitated dialogue itself before we get to the crux of the matter. And again the importance of having a great moderator cannot be under emphasized, especially when you have sensitivities between genders. Being mindful of that it's critical when you're facilitating some of these issues and it's hard. You don't always get it correct.

We take notes and try to be very mindful and respectful of other people's cultures and as we are in their AOR. The second part of your question about getting the right people in the room, especially during the stakeholder engagement, that's an excellent point. Usually AFRICOM or the other geographic command take responsibility for doing the invitations and we really rely upon the USA Embassy because they are in country to help identify those people that may be ordinarily marginalized and not working with these communities.

The longer answer is that once we establish this community of interest and have the facilitated dialogue, participants will often come up to the facilitated moderators and say this organization should really be here or so and so really should be here because he or she is an expert in this. So the point is that there's not just a one off, that it's iterative.

Yes this is a multi-lateral engagement for the first year, but AFRICOM sustains these conversations by coming back and doing bilateral engagements just between the US and with other countries. I hope that answers your question.

(Seth Cohen): Yes thanks.

Julie Marcy: Any other questions. Angela and Swathi if you see a Chat notice from (Eileen Takata)...she's looking for a life line.

(Eileen Takata): Help help. And I don't need to take up time, this is far more domestic and civil works related and out of district office but (Kate White) gave us funding to do a kind of a climate response to climate change (IWRM) type activity at a district level. To cap off this pilot, we are having this internal district workshop in two weeks.

I'm just trying to get as many people in the district with different roles and responsibilities and business lines to find out what the climate change responses for emergency management, reservoir regulations, safety, asset management or planning are. And, what are the gaps and what are we doing? Do we need more guidance blah blah blah blah. So it's more domestic but nonetheless I need help. I can facilitate it's just not an area of expertise for me.

What I heard is already useful. I heard Swathi say something about a vulnerability index so should I be brainstorming what are our vulnerabilities are? I am developing the agenda and I could really use some help in coaching or what would be a good agenda. I have one day with a bunch a people and then we have to write up about it and send it off to (Kate).

Angela Rhodes: Have you seen - this is Angela have you seen some of the work that (Paul Echol) has done in support of climate change? I know he works with (Kate White) too. I know I was sent one for Custer and for Watauga, so that might be a useful avenue to explore if you haven't already.

(Eileen Takata): I have no idea who he is.

Angela Rhodes: Okay.

(Eileen Takata): If you could put me in touch with him that would be great or a sample agenda. I'm more of a practical not a research type, but I'm just looking for the steps for affecting a response to climate change. If you could please help me with that it'll be awesome.

Julie Marcy: (Eileen) this is Julie and it sounds like a fantastic meeting that you're putting together. I think maybe you and Swathi or Angela can have a little chat about that. I see a direct correlation to the type of work they're doing to what you're proposing to where you can tap into some of their other lessons learned. I have another Chat message to everyone from (Chuck Theiling). Chuck's looking at the climate driven risk assessment cycle for existing civil works projects. That perhaps we go through the efforts of anticipating or evaluating risks at the beginning of a project, but maybe we don't go back and re-evaluate with changing hydrology or perhaps climate change impact. So (Chuck) do you want to say a little more about that?

(Chuck Theiling): No that pretty much reviewed it pretty well. I think when we're acknowledging non-stationary hydrology it really makes it a real concern.

Julie Marcy: Angela and Swathi do you have any thoughts about that?

Swathi Veeravalli: Yes this is Swathi and (Chuck) that's a great question and unfortunately I'm not a climate scientist yet I'm working on it. Your point about non-stationary is really well taken. I know that with projects that the World Bank does they use something called the X and T which is before the model or before the project or intervention occurs. So it's the pre-assessment and then they actually do the assessment or whatever the model or the intervention is. But then they do something called an ex-post which is to go back and return to see and really validate whether or not that model or intervention met its roles or objectives or whatever it was supposed to do.

And I think we as researchers really need to do a better job of that. If you have any ideas from the civil side to do some of these climate driven risk assessments I know Angela and I would really love to talk to you more about it and learn a little bit more about what you do and see if there's overlap.

(Chuck Theiling): Yes I've got a lot of stuff that I'm really interested in and Angela I'm only a couple of hours away from you so I may come knocking on your door.

Angela Rhodes: Sounds great I'm here.

Julie Marcy: All right it sounds like a deal. Angela and Swathi, we have a few minutes left and I think you might have a question or two to pose to the participants?

Swathi Veeravalli: Yes I mean if there's anything that, you know, in your respective roles of conducting facilitated dialogues or other tools similar to that if you have any lessons learned on things that do and do not work we would really love to hear that more. Courtney does have our emails up, so if there's anything that you'd like to share, we would really love to learn more about what your relative your expertise.

I know that Julie you have an archive so maybe Angela and I could also go through the archives of previous facilitator exchange Webinars and see who's done what and we can also follow-up with individuals.

Julie Marcy: Sure that's great. Have any of the participants on the line done your own facilitated discussions focusing on various aspects of climate change?

Swathi Veeravalli: And it doesn't need to be climate specific it could be about just generally conducting facilitated dialogues.

Julie Marcy: This is Julie again - I know that a lot of our folks work with very diverse groups and with very challenging environmental topics from time to time, everything from cleaning up hazardous waste sites to planning new engineered projects or restoration projects. So, we are a very diverse group.

(Chuck Theiling): Yes one of the things that we're working on is large scale non-structural measures. We haven't had the workshops yet, but we're beginning to open up dialogue and we're definitely working towards that.

Julie Marcy: Well that's great (Chuck). Any other comments or questions from our participants?

(Seth Cohen): It's (Seth Cohen) again. Yes I'll follow-up with both of you. I have done facilitated dialogues in similar kind of environments to what you're describing and would be interested in seeing how to discuss and work on potential opportunities together going forward.

Julie Marcy: Great (Seth). And Courtney you had a question also?

Courtney Chambers: Yes it was a question. Being in Africa, what is their response to the discussion around climate change? Because I can understand disaster preparedness is likely having pretty good traction, but climate change is somewhat of a "oh no! take cover" kind of problem, so how do they receive that? And then your strategies...do you try to implement human intervention to prevent additional change or just simply prepare for potential disasters?

Swathi Veeravalli: Those are some excellent questions Courtney and I'm glad you brought them up. So after your first point we found that in most of our countries across the regions within Africa is that climate change doesn't induce sensitivity like it does in the US. In fact, in many of the countries that we've gone to they

have ministers of climate change which, you know, perfect world, it would great if here in the US we could even agree that climate change is an issue.

What we find is that some of the countries are almost, I don't want to say angry, but they know that the US and all of the more developed countries are greenhouse gas emitters and have a huge carbon footprint. They are aware of that and they're not shy about bringing that up.

Actually that goes back to a point Seth made earlier about the marginalized people or making sure we get the right people in the room in that we've often found with the concepts of environmental security and climate change, is it almost brings everybody's attention together and they talk in a way that they maybe would not have talked before. We actually are able to get stakeholders that don't ordinarily talk to each other talking to each other because they're collaborating about something that affects everybody.

So it really does unify folks and sometimes it has the opposite affect when it's really reunifying and they gang up on AFRICOM. As facilitators we need to be mindful of that. The point is well taken that the US and the developed world has a huge carbon footprint and then often don't experience the brunt of the disaster to the same degree which relates to your second question. We don't actually focus much on mitigation or stopping climate change.

We focus more on adaptation. And so developing that adapter capacity or that capacity to respond to changing climates barring development and other paradigms, that's what we really tried to do so. Thank you for that question.

Courtney Chambers: Thanks.

Julie Marcy: This is Julie again. We've had some great discussion this afternoon. Swathi and Angela thank you so much for an outstanding presentation. This was a little different twist from some of our usual topics, but we felt that climate change and the work that you're doing on helping to build resiliency is very appropriate for both the military and the civil work we do. I really appreciate the time you've spent with us and participants I appreciate all of you tuning in with us.

END