

Speaking of Water  
Water Conflict Chronology  
Dr. Peter Gleick and Brett Walton

J. Carl Ganter

There's a saying that wars will be fought over water. But if not outright wars, a new report reveals a significant rise in violence over water scarcity.

Dr. Peter Gleick

Explicitly, we've seen very large numbers in recent years of water as a trigger of conflict primarily associated with concerns about drought, about scarcity, about control of water resources.

J. Carl Ganter

I'm J. Carl Ganter and this is Speaking of Water from Circle of Blue. Today, Circle of Blue's Brett Walton is joined by Dr. Peter Gleick, curator of the Water Conflict Chronology.

Brett Walton

This is Brett Walton, a reporter for Circle of Blue. And you're listening to Speaking of Water, a series of conversations about the world's urgent water issues. The Pacific Institute is a leading water policy think tank for three decades. The Institute has been tracking and categorizing incidents of violence that are associated with freshwater. The institute just updated its database, adding more than 300 incidents that occurred over the last three years.

Brett Walton

Here today to discuss the water conflict chronology is Peter Gleick, co-founder and president emeritus of the Pacific Institute. Peter, thanks for joining me.

Dr. Peter Gleick

Happy to be here. Thanks for having me on.

Brett Walton

Events in the database stretch back 4500 years. But the most recent entry happened last month when Russian forces destroyed a dam during their invasion of Ukraine. So these are timely and relevant matters related to conflict and water. To start us off. Can you explain a little bit about the water conflict chronology and why you embarked on this project?

Dr. Peter Gleick

Sure. So many years ago, really at the beginning of our work at the Pacific Institute, we started to try to understand the way water resources, freshwater resources were connected to international politics, international disagreements, and specifically violent conflicts. And so for a very long time now, we've been tracking and recording in the Water Conflict Chronology and open-source database examples throughout history of ways in which water has been a source of tension and conflicts around the world.

Dr. Peter Gleick

We look at water as a trigger of conflict where competition or control of water has been an issue. Water is a casualty of conflict where water systems have been victims and targets of conflicts that may start for other reasons. And water is a weapon of conflict where water or again, water systems have been used as weapons during conflicts.

Dr. Peter Gleick

The bad news is there are many, many of these entries with this new update we're up to over 1300 entries from regions around the world.

Brett Walton

And in this new update, are you seeing any trends or patterns in the types of conflicts that are occurring?

Dr. Peter Gleick

Yeah, we're seeing two kinds of trends. The first is simply the number of conflicts over water have been increasing over the last several decades, quite substantially. Numbers per year, that is. And secondly, because we look at water as a trigger. Water as a casualty. And water as a weapon. We've also seen a very substantial increase in the numbers in particular categories in explicitly we've seen very large numbers in recent years of water as a trigger of conflict, primarily associated with concerns about drought, about scarcity, about control of water resources, but also large numbers and growing numbers of water systems as casualties of conflicts, conflicts, they may start for entirely other reasons, reasons associated with politics or economics or ethnic disputes, but where water systems have been targeted during those conflicts.

Brett Walton

Right. To get a bit more into these categories, there are three different categories that you put these incidents into. You mentioned one, water is a casualty of conflict. What sort of things go into that category so that people might be able to picture what these are?

Dr. Peter Gleick

Well, what we've seen is, again, in, for example, the Middle East, where we're seeing lots of violence associated with ethnic and religious and ideological disputes often that go back centuries in their origin. Water systems, civilian water systems, water pipelines, water dams, water delivery systems have been explicitly targeted during those conflicts. Water systems have been bombed in cities. That type of conflict is unfortunately both a violation of international law, but also increasingly increasingly prevalent.

Brett Walton

And how does that differ from water being classified as a weapon of war?

Dr. Peter Gleick

So water as a weapon is a different kind of event. Where, again, water systems, for example, dams and water supply systems, are used explicitly as weapons during conflict. Where, for example, ISIS, the

Islamic State, took over control of dams on the Tigris and Euphrates rivers and then withheld water or released water as weapons during those conflicts.

That's a little bit different than water is a casualty where those systems have simply been targeted during conflicts. Here, where water is a weapon, water systems have explicitly been used as a weapon during violence.

Brett Walton

The third category is water triggering conflict. And what sorts of things fit into this?

Dr. Peter Gleick

Now, so this is sort of the most typical category that we think about when we think about water and conflict. That is where water resources and explicitly control or access to water have triggered violence. A whole series in the new update include riots in both Iran and in India associated with severe drought, where cutoffs of water or access to water has been denied during droughts in Iran.

In Esfahan, the city of Esfahan — where water has been delivered from Esfahan to a neighboring region in Iran, has triggered riots, riots and deaths and injuries associated with local communities that say, Look, you're taking our water away. That's a trigger of conflict that's led to both riots, but also responses on the government side that have led to injuries and deaths.

Brett Walton

The database looks backwards, categorizing and describing all of these events that have happened in the past. Does it also for the future point to where we might be going?

Dr. Peter Gleick

Well, the database, of course, is a historical one. It says, These are places and categories where water has been associated. Fresh water has been associated with violence and and conflict. It doesn't explicitly predict where these conflicts will occur, but it does tell us, based on the kinds of conflicts we've seen in the past, where we ought to be paying much more attention in the future.

So, for example, we know that there's been a terrible failure to provide safe water and sanitation to hundreds of millions, if not billions of people worldwide. The failure to provide safe water and sanitation. In the conflict database we also see that the failure to have access to safe water and sanitation are places where we've seen violence over water, where people want more water, where they riot over the failure to provide safe water and sanitation.

And so that does suggest that whatever we can do to provide safe water and sanitation for the billions of people that don't have it today offers an opportunity to reduce the risk that there's going to be tensions in the future. In those regions about the failure to provide safe water and sanitation. It also provides really an indication that climate change is increasingly going to be a challenge.

We know that climate change is occurring. Human caused climate change. We know that some of the most severe impacts of climate change are on extreme events, that is droughts and floods. And when we look at the risk of droughts causing tensions and conflicts over water it suggests that those are regions and places where future climate changes over water or even worse, today's climate changes are likely to raise tensions over access and control of water resources.

Brett Walton

Right. So we do have all these pressures now on water resources, both environmental and social, political. One of the things to point out here is that tensions and conflicts are not all the same. And I want to ask a question about scale — local, regional, international. What sorts of conflicts do you find most concerning and how are these conflicts addressed at different scales?

Dr. Peter Gleick

Yeah, that's a great question. So when we started looking at conflicts over water, many decades ago, the focus really was on nation-to-nation conflicts. A substantial fraction of the world's water is shared by two or more nations in rivers that cross borders, the Tigris and Euphrates. A classic example and one where the earliest conflict over water is recorded more than 4000 years ago is shared by Turkey and Syria and Iraq.

The Nile River is shared by 11 nations in Egypt, in northern Africa. Egypt, of course, being the most important, most vulnerable downstream nation on the Nile. The Colorado River in the United States is shared by the U.S. and Mexico. Basically, every major river worldwide is shared by two or more nations. And so the concern was how do we reduce the risk that countries will fight over shared international water resources?

The bad news is that more and more of the examples in the database today are subnational conflicts, their conflicts, smaller scale conflicts, but violence associated with droughts in Iran or India or Pakistan. It's examples where in 2020 the FBI arrested seven neo-Nazis in the United States for threatening to poison water supplies in the United States. We still worry about nation-to-nation conflicts. There are disputes between the Ukraine and Russia over water resources, and between Kazakhstan and Uzbekistan over shared water resources. Those are still a worry.

But we also now have to think more carefully about how to reduce the tensions within nations between ethnic groups in Northern Africa, for example, over control of wells between pastoralists and farmers. Those kinds of conflicts, those subnational conflicts are an increasing portion of what we see in the data.

Brett Walton

And the flip side of conflict, of course, is cooperation, which is not addressed in this database. But there are other sources that do look at cooperation. How do you see the interplay between these two? Conflict can be a baseline condition, and whether it leads to violence is one path and cooperation is the other. Are there things that you see looking through this database that could nudge a conflict solution in one direction or the other?

Dr. Peter Gleick

Yes, of course. You know, our ultimate goal is cooperation over water resources. And there are many, many more examples of efforts to cooperate over water but there are these conflicts and there are growing numbers of these conflicts and understanding the nature of the conflicts where they occur, why they occur, the parties that are involved can help us think about precisely that issue.

How do we move from conflict to cooperation? So, for example, when there are conflicts where water is a weapon used during conflict or a casualty during conflict, we have to realize that international laws of war, the Geneva Conventions, the 1977 protocols to the Geneva Conventions are very explicit about prohibiting attacks on civilian infrastructure during war, including again explicitly water.

And so international law becomes an important tool to think about to reduce the risk of conflict over water. Another example is providing safe water and sanitation to the millions and billions that don't have it. Today, though, the greater of the efforts which are underway, for example in the Sustainable Development Goals in the U.N. to meet basic human needs for water.

The more likely we are to take water out of that equation of conflict, if you provide safe water and sanitation as a basic human right, everyone on the planet, then tensions over access to water. The failure to meet needs for water and sanitation gets removed from the equation. So understanding where these conflicts occur can really help us think about strategies for reducing the risks in the long run.

Brett Walton

And looking at the map of conflicts that are listed in this chronology. They are clustered in certain areas, especially in the more recent incidents around areas that are already in conflict. So places like Yemen and North Africa, dry areas where there's already fighting going on. Is that a case where conflict goes hand and water conflict goes hand in hand with other conflicts?

Dr. Peter Gleick

Yes, I guess it should be no surprise that the richer countries of the world tend to have fewer of these examples. You know, I mentioned the FBI arresting neo-Nazis for threatening to poison U.S. water supplies. There aren't that many examples in the U.S. And we tend to have the institutions to provide water, to manage water, to deal with tensions over water, resources that regions in the developing world tend not to have.

In addition, again, perhaps no surprise as more and more of these entries are in places where water is scarce. The Middle East, which historically has had many of these entries, continues to have many entries over access to water, over control of water, over the use of water as a weapon. Examples in India and Pakistan, where there have been severe droughts in recent years. There are many examples in the database now where violence, small-scale violence, but violence associated with access to irrigation water or cut offs of water in urban centers have led to injuries and deaths.

Again, that should be no surprise, but it should also let us know these are areas where we really want to pay more attention, where we really want to think about strengthening technology and access to technology that provides access to water or institutions that manage water better. Those are all wake up calls for us.

Brett Walton

You mentioned technology I might also add another burgeoning area, arena of conflict that I've seen more entries in recent years is cyberspace and cybersecurity where you have people hacking into water systems, this being another venue for potential conflict, for water.

Dr. Peter Gleick

Yeah, that's another great example. Again, several decades ago, there were no examples in the cyber war kind of area. But in recent years, there have been a number of reported attacks on water related infrastructure using computer access. Israel has reported a whole series of cyber attacks on their water infrastructure. Other examples in the United States and Australia where hackers have tried to break in to water systems No serious injuries have been reported from that kind of event.

But it is again a wake-up call that we had better think about strengthening our protections as more and more of our water infrastructure is controlled by computers. We worry about losing control of access to chemicals in these in in these water systems. The possibility of cutting off water supplies because of cyber attacks on water infrastructure. Again, we're seeing more examples of that in the new update.

I should probably be specific that the water conflict chronology really focuses on violent events associated with water. And there are plenty of conflicts over water that don't raise to the level of rise to the level of violence. Yet the dispute between India and Coca-Cola over access to water by a local community versus the control of that local water resource by the Coca-Cola Company is a classic example of a dispute over access to water that didn't didn't lead to violence.

It's not in the database. But as water becomes more important to us worldwide, we are seeing more and more examples where tensions and control of local water resources, especially scarce ones, are leading to challenges And corporations absolutely have to be aware of this corporation's work. And in countries around the world where water is scarce, where access to safe water is still problematic, Corporate stewardship over water can go a long way toward reducing tensions locally over access to water between local communities and corporations.

And that's work that the United Nations and the UN CEO Water Mandate are working on very hard. But anything that we can do at the corporate level, at the community level, at the governmental level, to reduce these kinds of tensions is going to be important moving forward.

Brett Walton

It's a wake up call would be a good way to describe the water conflict chronology and just showing the range of conflict and violence that can happen over water around the world. So I want to thank you, Peter, for sharing the update to the chronology and all your lessons that you gleaned from it.

Dr. Peter Gleick  
Thanks very much.

Brett Walton

That's Peter Gleick, co-founder and president emeritus of the Pacific Institute, which publishes the work *The Water Conflict Chronology*. You'll find the database at [worldwater.org](http://worldwater.org) where you can click on the water conflict tab for Circle of Blue. I'm Brett Walton and this has been speaking of water. Thanks for listening.