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FLORA KLISE: Today, I am going to be giving you a full run-through of the Singapore-Malaysia water conflict. This is something I knew nothing about before the class but I've really enjoyed learning more about during this process and applying the things we've learned in the class this semester. So, please, ask questions if things are not clear. I can't promise I have an answer, but I'm excited to share what I've learned.

So these are the things I'm going to run through today, basically give you an overview of the case, then dive into the water resources for both areas and the key stakeholders, as well as a brief overview of the agreements, and then try to spend the bulk of the presentation talking about the water diplomacy framework and how I see room for improvement.

So this is a map of the region, just in case you're not familiar with this part of Southeast Asia. So Malaysia is much larger than Singapore. And, for this case, we're only considering peninsular Malaysia, which is on the left, and, specifically, Johor, which is the state that is most southernmost. And it's hard to tell from this perspective, but Singapore and Malaysia are separated by a small water body called the Johor Strait. And connecting the two countries physically is the Johor Causeway, or more commonly known as just the Causeway.

So a summary of this case can be summed up in these couple of bullet points. So current water agreements regulate the importation of raw water from Johor, Malaysia, to Singapore and importation of treated water from Singapore to Johor. So this map shows a simple overview of the Johor River basin. And you can see the prominent Johor River and the Linggiu Reservoir. And then the dotted line represents the series of pipes that cross the Johor Strait.

There is also complex river networks that offshoot from the main river, as well as you can see the Johor River Barrage, which is something I'll talk about a little bit more. That was a joint project to improve the water supply.

There have been four main agreements signed between the two parties, and the last agreements will expire in 2061. That's a number that-- or year that's going to come up a lot. And, despite ongoing negotiations since 1990, they've still failed to reach another agreement.

Singapore is classified as water-stressed and relies on water from Johor to currently meet 40% of its water demand, so extremely significant. And they're unable to meet their demand without this imported water. And a blossoming issue is the fact that Johor has increasing issues with meeting its own water demand due to a combination of increased pollution as well as droughts.

So, to talk about Malaysian water resources, Malaysia is fortunate to have very abundant water resources. Despite being so close to Singapore, it has quite a different landscape. It's covered in rainforests and experiences heavy rainfall almost all year. Some Malaysian states do suffer from chronic water shortages while others are experiencing surpluses. So how is that possible?

Before 1992, state governments had almost complete control over surface water resources. So I guess you can-- so, as a result, there's been a lot of issues of water management between the state government and the federal government, which has tried to become more involved as more issues arise across the states that are common and related to water resources.

Climate change and droughts put Malaysia at an increasing risk of becoming water-stressed in the next 50 years, according to research done by institutions such as the World Resources Institute. I used their Water Risk Atlas a lot to help shape my projections for this case. And I think it's really important to note that currently, Malaysia, and specifically Johor, has a lot of water and could manage it more efficiently to meet its needs. But it's possible, even managed efficiently, they won't be able to do so in the future.

And I think kind of the biggest point here is that Malaysia does not manage its water resources effectively currently, which is a big reason driving why they're unable to meet their water demand. This includes insufficient infrastructure to collect rainfall, extreme water pollution due to unregulated practices of mining, logging, land development, and sewage disposal. They have almost no water conservation efforts. They're hesitant to invest in alternative water resources, so things like desalination or wastewater reuse. And, still, despite all of these things they have agreements in place to export water to both Singapore and Malacca.

So the image here on the upper right is from part of a river in Johor, and it was taken many years ago. So it's actually much harder to find natural river-- or water resources that don't more resemble that bottom image, where there's just a lot of pollution buildup and very poor water quality.

So Singapore water resources is quite the different story. The main issue that Singapore faces is that it doesn't have enough natural water supply to support their growing population and economy. And, since 1965, when Singapore and Malaysia separated from their brief union quite acrimoniously, Singapore has made a very extreme effort to implement a three-pronged strategy to decrease their water vulnerability and water dependence, especially from Malaysia, by 2061, when their current agreements are going to expire.

So this three-pronged approach first focused on optimizing their domestic water supply by building dams and reservoirs. They have built a total of 11 reservoirs in addition to three that existed before 1965. These reservoirs cover about half of Singapore's total land area. You can see in this image in the upper right a glimpse of where the reservoirs are.

It's hard to tell, but there's small colorful dots. This is from 2014. But these are all the projects that are started or finished having to do with water catchment. So, actually, after 1986, there's almost no opportunities to increase their water catchment just due to restrictions and land area.

So they then turn to the second two prongs of their strategy, which includes securing alternative water supplies through seawater desalination, wastewater reuse-- which they're one of the most advanced systems in the world. They have a reclaimed water program called NEWater-- and negotiating a new agreement with Indonesia for imported water. I'm really not going to focus on that third one, because they haven't reached an agreement yet. But the other two are part of their-- have currently already started to be implemented and hope to increase in the future.

And the final prong of their approach is to improve water conservation. So they also went at this quite aggressively. They added regulations as well as monetary incentives for individuals as well as businesses. They've made investments in new water conservation technology as well as improving existing infrastructure to decrease the amount of water lost to leaks. And then, they also launched a large budget education campaign.

So it was very successful. Already, Singapore is experiencing a 0.2% decrease in water consumption per year despite continued population and economic growth, so very impressive. Most parts of the world, especially with developing economies, are increasing water consumption per capita, so pretty interesting.

And then, here, this is a slightly outdated infographic published by Singapore's Public Utilities Board, also known as PUB, which shows Singapore's plan for decreasing the reliance on imported water and increasing their reliance on reclaimed water from wastewater, which is the NEWater campaign, which currently supplies 30% of their water demand. But they have ambitious plans to be relying on it for about up to 55% by 2060.

And then seawater desalination is currently 10% of their water demand, but they hope to be up to 30% by 2060. So, again, they're really-- I think the domestic water supply is about 20% and won't really change. So they're hoping that if they are successful in this three-pronged approach, they wouldn't be reliant on Malaysia. But, as I mentioned at the beginning, currently, they're still 40% reliant on water from Malaysia. And it seems pretty unlikely that they'll be 100% independent in just 40 years.

So, next, I want to talk about the key stakeholders in the water negotiations. So I'm not very familiar with the governmental structure of Singapore and Malaysia. So, based on my research about the water conflict, I'm going to show you the stakeholders that stood out.

In my paper, I mentioned more about how media had a unique role in the water conflict. Basically, news about water negotiations and agreements were widely covered in the local newspapers in both Singapore and Malaysia, where the newspapers were not only publishing factual news coverage. There is also increasingly negative partisan editorials and letters that were shared.

So this, combined with the lack of transparency from both governments, went so far as-- like, one point, the governments were just communicating with each other through the newspapers. So one government official in Singapore read a Malaysian newspaper with a public statement from a Malaysian official that had not been talked about officially behind closed doors. So then, they had to release a different statement to their local newspapers and on and on.

So it is quite complex and something that I didn't want to muddle this idea, but it meant that there's a lot of stakeholders with opinions about the negotiations that are not at the table, so people or groups representing ecology as well as competing minority political groups in both territories.

So, here, we're going to talk about the Malaysian key stakeholders, which are stakeholders from both the federal and state governments. So much of Malaysia's water management happens at the state level. However, Malaysia's political relationship with Singapore inherently involves federal stakeholders. So that would be people like the prime ministers.

Later, I'll mention that a change in Malaysian leadership will improve negotiations. So that's due to Prime Minister Mahathir Mohamad, whose picture is placed on the right, because he was a driving force preventing further water agreements from being reached during his position as prime minister. And, unfortunately for water diplomacy, he governed two times separately and basically has a very primary focus on water pricing and wanting to increase water prices for Singapore. And, unfortunately, a focus on competitive pricing is just not conducive to progress.

So, anyway, the National Water Council and the National Water Resources Council were created in the 1990s to improve water management, specifically between the state and federal levels. But I would say, overall, Malaysia's water management is still relatively disorganized and ultimately ineffective. And that's just a challenge that will need to be addressed.

And then, finally, the BAKAJ is a Malaysian counterpart of the PUB, which is the Singapore Public Utilities Board that runs their water management. So, currently, BAKAJ and PUB have monthly meetings to discuss water topics.

Quickly, to go over the Singaporean key stakeholders, as I've mentioned several times now, their management is led by the PUB, which was founded in 1963 and is part of the Ministry of Sustainability and Environment in Singapore. Publicly, the Singaporean prime ministers, and more recently, the minister of foreign affairs, Minister Vivian, has been quite involved in the diplomatic relations with Malaysia. And they're the ones who would be responsible for signing any official agreements between Malaysia and Singapore.

So, in my paper, I have a pretty in-depth description of the terms of all four water agreements between Singapore and Malaysia. But, for the sake of time, I'm going to highlight the main points that you need to understand. So, starting in 1927, Singapore rented a plot of land in Johor at an annual rate and then can use all the water found in and on the land. In return, Johor would buy back specific amounts of treated water from Singapore.

An interesting thing to note is that this agreement allowed for increases in land and treated water purchased and traded, expecting that the water needs would change and they would probably want to increase that. So they specifically wrote that in. The 1961 and 1962 agreements replaced the 1927 agreement. They expanded the amount of resources that would be traded between the two. They defined a certain rate at which the prices-- the water would be bought.

So, in this agreement, Singapore would buy water, raw water, from Johor at 3 sen per 1,000 gallons, while Malaysia would buy treated water for 50 sen per 1,000 gallons. So I mention that because the agreements both include a joint price review every 25 years.

Unfortunately, none of the times that they've met-- so I think the last one was in 1986 and 1987-- they weren't able to reach any update even though an update was necessary. It's like both sides kept asking for a little bit too much. So, as a result, they got no agreement. So, to this day, the water is still being sold for 3 sen per 1,000 gallons and 50 sen. So that would really come back later when I talk about what needs to be done.

And, finally, the 1990 agreement was an extension of the 1962 agreement. It authorized a new construction of another dam. Singapore has made a lot of infrastructure investments in Johor to increase their water supply but also benefits the local Johor community, and completely at the Singaporean expense.

I guess, to sum up, the one agreement expired in 2011, and then there's two that are still active. But, again, they were not able to renew the one that expired in 2011. So, as a result, Singapore had to decrease the amount of water they imported from Malaysia.

A couple of supplemental things that you might care about is the 1965 Separation Agreement, which is also known as the Independence of Singapore agreement. And it included a clause ensuring that Malaysia would abide by the terms of the water agreements already signed to ensure Singapore's water security. And this was filed with the United Nations.

The 1998 through 2003 water pricing negotiations were a time when Malaysia and Singapore were trying to negotiate another agreement that would last for 100 years to extend this deadline of 2061. Malaysia was motivated because they needed finances from Singapore to back their currency because there was a financial crisis. And Singapore just wanted to secure water resources for an extended period of time.

Once Malaysia no longer needed the finances because they got it from somewhere else, the negotiations were reduced to debates about the water pricing, packaging the water, policies with other partisan issues, and just got out of control. In these negotiations, Malaysia tried to increase the price of raw water from 3 sen per 1,000 gallons to 45 sen, then 60 sen, and finally, 625 sen per 1,000 gallons in 2002. And, as you might expect, no agreement was made.

Finally, I highlight the Johor River Barrage project, which was a three-year project funded by Singapore and addressed the saltwater intrusion to the Johor River Basin. So that's an example of both Johor and Singapore were suffering from a reduced quality of water in the river basin. So Singapore agreed to fund a project that would improve these and ensure a longer-term water resource.

So now, I would love to talk about the water diplomacy framework and how this fits in. So the Singapore-Malaysia water conflict is unique because there's only two parties involved, sharing water resources that are not physically common. The water networks are defined through several water agreements where water is being traded rather than shared. However, Johor and Singapore still mutually benefit from the terms of the existing agreements, and they have acknowledged that publicly.

The water diplomacy framework acknowledges the complexity of managing competition, feedback, and interconnection between the natural and societal domains in the context of the political domain. So that is absolutely true. In this circumstance, there were ongoing societal tensions between Singaporean and Malaysian communities at every level over a lot of issues, not just water.

And then, Johor has been experiencing increasing water problems in the natural domain related to water quantity as well as quality, which threatens both stakeholders. And, finally, because the media was so involved in covering the water negotiations, the group of stakeholders with opinions is actually much larger than the officials that are involved in the signing of the agreements. And, as a result, there's kind of a negative air around the agreements and signing a new agreement.

So something that I recognized immediately is that there would need to be trust built between the stakeholders. So the first issue that needs to be addressed is how to build this trust and enhance cooperation between the different stakeholders, mainly state government officials. And, before negotiations can make progress, stakeholders from both sides will need to recognize and accept the value of being cooperative rather than competitive, which is something we talked a lot about in this class.

So one of the stickiest points in the current negotiations is the water pricing for the raw water bought by Singapore and the treated water bought by Johor. However, both Singapore and Johor have increasing concerns about their water security. So I think it'd be really beneficial to shift the conversations away from competitive water pricing that's motivated by self-interest and start by discussing cooperative strategies for making sure that both parties will have enough water of the right quality, because the opportunities for mutual gains would then be more prioritized, which is what, obviously, they both need.

So I guess I will note that there are ongoing negotiations and conversations and meetings between Singapore and Malaysian officials. So I think things that have been highlighted is they have an annual leaders' retreat, which is literally just a retreat for their leaders to meet, joint ministerial committee meetings that happen on monthly and yearly basis, the ministers of both countries visit the other country to improve relations, and then they've recently created the Malaysia-Singapore Joint Committee on the Environment, which is also basically for this kind of-- to increase the relations in these topics. So there's starting to be progress, but it's really not being reflected in any legislative progress, in my opinion.

This is something that I thought was interesting to point out. So most partisan media articles from both sides reflect slightly different versions of the same story. So Malaysian media articles would say that the current agreements only benefit Singaporean stakeholders. Johor is experiencing increasing incidents of water scarcity. And Singapore just keeps taking the amount that it's always agreed upon despite the circumstances changing. The water pricing has not been updated. And, as a result, Singapore is getting this raw water at way below the price that they should be buying it at.

And then, conservative Singaporean media outlets would frame the issue quite differently. But it's ultimately the same story, where Singapore has been actively trying to reduce its reliance on water from Johor while continuously granting requests from Johor for more treated water than agreed upon in the agreements at the same discounted rates. This is just to maintain goodwill between the two parties. And Singapore has prioritized enhancing their water security by extending the water agreements. However, if Johor wants to increase the price of raw water, Singapore would have to increase the price of treated water.

So this slide is basically to go over how both sides, if you look at it objectively, could be gaining from this relationship. I chose this image. This is a screenshot from the Aqueduct Water Risk Atlas tool that I mentioned before. This is their projection for water risk in Singapore and Johor in 2040 if things continue, quote, "business as usual."

So, as you can tell, Singapore is classified as extremely high risk, and Johor is medium to high risk. So, for reference, currently, if you click to baseline, both are classified as low risk. So this is something where their water risk characteristics are increasing due to changes in climate change, drought, and pollution.

So, currently, Singapore and Johor rely on each other to meet their water demands. They both care about the decreasing water quality in Malaysia since it jeopardizes both water security of Singapore and Malaysia. I recognize that Singapore has much more and better experience in launching water conservation campaigns as well as investing in alternative water supplies. They have one of the most advanced systems in the world for desalination and water reuse, as well as very strict water quality tactics because they don't want to waste their own water. So I think that's one opportunity where both nations could benefit if Singapore could give some of their experience and help improve the situation in Malaysia.

Secondly, both parties are unsure of the long-term effects of climate change and drought on their water security. So they both want to be resilient and prepared to adapt to changing water circumstances. The water prices for both the raw water and the treated water are absolutely outdated and should be updated. However, that should not be the only thing included in the conversation, because that is currently only representing self-interest.

Singapore benefits from Johor's water supply to support its economic growth. It needs the water. And, while they say that they will be independent by 2061, that has not been proven. And I think, furthermore, an ongoing water relationship for Singapore is convenient because Singapore has already made long-term infrastructure investments and already have good existing relationships with the water representatives there.

So, rather than trying to find a different importing place to get water from, it makes sense that Singapore would want to stick with Malaysia. And, finally, Malaysia would benefit because they need the increased supply of treated water, and they need assistance stimulating progress in increasing their supply long-term, since they have no progress in water treatment development, water conservation development, or water pollution regulation.

So, finally, a couple of other ways that the water diplomacy framework could be utilized include utilizing an impartial moderator. So it was really successful when they lodged the document with the UN after they split politically to ensure that Malaysia would not renege on their agreement. And I'm really confused why they haven't done that since. It seems like incorporating some more impartial stakeholders could really help promote progress.

And, secondly, I think it'd be interesting if they would start conversations about signing a new agreement, unrelated to the water supply but kind of more toward a joint agreement, trying to become more resilient in the face of climate change. This part of the world is extremely vulnerable. And if Singapore, Malaysia and some of these other southeastern Asian countries and states join together in their efforts to develop new technology and get better information, it would really benefit them all.

So, yeah, these are the key takeaways. But I think, just for the sake of time, it's pretty clear that Singapore and Malaysia already recognize that their agreements are mutually beneficial. However, they have not been able to reach further agreements, which is threatening both the water security of both, and ultimately, preventing progress and security.

DR. GAIN: Thank you, Flora, for the nice presentation. It's really wonderful. So yeah, is there any feedback for Flora, Husnain or Cassiano?

AUDIENCE: Well, well done for your wonderful presentation. As this topic was new for you, you have done a very great job. Just first of all, let me give you a small comment.

As you mentioned a prospect for desalination, my view would be that desalination is expensive and its production is energy-intensive and involves carbon emissions. In the long run, Malaysia might not be able to operate and maintain it as well. As you mentioned in the case study that Malaysia has had some availability of fresh water and receives ample rainfall, it would be better for Singapore to cooperate and invest in water infrastructure, enhancing Malaysia's storage capacity, which, in turn, would ensure long-term water security for Singapore. And Malaysia could, in turn, offer increased water quality to Singapore. This could be a practical mutual gains approach in respect to the water diplomacy framework.

And, secondly, the question would be that what is the public sentiment in Malaysia given their own water scarcity situation? You mentioned that some states receive-- are water scarce. And you mentioned that, as per the treaty, water flows freely to Singapore. But some states within Malaysia face water scarcity. So what is the public sentiment within Malaysia about that?

FLORA KLISE: I can respond to that. Yeah, so definitely, the public response is pretty negative. I think it's negative in every regard. It's like we want to sell the water to Singapore, but they need to pay us way more. We want to sell it to them, but they're not paying enough.

And then, it's also like, why are they taking our water when we don't have enough water? That's not fair either. So I think part of that is unavoidable just because, yes, Singapore also needs the water, and it's confusing. But I think the public sentiment is tainted by political sentiment that's just Malaysians don't like Singaporean as a stereotype but then further aggravated by this increased water scarcity caused by these droughts and lack of rain capture. So yeah, it definitely is negative and not very controlled. The information shared in Malaysia is not the same information shared in Singapore. Media is extremely regulated in both countries and is highly partisan. So, as a result, it's really hard to change public opinion. But, from what I understand, the public doesn't have much control over what happens, so.

AUDIENCE: And just one more thing. You know, as you mentioned, that the treaty expires in 2061. And it is still four decades until the existing treaty is going to expire. And some clarity is required why negotiations are needed to extend-- why negotiations have already started as of now because it is still four decades remaining. Or the two countries are trying to formalize a new treaty before 2061 in order to get it for existing water scarcity and water quality issues.

FLORA KLISE: Yeah, so basically, from their point of view, 40 years is not long at all. In the early 2000s, they were trying to negotiate a treaty that would last for 100 years, so extend it from 2061 to more like 3001. It sounds so weird to say. But, yeah, they were unable to reach one.

But, basically, especially for Singapore, since this is more of an issue of water security in the next 40 years, if, in 2061, they aren't able to import water from Malaysia anymore, and they have not succeeded in increasing their water reuse and water desalination, basically, Singapore will no longer be able to supply water to run its municipal and industrial water supply. So that, I guess, is the threat of water security.

And some parties would even say, what would they do? Would they try to fight Malaysia, some kind of water war? Most people say no. But that's basically why it's so urgent, why they don't want to wait until 10 years before, because, already, negotiations have been going on for 30 years, and they haven't reached any agreement.

Thank you.

AUDIENCE: Wonderful presentation, Flora. Every time I have a question in my mind, your next slide answered my question. It was very good.

Flora, do you think that Indonesia could be considered a partner for Singapore?

FLORA KLISE: Well, it seems like they'll run into the same issues that they're running into with Malaysia but having a little bit less bad blood. And it's extremely less convenient since, already, Singapore has invested so much in the Malaysian water resources that, if they were going to do the same thing in Indonesia, it would be like starting from scratch and also probably ruin their relationship with Malaysia, decrease their chances of renewing the water agreements.

So I think, in that regard, it's been quite hard. Also, the main thing holding up any negotiations is that Indonesia has had a lot of political turmoil internally. So just the lack of governance has prevented real conversations from happening.

AUDIENCE: Yeah. Flora, if you know more about this innovation, can you talk about the four taps and the NEWater solutions?

FLORA KLISE: Yeah. So Singapore has one of the most developed-- I mean, Larry and Animesh can stop me if I'm just saying wrong things-- but a very advanced water recycling program. So NEWater is what they're calling it.

I have a manager from my internship that lives in Singapore, and she always laughs at me when she says, like, in your country, you call reclaimed water toilet to tap. And she's like, that sounds gross. No wonder no one likes it.

She's like, in Singapore, we call it NEWater. Everyone wants new water. NEWater sounds great and cool and innovative. She's like, toilet to tap? That's bad advertising.

So yeah, basically, they've really worked on increasing their reclaimed water supply. They have very advanced technology to do water reuse, which is a technology that's not utilized very much in the US. There's not as much technology development in the US because of this hesitancy from the public and industry to adopt it.

But that is what they're mainly relying on where, instead of getting rid of wastewater, you'd be able to recycle it one or two times to use it again, which obviously makes sense. And then, seawater desalination is their other big technology push for their four taps, other than the rainfall capture, since that is basically just exhausted. They don't have any more land to expand into.

So yeah, I think Husnain raised a good point. Desalination is expensive. It currently relies on carbon fuel and will wear out, potentially, if it's not maintained properly. So yeah, I think that's interesting. I haven't really read any articles.

Right now, Singapore is just really in the push to increase the amount of water that they are obtaining from non-Malaysian sources

AUDIENCE: Thank you very much, Flora. Congratulations again.

FLORA KLISE: Thanks.

PROFESSOR SUSSKIND: I just want to annotate the question of desal a little bit. Desalination now is completely solar-powered. And the Israelis have created very advanced desalination technologies, again, for their own uses.

Israel is going to be almost 85% desal in the next decade, even though they have water. They have aquifers. But they're not going to hold out forever. And Israel has developed new technologies for separating the brine from the fresh water.

Kuwait is 95% desal. Everything in the country, 95% of the water is in desal. So yes, it was true that desal was mostly fossil fuel-driven. It isn't-- no one planning a future desal facility of large scale would think, unless they were an oil-generating country and had so much extra oil they didn't know what else to do, but that isn't the case in Singapore. I personally think that Singapore will have no problem through recycling.

People have to understand that Malaysia and Singapore think of themselves as developed countries. They do not think of themselves as developing. They have the most advanced technology. They have the most advanced universities.

Singapore has used advanced technology on just about everything. And, because it is a small island nation, it has the limitations, as was nicely pointed out, of scale in terms of land. But it's going to be able to claim existing space at its edges and expand development on the water.

And my sense is that it's not crazy to think that Singapore, through desal-- because it's got all of this area on the ocean-- and water recycling, which is the most advanced in the world for municipal systems, and a space that can't grow in terms of large additional population, and it can't increase density because it's already as high as Manhattan. So my sense is that they've made some smart choices. And I think they will take advantage of water from Malaysia when they need it as they need it.

The other thing that has to be noted is that Johor is a state in Malaysia, but Malaysia has two parts. The peninsula part that you talked about is in one place. And the other two states, it's like Hawaii and Alaska for Americans. The other two states are on top of Borneo. They're on top of another country as far away as Hawaii is from San Francisco. And those two states are amongst the most important income-generating states because that's where all the natural resources are.

And so the water policy in Malaysia doesn't really focus on the two states that are separate, because there's very few people there-- I mean comparatively-- and plenty of water. So the water issues are in the peninsula of Malaysia. And my sense is that there's plenty of water. I'm a little less negative, I think, Flora, than you are about their pollution improvements over the last decade.

In all of their cities where the rivers run through the city, they got the idea from San Antonio. Instead of covering over the river and just dumping everything in it, they uncovered the river and they made it an attraction of the city, which meant they had to do the pollution cleanup. And the level of pollution cleanup-- I've been working in Malaysia for a decade. And, even from year one to year seven, the difference in pollution levels in rivers is really dramatic. And the coordination, which I understand-- when you look and do research on this, the coordination between the federal level and the state levels is dramatically enhanced in the last five years.

Now, they had this crazy change of governments. And now, they're back to a normal kind of government that has qualified people in senior positions. There was a period a few years ago, where the transition happened, where the people running stuff were political appointees with zero professional background and capabilities. But now things are back in order.

So I think there's a chance of the negotiations. Since a friend of mine is the head of the commission and will be doing the negotiations, I think there's a chance that they will find all of these mutual benefits that you point out. Johor, it has all these facilities being built by Singapore. The national government is saving the money, and Johor is saving the money. And, if Singapore is willing to build all these facilities, and if Singapore continues to increase its own water resources, it won't be so scary about its long-term need for all of Johor's water.

Two other things that have happened maybe since the material you were looking at was published. One is that a Chinese developer has built a new city floating in the Straits of Johor right between Johor-- and Malaysia and Singapore. And it's Malaysian.

So Singapore is quite distressed about it, especially because-- and this is the other thing. You had it on the slide, but you need to explain it. Malaysia is a democracy, but it also is a monarchy.

And so we're used to thinking about how the British government operates. Well, the sultans-- there are six sultans, six sultanates, within Malaysia. And, each year, one of them is the sultan of sultans. And the sultanate is in the Constitution and has a variety of things that it controls. And the sultan of Johor is a player in the conversation, even though it's country to country, because the sultan has real say within what Malaysia does.

Malaysia is a Muslim country, even though Chinese and Indian populations are growing. It's basically a Muslim country. And all of the original settlers came from Indonesia. And so there are implicit connections to Indonesia.

But Indonesia is a long way away. How are you going to get water? You're not going to have a pipe from Indonesia to Johor. That's nuts. So my sense is that you're exactly on target, that they need to do something about these negotiations quickly. And there are plenty of joint gains to be had.

But the negotiation will include Johor, even though it's a state. I think they ought to encourage the involvement of Malacca, which is another state which isn't a sultanate in the same way and would benefit by being part of the deal.

And I think we should expect that solar-powered desal will be very important in producing maybe 40% or 50% of everything that they need into the future and that recycling and this huge construction of all of these reservoirs-- it's amazing. A tiny little island built 11 big reservoirs to capture rainwater because they saw this problem coming.

So they're not in terrible shape. Malaysia is not in terrible shape. There are advantages to be had. Yes, the pricing is going to have to change. But there's so much shared interest in other things that the last thing I would expect is a water war.

They don't have an army. So that would make a difference. Malaysia does, but my sense is that these two nations and Johor will be able to figure this out.

But you do a beautiful job of describing the history of identifying why these negotiations are important. The older negotiations were in a different time, before you had such powerful economic countries. These were developing countries. Now they are developed nations with lots of money. And they should be able to deal with each other.

So I think your emphasis is just right that. The only two things I would point out, which I think the threat of doing something with Indonesia is nuts just because of distance and because Indonesia has its own problems to worry about. And I think-- and I think this floating city, Forest City-- that's what they called it, Forest City-- 700,000 people on floating platforms in wetland, in an internationally protected wetland. It's a disaster.

And so that's what led to the new joint effort on environment and sustainability, which is Malaysia never should have allowed it to happen. But the national government defers on land use issues to the state. And the sultan of Johor is one of the major investors in this ridiculous, gigantic new city. And he was in it for the money, and it was his land. And, because he owned the speck of island, he didn't need to get any permissions to build. And the Chinese developer was happy to fill.

And so they filled everything, and it created-- it killed all of the fishing industry up and down the strait. And oh, this was a mistake. And they had to dig it out, and they had to re-go back, and they did this through court action because Singapore brought suit against Malaysia. And the Malaysian government sheepishly said, well, it was the state. We didn't know what they were doing.

And this project is the largest planned community by a Chinese developer outside of China. And it's a gated community for Chinese. But it's going to use all the water and all the services and everything else from Johor. There's so many things about it which is-- but it's created the need for the Malaysia national government and Singapore national government to work together on-- they are alleging it's climate change. It's on sustainable development and the protection of wetlands and the protection of other resources.

Sorry to go on. It's just-- I think you did a beautiful job. I'm delighted you chose the subject, and we'll be able to put this in the collection because it's an important example of nations where states within nations really are players.

So this nation-to-nation treaty thing, the agreement isn't going to happen without Johorian involvement. And it involves all kinds of technology. Anyway, I think you did a great job, Flora.

FLORA KLISE: Thanks so much.

DR. GAIN: Yeah. So thanks, Flora. It was a wonderful presentation. And I think, in terms of improvement, in terms of exploration, you did an excellent job as I read your draft paper. And I already made comments I already sent to you.

But, in the presentation, you incorporated the water diplomacy framework very well. But, in the paper, it was not, so maybe we'll work on that. And so maybe, for the implementing water diplomacy framework, if you just focus on the conflict-- in my view, this conflict now they're stuck is that Malaysia is demanding price increasing and Singapore is not willing to provide that much amount for the raw water. So, in that point, how you can-- yeah, so how this stuck can be-- dispositional things can be improved by these joint factfinding things. The issue that you already mentioned, if you just describe in a way that can provide a systematic explanation of the things, I think then the paper could be fantastic. It's already nice, but it can be further improved in that part. So yeah.

PROFESSOR SUSSKIND: I do think, Flora, your tone about the relationship between these two countries and its historical roots is very, very true and very, very important. And one of the reasons is that this really simple water money-- recycled water treaty-- isn't getting fixed is Singapore doesn't want to admit any need for anything from Malaysia. It's just-- it goes back to when they pulled apart, and Singapore felt it developed itself as a developed nation. And Malaysia took so much longer and didn't know how to do what they did. And they don't want to be beholden.

I have the advantage of talking with the person who's doing the negotiations for Malaysia, who's a scientist, and he thinks the whole thing is ridiculous. And he just doesn't understand. What do you want? [? Is ?] [? that ?] the price?

Come on. Let's ask some independent folks what the value of the water is and the recycled water. You've got a huge amount of money. It's not about the money. And I think, by involving more of the states, it will be easier for Singapore to say, well, we did this because we're helping those states, because they just can't swallow the idea of doing anything for or needing Malaysia.

And I think you captured that tone very appropriately in your paper from the history.

FLORA KLISE: I think that's one of the interesting parts of reading so many very partisan articles. It's very clear-- it makes it even more clear where the gaps in communication and pride and things like that play in, because it's just so obvious as someone impartial.

You feel like the parent watching your kids bicker. You're like, you can both have water. You don't need to just say the other person's ugly. You can just take the water and then call it a day.

So yeah, it was very interesting. There is not much literature, but there's a lot of coverage.

PROFESSOR SUSSKIND: There's a lot of coverage, yeah. Well, people have been discouraged. Scholars have been discouraged from writing about it quite explicitly at University in Singapore and University of Technology in Malaysia that I work with. They've been told, don't do it. You're killing your career if you write anything scholarly about this, because this isn't really a scholarly issue. And nobody wants--

FLORA KLISE: Hopefully, that doesn't come bite me later.

PROFESSOR SUSSKIND: Yeah. But, for us, studying water diplomacy to understand that the root issue is this historical not just lack of trust, but really, almost hatred of two parties that were part of the same country. It's difficult.

And I think there's also-- partly, this is about the fact that the Muslim majority in Malaysia is, in some ways, losing control. It still gets who it wants elected, and it's still 51% Muslim. And the Chinese, though, are really controlling industry in Malaysia. They're controlling wealth in Malaysia, whereas the Muslim majority, bare majority, is controlling government in Malaysia and certain-- a few industries.

And it's-- Singapore is not interested in acknowledging the power of a Malaysian partner who is Muslim. They're much more focused on Chinese. And the Muslim majority in Malaysia thinks that the Chinese minority is using its connections to Singapore to build more of its strength and power in Malaysia and wants to take over the government, which has always been the domain of the Muslim majority.

So all of these pieces and parts, these are part of water diplomacy. And I think your case is important because it brings out these are not just about natural resource management or territory. This is about this lack of trust in this difficult relationship between the two countries, which you do a really nice job of raising.