

Singapore-Malaysia Water Conflict

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1- Case Description

1-1 Geolocation:

Skip

1-2 Indicate the three uses of water most important to this case study:

- Domestic/Urban Supply
- Industry – Consumptive and non-consumptive

1-3 Case Study Summary:

The Singapore-Malaysia water conflict is shaped by four major agreements regulating the importation of raw water from Johor, Malaysia to Singapore, and in return Singapore provides Johor with treated water at a discounted rate. The most recent agreement was signed in 1990, and despite ongoing negotiations no new agreements have been signed. The current agreements are set to expire in 2061, and Singapore currently relies on water from Johor for 40% of their water demand. Johor's water supply has been declining in recent years due to the combined effects of increasing incidents of drought and worsening rates of water pollution, paired with a growing population and economy. Malaysia's water management is shared between the state and federal governments and only recently were efforts made to improve collaboration. Singapore's Public Utilities Board (PUB) has invested heavily in a three-pronged strategy that decreases their water reliance on Malaysia including optimizing domestic water supply, increasing water conservation policies, and securing alternative water supplies, and has plans to be water independent by 2061. Lack of trust and willingness to cooperate has prevented negotiations from utilizing a mutual gains approach to water diplomacy. Although the two parties do not share a physical water network, both Singapore and Johor have become dependent on and are benefitting from the existing agreements. These synergies could be improved with better negotiation framework utilization.

1-4 Keywords:

Singapore, Malaysia, climate change, scarcity, quality

2- Issues and Stakeholders

Core Issue: Existing treaties regulating the trade of raw and treated water between Johor, Malaysia and Singapore will expire in 2061 and the parties have been unable to reach a new agreement extending the relationship.

Natural Societal and Political Domain Variables: Water Quantity, Water Quality, Assets, Governance



Stakeholder Types: Federated state/territorial/provincial government, Sovereign state/national/federal government, Non-legislative governmental agency, Community

In the past, Malaysia and Singapore have packaged water issues with other bilateral agreements. The political unrest between Malaysia and Singapore since their separation in 1965 has prevented amicable water negotiations despite the potential for gains for both parties. The current agreement in which Singapore buys and imports raw water from Johor, Malaysia and in return sells treated water to Johor at a discounted price, has been in place since 1927. The most recent treaty, that expires in 2061, was signed in 1990.

Issue: How will Singapore meet its water needs after 2061 without water from Johor (currently supplying about half of their water supply)?

Natural Societal and Political Domain Variables: Water Quantity, Assets, Governance

Stakeholder Types: Federated state/territorial/provincial government, Community

Starting in 1965, Singapore has actively planned and implemented a strategy to decrease their water vulnerability, specifically their reliance on water from Malaysia. This strategy has three parts: optimizing domestic water supply, increasing conservation measures, and securing alternate water supplies (through desalination and a potential new agreement with Indonesia). Singapore has already shown great progress in building new reservoirs, decreasing consumption habits, and will need to continue to rapidly increase their expansion of water desalination and water reuse.

Issue: How will Johor improve its water quality in order to meet its own water needs?

Natural Societal and Political Domain Variables: Water Quality, Assets, Governance

Stakeholder Types: Federated state/territorial/provincial government, Sovereign state/national/federal government, Environmental interest

Johor, Malaysia is experiencing an increased water demand, mainly due to population growth and scarcity due to droughts. Johor currently buys treated water from Singapore at a discounted rate as part of the existing water treaties

between Singapore and Malaysia. Johor is focused on intrastate infrastructure development to increase their supply, however they are at an increased risk of droughts leading to water scarcity, especially since they have not invested in any water reuse or desalination technology. However, Malaysia does have plentiful natural water supplies. The main issue that needs to be addressed is improving state and federal regulations controlling the pollution of water supplies. Johor already reports five polluted river basins, mainly due to sewage contamination. Decreased raw water quality has the potential of harming existing treatment plants and long term harm to the environment.

3- Details

3-1 Case Status

Ongoing – current treaties expire in 2061

3-2 Presence or absence of enabling conditions

Parties agree to explore mutual interests and invent creative options for mutual gains

Active recognition of interdependencies among involved parties

Parties agree to create a mechanism to monitor implementation of the agreement and adapt the agreement to address new problems/issues as they emerge

Currently, state representatives of Johor, Malaysia and Singapore both seem to recognize the interdependencies of their water relations and water security. However, the parties have yet to commit to trust-building and cooperation in ongoing negotiations, and instead seem to be clouded by a history of competition. The parties are making decisions driven by self-interest and pride, preventing further agreements from being reached. However, parties do have mutual interests in extending and updating their water agreements. Creative options for mutual gains could address investing in mitigating water pollution in Johor, expanding shared water infrastructure, and updating water pricing for raw and treated options such that both parties can benefit. While there have been several committees dedicated to monitoring and discussing their shared water resources, inclusion of a neutral moderator and/or creating a joint fact finding committee could improve water monitoring and decision making.

4- Key Questions

Power and Politics

Q. How do national policies influence water use at the local level?

The Singapore government's conservation efforts were overwhelmingly successful in changing public water consumption habits. The campaigns launched, regulations and policies implemented, and monitoring and management strategies could be used as a model for improving conservation in other areas.

Technological Innovation

Q. What roles can desalination play in a country's national water policy and what energy ecological and water quality considerations ought to go into making such a decision?

Part of Singapore's strategy for decreasing its dependency on water imported from Johor includes investing in seawater desalination. Currently, desalination supplies 10% of their water demand, and there are plans in place to increase this percentage to 30% by 2061. Seawater desalination can be extremely energy intensive, and many plants utilize carbon-based fuels. However, there have been new technologies developed for solar and wind powered desalination that are already adopted in other parts of the world, which are much more sustainable. Although Singapore has limited land area, there are plenty of opportunities to expand on their surrounding waters. One last consideration, plant efficiency usually decreases over time without consistent maintenance and upgrade investments. While Singapore's main priority is increasing its alternative water supply quantity, ecological and quality considerations should also be considered when maintaining existing plants and building new plants.

Transboundary Water Issues

Q. What mechanisms beyond simple allocation can be incorporated into transboundary water agreements to add value and facilitate resolution?

Singapore-Malaysia water agreements could also incorporate the creation of joint fact finding committees, regulate further water infrastructure and technology investments as well as plan further joint efforts on preserving existing shared



water resources. This could include implementing new regulations and policies, improving oversight and management, and educating individuals and industry groups who are currently polluting the water resources directly and indirectly. Singapore has experience implementing similar projects domestically.

5- Connections

- **Riparians:** Johor, Malaysia
- **Water Features:** Johor Straits, Johor River Basin, Johor River, Linggiu Reservoir
- **Projects:** Linggiu Dam, Johor River Barrage Project
- **Singapore-Malaysia Agreements** – 1927 Agreement, 1961 Agreement (The Tebrau and Scudai Rivers Water Agreement), 1962 Agreement (The Johor River Water Agreement), 1990 Agreement

6- Analysis, Synthesis, and Insights (ASI)

Skip

7- The Case (Case Content)

Background

The Singapore-Malaysia water agreement has been shaped by four treaties signed between 1927-1990, the last of which will expire in 2061 (Chew, 2019). The main agreement regulates that Singapore can buy raw water from Johor, Malaysia and in return will sell treated water back to Johor at a discounted rate (Chew, 2019; Kog, 2015; Long, 2001). Currently Singapore relies on water from Johor for about 40% of their water demand (Kog, 2015). Unlike most water treaties, the Singapore-Malaysia treaties are between only two parties, and they do not physically share the water basin. However, Singapore has relied on the water they receive from Johor since 1927, due to their inability to meet their water needs independently. Singapore is classified as “water-stressed” by the United Nations (Kog, 2015) due to their limited land area to catch and store rain and the absence of nature groundwater aquifers. Political tensions between Singapore and Malaysia have existed since the end of their short union from 1963 to 1965, when Singapore separated from Malaysia to become an independent city-state. Ever since Singapore separated from Malaysia, addressing Singapore’s water vulnerability has been a national priority. Despite ongoing negotiations between Singapore and Malaysia, they have been unable to sign a new agreement to extend their water treaties beyond 2061. In the past, negotiations have focused on water pricing and packaging water issues with other bilateral agreements, however these strategies have ultimately slowed progress for all the issues involved.

Malaysian Water Resources



Malaysia, located north of Singapore, has a population of 32.77 million people and total land area of 330 803 km² (Department of Statistics Malaysia, 2020). Since 1970 when the government implemented a new social and economic strategy, Malaysia's economy has been transformed from being focused on the export of raw materials, specifically rubber and tin, to being one of the most diversified and growing in Southeast Asia (Ahmad, n.d.). Malaysia has abundant water resources, experiencing heavy rainfall almost all year sustaining a complex network of rivers and streams. Currently, much of the water resources are not captured due to lack of infrastructure and perennial patterns of short, intense bursts of rainfall (Kog, 2015). Furthermore, prolonged rains often cause floods, especially in areas that have been disrupted by excessive mining and agriculture practices (Ahmad, n.d.). Ultimately, while Malaysia has plenty of freshwater, sufficient local water supply is not always available due to lack of infrastructure and exacerbated by polluted water resources due to unregulated human practices. While Malaysia exports significant amounts of raw water to Singapore and Melaka (Chuah, 2018), some states suffer from chronic water shortages while others experience surpluses. These tensions have tainted the public's view of exporting their water, especially as incidents of extreme weather seem to be increasingly common. For example, in March 1990, northern regions of Johor had to implement water rationing while reservoirs serving Singapore in Johor flowed freely (Kog, 2015). Incidents like this one have become more common in the most recent few decades.

In 1992 and 1999, Malaysia established the National Water Council and National Water Resources Council, respectively, in order to improve interstate water management. Before 1992, state governments had almost absolute control over all surface water resources. However while consistently improving, current coordination and consultation between Malaysian state and federal agencies in regard to water issues are slow (Kog, 2015). The effects of disorganized water management are particularly noticeable in Johor. Climate change and seasonal droughts have put Johor at high risk of becoming water-stressed in the future without implementation of risk mitigation tactics, according to the Aqueduct Water Risk Atlas (World Resources Institute, n.d.). Unlike Singapore, Malaysia does not have any water conservation legislation and has invested only in water storage infrastructure, not water treatment technologies like desalination or water reuse. However, their existing water capture supply is frequently not enough to meet their growing water demand. Malaysia also lacks comprehensive environmental conservation regulations, so unregulated practices of logging, land development, and sewage disposal have polluted many of the existing water resources (Chuah, 2018). Recently, there have been increased efforts to clean up the polluted water resources (Devi, 2020).

Singaporean Water Resources



Singapore is a small city-state with a population of 5.686 million with a land area of 712 km² (Singapore Department of Statistics (DOS), 2020) and limited water resources of its own. Unlike other Southeast Asian countries, Singapore does not focus on exportation of commodities but rather supports its fast-growing economy by being the largest and busiest port in Southeast Asia with powerful financial and industrial sectors (Winstedt, n.d.). Economic development is strictly regulated by the Singaporean government, and the government owns about three-fourths of all land and is the chief supplier of surplus capital (Winstedt, n.d.).

Singapore's effective water management is also driven by the government, motivated by Singapore's lack of natural resources, especially related to water security. According to UN Water, water security is defined to be "the capacity of a population to safeguard sustainable access to adequate quantities of acceptable quality water for sustaining livelihoods, human well-being, and socio-economic development, for ensuring protection against water-borne pollution and water-related disasters, and for preserving ecosystems in a climate of peace and political stability." Singapore does not have access to enough natural water supply to support their growing population and economy. There are no remaining natural forests, and even though Singapore has the lowest percentage of its economy dedicated to agriculture production in the world (Winstedt, n.d.), there is limited land available for water storage due to high rates of development. Even with their current treatment and conservation efforts, they rely on imported water from Johor, Malaysia to meet 40% of their needs. However, Singapore's government plans to change that by 2061, when the existing water treaties between Singapore and Malaysia are set to expire.

Since 1965, when Singapore separated from Malaysia acrimoniously, Singapore has been implementing a three-pronged strategy to decrease their water vulnerability and water dependence on Malaysia by 2061. The first priority of the Singaporean government was to optimize Singapore's domestic water supply. From 1965 to 1986, Singapore water policy focused on the construction of reservoirs. A total of 11 reservoirs were added to the three existing ones, covering about a half of Singapore's total land area, expanding their catchment capacity from 31.1m³ to 140 million m³ (Long, 2001). After 1986, Singapore had no more area for reservoir expansion, and instead turned to construction of stormwater ponds, building a total of 16 ponds by 1999 with capacity to collect 50,000 m³/day (Long, 2001). Today, domestic water supply accounts for 20% of Singapore's water demand (Kog, 2015).

After opportunities to increase domestic supply had been exhausted, the Singapore government focused on the two other parts of their water management strategy: improving water conservation and securing alternative



water resources. Singapore's government approached improving water conservation in many ways. They invested in public education and campaigns in order to change the general public's water consumption habits. They instituted water tariffs and conservation tax that fluctuates with municipal water consumption, as well as imposed strict regulations on water intensive industries. They invested in new water-saving technology, like low-capacity flushing cisterns, and offered fiscal incentives for water conservation, reuse, and recycling. They also replaced leaking pipe infrastructure, decreasing water lost from leaks from 18,058 m³ in 1985 to 2,373 m³ in 1996 (Long, 2001). Finally, they passed the Public Utilities Act and Public Utilities Board Regulations of 1977 to enforce stricter consequences for illegal water use (Long, 2001). As a result of their efforts, Singapore has experienced a 0.2% decrease in water consumption per year despite continued population and economic growth (Long, 2001).

The final part of their strategy, securing alternative water resources, included investing in seawater desalination, recycling wastewater, and negotiating a new water treaty with Indonesia. There has yet to be a formal agreement between Singapore and Indonesia, due to political unrest in Indonesia and the logistical challenges of getting water from Indonesia to Singapore. However, Singapore's wastewater recycling program, known as NEWater, has been a great success and is still growing. Reclaimed NEWater currently supplies 30% of Singapore's water demand (Kog, 2015) with plans to increase to supplying water for 55% of Singapore's water demand by 2061 (Chuah, 2018). Seawater desalination currently supplies 10% of Singapore's water demand (Kog, 2015), with plans to increase to 30% by 2061 (Chuah, 2018). Recent developments in solar and wind powered desalination offer opportunities to make seawater desalination more sustainable. Furthermore, while Singapore has limited land area, there are plenty of opportunities for new desalination plants utilizing the waters around Singapore.

Although Singapore's government has made several public statements establishing that if the Singapore-Malaysia water treaties are not extended past 2061 Singapore will be able to meet its water needs independently (Ministry of Foreign Affairs Singapore, n.d.), currently Singapore still relies on Malaysia to meet 40% of their water demand. Their population and economic growth is increasing their demand, and reservoir capacity has already been met. Despite these challenges, Singapore's tremendous efforts to decrease consumption habits and increase water supply through desalination and reuse have improved Singapore's future water security. While they are not yet independent from Johor's water supply, they have increased the minimum supply they have available independent of climate change and extreme weather. For this reason, Aqueduct Water Risk Atlas classifies Singapore as lower risk of being water-stressed in fifty years than Johor, Malaysia (World Resources Institute, n.d.).

Key Stakeholders



The media had a unique role in this water conflict. News about water negotiations and agreements were widely covered in conservative (and federally regulated) local newspapers in Singapore and Malaysia, publishing factual news coverage as well as increasingly negative partisan editorials and letters. This public sentiment was exacerbated by the lack of transparency from both governments. As a result, there are many minor stakeholders who have public opinions about the Singapore-Malaysia water agreements who are not included in the negotiations, including industry leaders and representatives of competing minority political groups (Tortajada, 2011).

Malaysia's key stakeholders represent the federal and state governments. Much of Malaysia's water management happens at the state level, however Malaysia's political relationship with Singapore inherently involves federal stakeholders including the Prime Ministers. Prime Minister Mahathir Mohamad, in particular, was a driving force preventing further water agreements from being reached, with a focus on increasing raw water prices for Singapore. He has served two separate terms as Malaysia's Prime Minister. The National Water Council and National Water Resources Council were created in the 1990s to improve water management in Malaysia and connect the federal and state stakeholders. Badan Kawalselia Air Johor (BAKAJ) is the Malaysian counterpart of Singapore's Public Utilities Board (PUB). The two groups have monthly meetings to discuss water topics. While Malaysia's water management is still relatively disorganized and ineffective but has been improving rapidly in the recent years.

Singapore's water management is led by PUB, founded in 1963, part of the Ministry of Sustainability and the Environment, and responsible for managing "sustainable and efficient water supply" in Singapore. Publicly, the Singaporean Prime Ministers and more recently, Ministers of Foreign Affairs as well, have been involved in diplomatic relations with Malaysia and would be responsible for signing any official agreements.

Singapore-Malaysia Water Treaties

There are four agreements that govern the Singapore-Malaysia water relationship. The first was signed in 1927, and the two most recent agreements will expire in 2061. Both parties have been in ongoing negotiations trying to extend the agreements, however nothing has been signed. Below is a summary of the main terms of each agreement as documented by the Singapore government and checked against academic and Malaysian sources.

1927 Agreement

This agreement, signed December, 5 1927 by the municipal commissioners of Singapore and Sultan Ibrahim of Johor, Malaysia, allowed Singapore to rent 2,100 acres of land in Gunong Pulai, Johor at the yearly rate of 30 sen per acre, for access to raw water. This agreement also established that Johor could buy up



to 800,000 gallons of treated water per day from Singapore at a discounted rate of 25 sen per 1,000 gallons. Considering how their respective water needs might change, this agreement also sets aside an additional 35 acres in Johor that Singapore could claim rights to rent in the next 21 years, and Johor could increase the treated water it requires, up to 1.2 million gallons per day (Chew, 2019). This agreement was voided upon the subsequent agreements.

1961 Agreement: The Tebrau and Scudai Rivers Water Agreement

This 50-year agreement, signed on October 2, 1961 by the city council of Singapore and the government of Johor, gave Singapore the full and exclusive right to all water within Gunong Pulai, Sungei Tebrau, and Sungei Scudai in Johor for 500 sen per acre annually for the land and 3 sen per 1,000 gallons. Johor could buy back 12% of the water after treatment, with a minimum of four million gallons per day, for 50 sen per 1,000 gallons. Every 25 years, there would be a joint price review, and if no agreement could be made then the prices would remain the same. Johor did not agree to any price changes in 1986. This agreement expired in 2011 (Channel News Asia, n.d.; Chew, 2019).

1962 Agreement: The Johor River Water Agreement

This 99-year agreement, signed on September 29, 1962 by the city council of Singapore and the government of Johor, gave Singapore the right to draw up to 250 million gallons of water daily from the Johor River. Johor could buy up to 2% of the raw water after treatment. The water prices remained the same from the 1961 agreement, and Singapore rented the land at the standard rate for building lots on town land. Like the 1961 agreement, every 25 years, there would be a joint price review, and if no agreement could be made then the prices would remain the same. Johor did not agree to any price changes in 1987 or 2012 (Channel News Asia, n.d.; Chew, 2019).

1965: The Separation Agreement, also known as The Independence of Singapore Agreement

This agreement, signed on August 9, 1965 by the governments of Singapore and Malaysia, included a clause that guaranteed the 1961 and 1962 water agreements (Chew, 2019). A document was also filed with the United Nations to ensure that neither party, especially Malaysia, would hold up the terms of the water agreements despite their acrimonious political relationship (Long, 2001). Eventually the terms were also enacted to the Malaysian Constitution (Channel News Asia, n.d.; Long, 2001).

1990 Agreement

This agreement, signed on November 24, 1990 by the Public Utilities Board (PUB) of Singapore and the government of Johor, supplemented the 1962 agreement allowing Singapore to construct a dam across Sungei Linggiu to collect more water from the Johor River. This agreement signified the end of



eight years of difficult negotiations. Singapore was responsible for all costs associated with the construction and maintenance and paid 1.2 billion ren plus 70 thousand ren premium per hector, for 54 thousand acres of land that would no longer be able to be used. Singapore would also pay an annual rent of 120 ren per 0.02 acre of land. As a result, Singapore could buy treated water from the dam in addition to the 250 million gallons of water already extracted from the earlier agreements. The price of the water was determined from “the weighted average of Johor's water tariffs plus 50% of the surplus from the sale of this water by PUB to its consumers after deducting Johor's price and PUB's cost of distribution, or 115% of the weighted average of Johor's water tariffs, whichever was higher” (Chew, 2019). This agreement would also expire in 2061.

1990-2021 Singapore-Malaysia Water Relations

The 1961 agreement was not renewed, and expired in 2011, decreasing the overall water Singapore extracted from Johor. Singapore had already taken significant measures to decrease their water reliance on imported water, see section on Singapore Water Resources.

There were ongoing negotiations from 1998-2003 about a number of issues, the prices of water at the forefront of these discussions. During the 1998 Financial Crisis, Malaysia wanted financial loans to support its currency, and Singapore and Malaysia began negotiations on a framework of wider cooperation. Singapore wanted to secure long-term water resources from Johor, however when Malaysia no longer needed loans the negotiations turned to packaging water rights with other bipartisan issues ultimately prevent progress on any of the issues. One of the key terms preventing an agreement was the price of water; Johor representatives wanted to increase the price of the water Singapore imported. Since there were no agreements made to the pricing in the price review in 1987, Singapore pays Johor 3 sen per thousand gallons of raw water and Johor pays Singapore 50 sen per thousand gallons of treated water. During negotiations, Johor kept increasing its asking price for water, to 45 sen per thousand gallons in August 2000, to 60 sen in February 2001, to 625 sen in September 2002. This period was marked by increased media coverage, mostly partisan, and mostly negative. Finally in October 2002, Malaysian Prime Minister Dr Mahathir Mohamad and Singaporean Prime Minister Goh Chok Tong agreed to “decouple the water issue” from the other items in the package (Ministry of Foreign Affairs Singapore, n.d.).

There were marked improvements in negotiations when Malaysia had a change in leadership in 2003 (Ministry of Foreign Affairs Singapore, n.d.; Tortajada, 2011). Both parties agreed to reconvene and continue negotiations in 2005, however there is this no water agreements have been signed that extends the 1962 and 1990 agreements. These new negotiations have been kept much more



private from the media in both states, as part of a joint agreement to adopt quiet diplomacy with the purpose of achieving progress (Tortajada, 2011).

Recently, PUB and its counterpart in Johor, BAKAJ have successfully collaborated on several projects. PUB and BAKAJ meet regularly to discuss “current weather trends, the water levels at various reservoirs and dams in Johor, and water resource development plans” (Ministry of Foreign Affairs Singapore, n.d.). One of their biggest projects recently was the Johor River Barrage project. The Johor River Barrage, a three-year project funded by Singapore and finished in 2016, helps to prevent salinity intrusions in the Johor River Basin thus increasing the reliability of water supply from the Johor River and benefitting both Singapore and Johor.

Risks and Opportunities for the Future of Singapore-Malaysia Water Relations

The Singapore-Malaysia water relations have been characterized by political tensions, partisan media coverage, and disputes about water pricing. Although negotiations between Singapore and Johor officials have been occurring on and off since 1998, no new water agreements have been signed. Recent negotiations have resulted in public statements from both parties agreeing that an agreement extending water relations beyond 2061 are desirable however the terms proposed by the other party are unacceptable, especially in regard to changes in water pricing. Furthermore, Johor’s water needs are increasing with its economy and population. Sufficient water yield and quality may become an issue even before 2061 if there are no changes to the status quo. There have already been incidents of water scarcity in Johor, requiring Johor to implement water rationing and purchase increased treated supply from Singapore (Balakrishnan, 2020; Ministry of Foreign Affairs Singapore, n.d.). The Singaporean government has made it clear that they plan to be water independent from Malaysia by 2061, however they have already made significant infrastructure investments in water treatment and storage in Malaysia and could benefit from a new agreement. Malaysia, too, benefits from Singapore’s investments and water treatment abilities.

Water Diplomacy Framework

The Water Diplomacy Framework (WDF) can be used to frame the weaknesses of water diplomacy between Singapore and Malaysia and offer solutions for improving future negotiations and potential for future water agreements. The Singapore-Malaysia water conflict is unique since there are 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 being shared. However, Johor and Singapore still mutually benefit from the terms of the water agreements. The WDF acknowledges the complexity of managing competition, feedback and interconnection between the



natural and societal domains in context of political domain. Ongoing societal tensions between Singaporean and Malaysian communities over myriad partisan political issues ranging from water to infrastructure to economy have tainted previous water negotiations. Furthermore, Johor, Malaysia has been experiencing increasing water problems in the natural domain related to water quantity and quality, threatening the water resources needed for Singaporean and Malaysian stakeholders. Because the media was so involved in covering the water negotiations, not only reporting impartial fact-based articles but also acting as a platform for partisan editorials and letters, the group of stakeholders with opinions about the terms of the negotiations is much larger than the group of officials actually involved in making the agreements. Despite reporting better relations between governments after Malaysia had a change in leadership, water diplomacy between Singapore and Malaysia still seem to lack shared knowledge and trust, key attributes in joint decision making. By utilizing the WDF, Singapore and Malaysia can not only improve the nature of their negotiations but also could enhance progress and speed up decision making.

The first issue that needs to be addressed is how to build trust and enhance cooperation between Singaporean and Malaysian water diplomats, mainly state government officials. Before negotiations can make progress, the stakeholders from both sides will need to recognize and accept the value of being cooperative rather than competitive. One of the stickiest points in current water negotiations is 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 water security, even with the existing water agreements in place. By shifting conversations away from water pricing motivated by self-interests, and instead discussing cooperative strategies for making sure that both parties have enough water, opportunities for mutual gains will become prioritized, which may in fact include changes to the existing structure of water pricing. It is important to note that in recent years, there has been more consistent effort from both sides to come together and try to collaborate on common issues. There are regular high-level exchanges between leadership such as at the Leaders' Retreat, Joint Ministerial Committee (JMC) meetings, and alternating Ministerial level visits. Other interactions, including bilateral cultural events, and the formation of the Malaysia-Singapore Joint Committee on the Environment also seem to be a step in the right direction. However, there is still a lot of room for improvement.

The Singaporean and Malaysian media has been covering the same water negotiations, and yet the partisan framing of issues polarize the issues. The most partisan Malaysian media articles frame the Singapore-Malaysia water resource sharing as only benefitting Singaporean stakeholders. Johor has been experiencing increasing incidents of water scarcity, while Singapore expects continuous water supply as according with the water agreements. Furthermore, Singapore is buying water for under market value since the water pricing is



outdated, and is refusing to negotiate an increase. The conservative Singaporean media outlets frame the same issues, differently. There is an emphasis on Singapore's continuous efforts to reduce its reliance on Johor water resources. Singapore has been continuously granting Johor's ad-hoc requests for more treated water, at the same discounted rates, than agreed upon in the water agreements in order to maintain goodwill. Singapore prioritizes enhancing their water security by extending the water agreements than increasing prices of treated water, however Singapore will not agree to pay increased prices for raw water without increasing the treated water prices as well.

An objective, impartial perspective highlights the following opportunities for mutual gains for both Singapore and Malaysia. Currently Singapore and Johor rely on each other to meet their water demands. Singapore and Johor care about decreasing water quality of water resources in Malaysia, since that jeopardizes the water security of both parties. Singapore has more and better experience in launching water conservation campaigns, investing in alternative water supplies, and regulating water quality of reservoirs, which is an opportunity for Johor to gain from their experiences. Both parties are unsure the long-term effects of climate change and drought on their water security and want to be resilient and prepared to adapt to the changing circumstances. Singapore benefits from Johor's water supply to support its economic and population growth, and while Singaporean officials state that Singapore will not be reliant on Johor by 2061, this has not yet been proven. Furthermore, an ongoing water relationship with Johor is convenient for Singapore since they have already made long-term infrastructure investments in Johor and have a reportedly good existing relationship with BAKAJ. Malaysia not only currently needs an increased supply of treated water to support its economic and population growth, but also could use assistance to stimulate progress in water treatment development (such as desalination, wastewater recycling, etc.), to regulate water conservation practices (for residents and industry), and to address increasing water pollution. Johor benefits from Singapore's extensive investments in water infrastructure in Johor.

Some final thoughts on how the Singapore-Malaysia water negotiations could improved include incorporating an impartial moderator group or representative. Several times when Malaysia threatened to renege on the water agreement, Singapore turned to the document filed with the United Nations, getting external support securing its water supply. Including the UN or some other impartial stakeholder could help the negotiations refocus on the mutual gains framework and promote knowledge sharing and general cooperation, especially when either party has a change in leadership. Another opportunity to make the negotiations more objective is to include more stakeholders. For example, Melaka also imports water from Johor, and could benefit from joining negotiations about water consumption, pricing, and planning. Their presence may also encourage Singaporean and Malaysian stakeholders to reign in their historically competitive



natures. It would also be helpful if Singapore and Malaysia (and Melaka or other relevant stakeholders) created a joint-fact finding committee that would be in charge of collecting data and doing research on the quantity, quality, consumption and other factors affecting the shared water resources. This would have a secondary effect of further trust building. One last area for improvement is in regard to joint preparedness for the uncertain future related to climate change and droughts. Many areas in Southeast Asia that are currently experiencing industrialization at astounding rates, including Singapore and Malaysia, are classified as at high risk of becoming extremely water-stressed in the next 50 years. A new agreement that guides cooperation and collaboration in the future could enhance the security of both Singapore and Malaysia, since they currently have different water strengths in terms of natural supply versus policy and technology development.

Key Takeaways

Singapore-Malaysia water agreements are mutually beneficial but need to be updated and renewed. Updated water pricing, resource allocation, and water quality and quantity need to be reflected in new agreement(s) in order to better meet the needs of both parties. Lack of trust and cooperation between stakeholders prevents progress and signing of new agreements. Competitive negotiation strategies about topics like water pricing prevent adoption of creative solutions that would benefit both parties. Singapore's efforts to decrease water reliance on Malaysia show great success and potential, however this creates even more opportunities for Singapore and Malaysia to find creative ways to maximize mutual gains. Unfortunately, historical tensions in social and political domains continue to dominate negotiations. Ultimately, Singapore and Malaysia's future water security is more at risk because they have not signed further agreements, however by building trust and adopting cooperative mindsets, both parties could reap benefits of sharing water resources in the future.

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