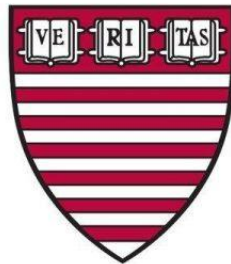


**Leadership without Authority: Collective Participations in Shrimp Farming  
Community, Decoding Internal Resources and Obstacles**

**Two Imagined Communities in Global Health Diplomacy: Virus Sovereignty, Access  
and Benefit Sharing of H5N1 Strains from Indonesia (2005-2012)**

**Final Project Reports**



**by**

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**Master in Public Administration**

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*For Elhurr*

*I am writing this letter, as a family tradition from my paternal side. This is not my first letter to you, but this one is special for different reasons. You are 10 now, and I want you to read it when you are 18, and again when you are 36, my age now. My mother gave birth to me when she was 33, and my father was 36. I finished PhD when I was 33, and I am finishing this MPA program at the Kennedy School at 36. Isn't it a full circle?*

*I wrote this project under the direction of Professor Ronald Heifetz. I presented my leadership failure. There are loss and pain. Loss and recovery are part of being human. The experiences which take so much from us, also give us the ability to be grateful on a deeper level. Sometimes, good things happen after bad ones.*

*Emotionally drained and intellectually enlightened, this project helped me to be authentic, compassionate, and to anchor myself. Purpose matters because it is key to making what I do flourish. I did my best, and my analysis was not perfect. I might fail when delivering and analyzing my life/ work. The story of our life/ work is not the life/ work itself, the latter is more important.*

*To diagnose, to analyse, and to deliver a case that represents the real life/ work is not an easy exercise. We might see the opposite, when people (or ourselves) present a story which is beyond the reality, only to gain impressions, or protecting and advancing our public image. It is not our image, but how we leave a mark on individuals, in the society, and in the world that define who we are.*

*On the one hand, life is about more (i.e. giving/ sharing), and not about acclaim or prestige. On the other hand, how we see ourselves impacts how others see us. We should spend more time appreciating the work we do like, because sometimes we are so very hard on ourselves. Listening to classmates' cases, and reflecting on my own case, I learned that challenges and opportunities are one in the same, like two sides of a coin. Those who can transform the pain, despair, and even tragedy into hopes; they are the true champions. How can we capture lessons, heal these wounds, and lay the past to rest?*

*Ibu*

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*Leadership without Authority: Collective Participations in Shrimp Farming Community, Decoding Internal Resources and Obstacles*

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*Two Imagined Communities in Global Health Diplomacy: Virus Sovereignty, Access and Benefit Sharing of H5N1 Strains from Indonesia (2005-2012)*

## Part One

### Leadership without Authority: Collective Participations in Shrimp Farming Community, Decoding Internal Resources and Obstacles

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## **Abstract**

Shrimp aquaculture is Indonesia's most important fishery sector, providing livelihood for coastal communities. The culture started in Indonesia in the 1980's, and started to face serious challenges in 1990's, because of low adoption of technology by the farmers, environmental degradation, and disease outbreaks. In Aceh, the North tip of Indonesia, the 2004 tsunami destroyed almost everything on the coastal areas. On the other hand, the natural disaster provided an opportunity to start something new, more sustainable aquaculture practices. Successful adaptation to farming will include adjustment to new environment, refashioning and combining old practices and new ones, forming a strong group, and looking for new sustainable livelihoods and not limited to sustainable farming. At personal level, my exercising leadership experience in Aceh, is largely influenced by the educational and professional paths I have taken. My mentors play important roles in directing my career. To my surprise, as I reflected recently, my family has provided very fundamental hunger for the journey, as I grew up in different cities under the guardian of my parents during my childhood, with my maternal grandparents during my high school, and with my older brother during my college years, all for education purposes. Education matters for our family, more than what I thought before.

## **1. Sociopolitical and historical context: tsunami, the beginning of a new end**

Aceh, the North tip of Indonesia, was the epicenter of the December 2004 Indian Ocean tsunami. The province was rich of natural resources, but received minimum basic service from the central government that led to independence movement (1976 to 2004). From the Indonesian authority points of view, it legitimized a military operation.

Tsunami wiped-out 250,000 lives, but it also ended the war. Peace agreement (2005 Helsinki MoU between Free Aceh Movement and Indonesian government) enabled different organizations to work. I left school in Brisbane, joined as a volunteer, and listened to people stories. “We survived the Dutch, Indonesian military, and tsunami. Allah gave us these tragedies to teach us to be resilient and to be humble”.

The resilience came from history of Aceh as a major regional power in the 16<sup>th</sup> - 17<sup>th</sup> centuries on the Strait of Malacca. After Indonesian independence, the way the authority weakened Aceh political standing but exploited its natural resources was a betrayal, with short exception during Habibie and Wahid administrations 1998 - 2001. The betrayal left a deep wound in the society, as described by Fikar Eda, an Acehnese poet, “More (evil) than the Dutch, that is Jakarta (the Indonesian authority)” or in its original Indonesia language, “Melebihi Belanda, itulah Jakarta”.

I was aware of this complex history before joining post-tsunami work. As I thought about it, I disconnected it from my technical appointments: *I spent enough time to understand the technical problems in farms, but I underestimated the trauma, the distrust, the broader challenge of people who lived in this sociopolitical setting which I never faced as a Javanese, the dominant sociopolitical power?*<sup>1</sup>

## **2. Case diagnosis: The real loss, the true cost**

### **2.1. The work at the center**

In 2007-2008, WWF Indonesia authorized me for a post-tsunami work, in partnership with WWF USA, American Red Cross, and UN-FAO. I was exposed to a variety of development projects, from the ridiculous to the meaningful. We developed Better Management Practices (BMP), an adaptive approach to sustainable, responsible, and profitable shrimp farming. We generated BMP based on farmers' experiences: what worked, what did not work, and how it could have worked better. BMP relied on farmer cooperation, where they started and ended the farm cycle together. Not only improving water quality and minimizing the diseases, farmers had higher quantity of crops, with a better price. They never experienced such harvest in the last 15-20 years.

In 2008, a new challenge emerged, a disease outbreak caused by white spot syndrome virus (WSSV) which wiped-out the crops within 7-10 days. The economic loss was real. In the presence of disease, BMP approach needed modifications.

### **2.2. The adaptive challenges and the technical problems**

There are several adaptive challenges and technical problems in aquaculture. The adaptive challenges mainly related to the expansion and conversion of extensive farming (low density) into intensive farming (high density), but with minimum efforts to educate farmers, combined with the lack of spatial and temporal planning from the local authority that led to environmental degradation and the emergence of diseases. Having limited access, farmers are dependent on middlemen for technical, financial, and marketing.

Despite all challenges, there are driving forces behind the rapid expansion of shrimp aquaculture: the decreasing availability and fluctuations of natural stocks and the subsequent decreased potential income and employment, high profitability of shrimp farming, low alternative commercial use for the land, and increasing demand for seafood.

### **2.3. The stakeholders, the perspectives**

1). Farmers: the loyalties, the real loss, and the true cost

“We have farmed for more than twenty years, we know how to farm. You came as a stranger to us, not to mention a woman, in an old boy network. Many people from humanitarian aids interviewed us for the purpose of writing a nice field report, and they never came back. WWF collected data from our practices, formulated new approach based on the data, and generated new knowledge based on our own experiences. Shrimp diseases are not new to us. We used chemicals in the past, and it worked to kill pathogens. The tsunami buried the pathogens for three years, and now they appeared again. You do not understand this pain, because you receive full salary, no matter what happen to us. The gain we expected by applying BMP was not guaranteed, and now the potential loss, the nightmare became real.”

2). My role: scientist and customer

In response to what the farmers said, I felt so incompetent. Some farmers decided to go back to the old way. I saw antibiotics bottles near the farms. Thinking myself as a customer, no chemicals meant more assurance of seafood safety.

3). WWF Indonesia



WWF Indonesia as an environmental NGO had to renegotiate and to reframe the project as a deal between providing livelihood for people and protecting the environment from more mangrove destruction.

#### 4). Village administration

Because the village is far from the province capital, village administration is the highest authority for farmers to seek help. For these administrators, seeing different organizations doing projects in their territories, they were happy, but also felt being by-passed by temporary strangers.

#### 5). International partners: WWF-US, American Red Cross, and UN-FAO

American Red Cross provided financial support, WWF implemented the project, and FAO provided technical and planning assistance and conducted training activities.

### **2.4. Zoom-in and Zoom-out the level of work**

Given the enormous damage from the tsunami and the involvement of more than 500 organizations for different projects, the work could be seen at provincial level, national level, and at international level. At that time, I chose to narrow-down at the village level. At this level, my organization (WWF Indonesia) could have a direct intervention by working together with the farmers in mobilizing the resources.

Figure 1 and Figure 2 summarize the diagnosis and action options, comparing what I really did, and how I could approach the challenge differently. Historical timeline is important as it informs something about the dynamics at a larger scale.

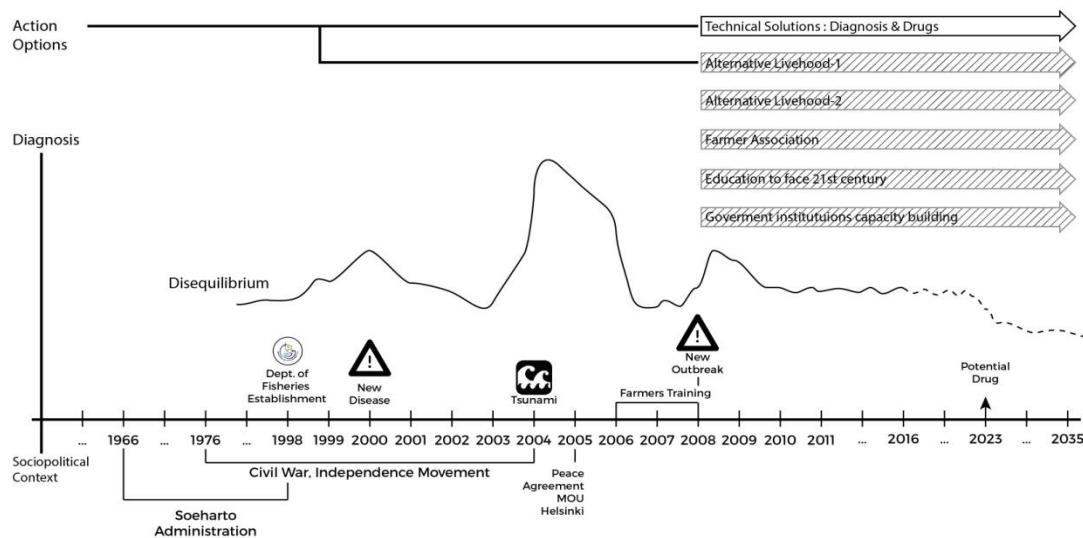


Figure 1. The Sociopolitical context, the disequilibrium, and the action options from working with shrimp farmers from January 2007 – December 2008. The timeframe goes to 2035, remarks the average biological generation time of 27 years, from 2008 - 2035. Corrections and adaptations are needed along the way.

Sociopolitical context provides rationale explanations of the absence of central government roles in providing basic services in Aceh. Providing services (education, health, wealth) for separatists would mean giving bullets to be used against the giver. Institutions in Aceh (and West Papua/ West Irian), therefore were not as developed as in most other places in Indonesia. The Department of Fisheries in particular, even at national level, President Wahid was the one who initiated the Department in 1999, considering the comparative advantage of Indonesia.

Diagnosis/ disequilibrium graph shows that the challenge of shrimp farming in Aceh was heavily connected to the broader context of economic development. The disease already emerged in 2000, so even the technical problem has evolved overtime if people notice, to make progress on the issue, and to be prepared for potential risks along the way.

Action options graph describes the action I chose in 2009 (in white arrow), and what other actions I could have started with different stakeholder at that time (grey arrow). Technical solution (disease diagnosis and drug) is vital, but it takes a relatively long time and high investment. While waiting for the drug, other actions would also be needed (grey arrow), for example establishing farmer association, investigating potential alternative livelihood 1 and 2, educating the people, and strengthening capacity building for institutions. By the time the drug became available, the society would have already developed different new capacities.

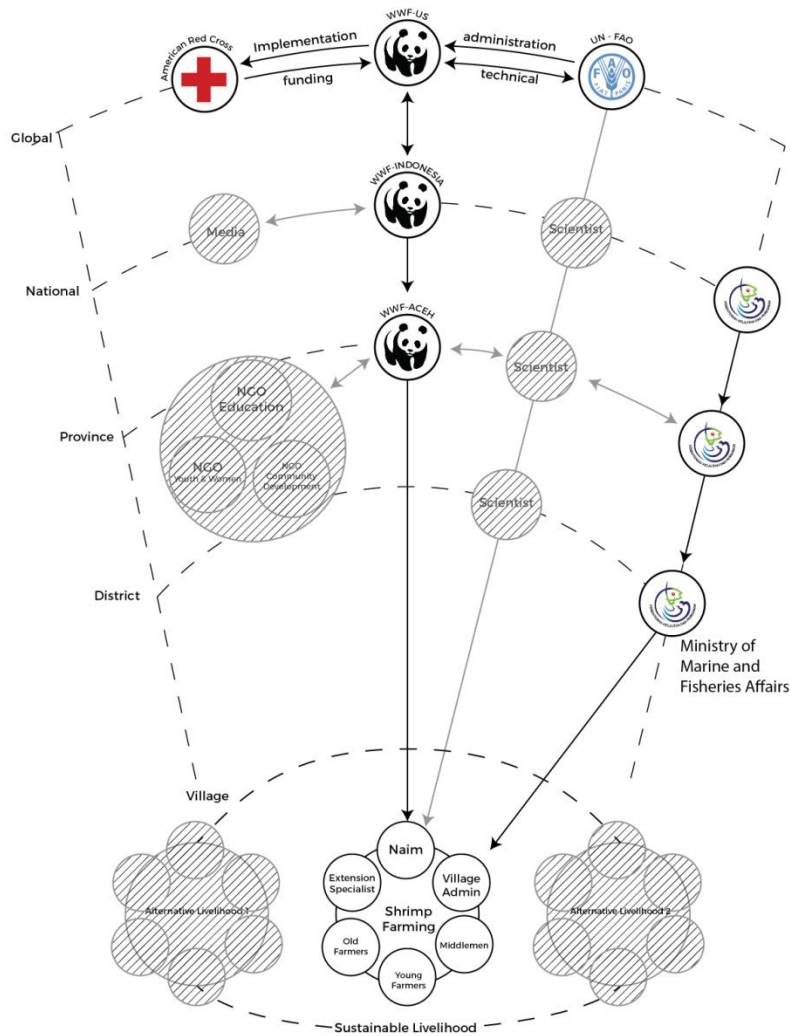


Figure 2. Stakeholders diagram. The grey area shows the things I did not see when the case happened. For so many years, the villagers disconnected from the rest of the world. When I worked there, I localized the problem for myself instead of seeking helps and using my networks to make progress. My informal authority would enable me to connect different stakeholders together, so that the farmers would have different access. I knew that access was one of the main issues for farmers, but I disconnected even myself from the network (other scientists, media, NGOs in education, women, and youth). The bottom part of the diagram shows alternative livelihood that we could have started, for example seaweed farming which can be done by female farmers, post-harvest process, and even a new activity which was completely outside farming activity, for example fashion industry or other things. Because there are different grey circles, sequencing the works is important.

### **3. On the balcony, the way I see the case now**

#### **3.1. Perspectives' dynamics and the stakes**

Even though it was not easy, my husband agreed that post-tsunami project would be the best use of my knowledge from studying aquaculture. I moved temporarily to Aceh with my baby, and left my easier life as a science teacher in Java. I became a teacher after the principal, my neighbor, invited me. “This is emergency, for the sake of students, because one teacher left unexpectedly. Please don’t say ‘No’”. This emergency narrative and my disability to say ‘No’ were repeated again when my friend persuaded me, “You have to come to Aceh. We need facilitators for farmer workshop next week. I could not find someone local who has passion and skills for this. We will figure out how to handle your baby.” *Why did I say ‘Yes’ even when I was not 100% sure, and I had to travel the distance of Florida to Boston? How/ where did I learn not to say ‘No’?*<sup>2</sup>

When farmers experienced bad harvest, the pain and the anger of these farmers and their families, mostly in silence, were like a bomb for me. Until today, I can still vividly remember their faces that day. Instead of staying longer, I left Aceh, partly because my contract was ended, and because I could not handle my disappointment.

After consulting with different people, I took the courage to serve my country by applying to a PhD program in shrimp disease. The disease prevalence and potential loss are at the rate of 10%, or equal to \$400 million annually across the country. For rural economies, this is a big number that cannot be neglected, but unfortunately, Indonesia had no authority in shrimp pathology. I treated the challenge as a technical problem, and therefore I thought technical solution would be the best approach.

When I said good bye properly, to honor the experience I had with these farmers, the village chief said: “Many strangers came here, and almost none of them ever said good bye to us. You had the courage to admit that you contributed to the mess, and you will try to fix it by going back to school. The challenge is here, and the solution is in the US? Isn’t this so strange? We wish you good luck.”

WWF Indonesia tried several times to continue the project. The location is remote, the work is hard. Because of these difficulties, WWF and other institutions have focused on policy and guidelines. Policy will provide boundaries for good practice. But, without working directly in the field, the progress became slow. The real challenges happened in the farms, in the villages, not in a meeting room.

For WWF Indonesia, the successful of aquaculture project will give a new brand, because WWF is mostly associated with conservation issues, more specifically with endangered species (large animals). Working on livelihood and at the same time protecting the marine environment will be a new portfolio for WWF.

For local administrations, they will get credits both from the higher administrators and the people, if progress can be achieved in their territories.

### **3.2. Learning process takes time**

I made one mistake because I did not put myself on the farmers’ shoulders. Farmers will not accept, accommodate, and adapt to changes unless they are part of the solution, unless they can fully engage as a subject in the learning process. While I was struggling with my PhD study in the lab, farmers had to face the real challenge every day.

Technology helps people, but we need to appreciate the culture and tradition where these farmers live. Most of them finished elementary or middle school, but we have to appreciate their experiences, to listen, and to speak using language they could understand. The new technology needs to increase the farmers' standing, and not as a threat. BMP approach requires farmers to work harder, to change their behaviors in respecting the nature and the willingness to learn new approach. In the longer term, by building the culture to minimize the negative impacts for the environment, for example by replanting the mangroves, the farmers will have more sustainable farming.

Building a bridge with the farmers means to renegotiate what the technology can offer, and how we accommodate their needs. To say that technology worked but we were unfortunate because of the disease, I represented those with high education but could not do anything when real challenges happened. I also represented an ethnicity that abused the power by conducting violence in Aceh. For these farmers, during that bad time, I was no different: someone from Java who opened up the deep scars on them.

Another important practice that we failed to appreciate, we were discipline during the first two years, to have the biweekly meetings where we explained the BMP, and the farmers shared status of their current farms. In the third year, we did not do again because we already shared all the materials. If we had the meetings, several farmers would notice the mortality or other clinical signs, shared their observations, and we could use them as an alarm to do interventions as a group of farmers, because their farms were connected, and diseases spread in the water. We underestimated how important regular group meetings as knowledge sharing, as well as a healing process for their trauma.

#### **4. On the dance floor: Collective sensing and participation without authority**

In this section, because the same challenge that we had 7-8 years ago is still alive today with little progress, and many farms are abandoned, I will focus on proposing alternative actions which we have tried, and how we could make it even better.

##### **4.1. Hold steady and deploy my authority**

Between August 2009 – December 2012, I was in Tucson doing a PhD in shrimp diagnosis. Unfortunately, aquatic disease study is not as advanced as poultry disease study, not to mention human disease study. Drug study for aquatic environment is almost nonexistent. Therefore, the adaptive solutions to shrimp disease in the absence of drugs are needed. The adaptive solutions might include livelihood diversification, and other approaches such as education, and women/youth empowerment to face the 21<sup>st</sup> century.

Started in March 2013, I served as a scientific expert for the deputy minister of fisheries which required me to have a biweekly meeting with him, and to travel across the country to meet with farmers. From my observation, the challenge was getting complicated because farmers and industries wanted to culture at maximum densities, which increased the risk for disease outbreaks.

I also started my faculty position at Surya University. Teaching is always my priority, but as the first trained shrimp pathologist from Indonesia, I am considered as the highest expert when it comes to shrimp diseases. To build the institutional capacity, together with my former supervisor from WWF-Indonesia, we cofounded Center for Sustainable Aquaculture and Pathology Studies (AquaPath) within the university.

AquaPath as an institution can contribute significantly for future shrimp farming by offering different adaptive approaches. First, the research we have been engaged in the last two years encompass several projects that overlap with efforts towards Area Based Management. Second, our development project on sustainable farming identified key limiting factors that reduce producer's empowerment in markets. In the latter project, our responsibility was to support institutional building of Aceh Aquaculture Cooperative (AAC), in order to increase their access to financial capital, as well as to increase member (farmers) capacity to meet buyer certification requirements. Additionally, AquaPath currently involved in a task force that is developing national guidelines for ecosystem approaches for aquaculture.

While little efforts and attention have been paid to the development-side of small scale farming, its environmental and social impacts have been widely studied. Area-based aquaculture management would be beneficial for small scale aquaculture as it would involve seek to unify farmers and better management practices, similar to what we did during post-tsunami work. From ground work with farmers, we have experienced the spectrum of inapplicability and potential areas for forward progress and understanding the intricacies of aquaculture business.

#### **4.2. Give the word and the work back to the farmers**

Small scale farmers know that it is important to work together with other farmers for many reasons, for example to reduce disease risk, for better water management, and for better market options. However there are no guidelines on how to develop a good and



strong farmer association to improve the production and to minimize its potential negative impacts. Their limited knowledge, authority, and access to market, financial resources, and governmental institutions have caused poor management and resulted in limited production and/or adverse aquaculture impacts to the environment and communities.

Area Based Management (ABM) for aquaculture as described in the previous section can be used as an alternative governance and risk-sharing model to improve the livelihood of smallholder farmers. The model will provide how vulnerable producers and consumers could benefit from reduced risks of aquaculture production and more secured supply, both directly and through markets.

Farmers are not as weak as what many people thought. Under good leadership and in a group setting, they are willing to learn. Because they are the most benefitted or the most bankrupted from the farming activity, so their lives are at stake. What motivated farmers during our success in 2006-2007, were the bonds of loyalty and trust they developed around each other from the biweekly meetings. Social connectedness is an important attribute for high functioning organization.

Investing the time to be together creates opportunities for farmers to know and to trust one another. Therefore, in the context of small scale aquaculture which is widely practiced in Aceh, farmer association will define a better future. It is not a promise, but hope/ possibility. By working so hard together, farmers will create a new capacity as a group to make progress, even when government, the industries, the scientists, NGOs and others are not present.

Farmers have potential to exercise leadership without authority because of the accumulated knowledge from their experiences. But, exercising leadership does not happen by chance, it needs to be conscious. Because of their limited education, living in remote areas with limited access to information, farming vocabularies are the only words that close to their hearts. The local words for innovation, creativity, improvisation are rarely used, and therefore the practice may become limited. A trigger/ intervention is needed. Farmer association becomes important for this purpose to stimulate collective leadership. When they are together, they start to generate new knowledge, strengthen one another, and take collective responsibilities.

#### **4.3. Improvisation: collective sensing and participation**

These action recommendations developed mainly from the collective behaviors in bacteria and Darwinian evolution/ adaptation, and how to draw a parallel for exercising leadership context. Simple reproduction using binary division and Quorum Sensing (QS) behavior have defined how bacteria survive and thrive for 3.8 billion years. In QS, bacteria have the abilities to detect when other bacteria are around them, and to start group behavior/exercising collective behaviors (invasion, defense, toxin production, and others) only when they reach a threshold.

More complex organisms for example mammals have the need to look for an authority, but this does not mean that humans loss their capacity for collective sensing and participation without authority. Even though human social structures tend to overemphasize or to overreact to authorities, my experience working with farmers showed

that active participation (leadership without authority) is prevalent but unnoticed, especially during tremendous crisis. It was an opportunity to start again from scratch, and each farmer was willing to work really hard. Leadership without authority in a group setting is less common in the social structure we live in, but the potential is always there.

To build confidence in the group, at least one farmer needs to start to work hard after disease outbreak. It might look strange, but it is a trigger for others to sense what he does, and to participate. For farmers in this rural area, I defined leadership as sensing the urgency to participate in a group purpose, which led to group adaptation to a new culture or tradition. Most of the farming practice would still be the same knowledge they have used since 1980. But, there are new things, innovations to the old tradition that need to be experimented, for example antibiotics prohibition, replanting the mangroves, and working together as a group. The innovations might work, might not work, but we will not know until farmers do the experiments, and adaptation is needed along the way.

Human adaptation, as described by Darwin, involves at least three forms: natural selection, sexual selection, and group selection. In the context of shrimp farming in Aceh, tsunami is natural selection that provides new ground to work on something new, what was available in the past, might no longer there, and we can only start from what is available. Sexual selection allows members to survive in future generations. In the context of farming, there are many old practices that need to be used, but there are new things that need to be experimented. Only by combining two practices, shrimp farming will survive for generations to come. Finally, group selection is pivotal in survival of any organisms. If one farmer is successful but he is only by himself, and no other farmers continue, then the

practice is close to extinction. In a broader context, if shrimp farming is the only livelihood being practiced because it is the most promising one and the one that already established, in the longer term, it will not be sustainable.

To sum up, successful adaptation to farming will include adjustment to new environment, refashioning and combining old practices and new ones, forming a strong group, and looking for new sustainable livelihoods and not limited to sustainable farming.

My exercising leadership experience in Aceh, is largely influenced by the educational and professional paths I have taken. My mentors play important roles in directing my career. To my surprise, as I reflected recently, my family has provided very fundamental hunger for the journey, as I grew up in different cities under the guardian of my parents during my childhood, with my maternal grandparents during my high school, and with my older brother during my college years, all for education purposes. Education matters for our family, more than what I thought before.

## **5. A full circle: Internal resources and impediments to leadership**

In the previous sections, I Italized two questions: Why was I so occupied with working on the technical part and neglected the larger context of the challenge, even though I was aware about it? Why did I always say ‘Yes’ to almost any offer, even though I could have said ‘No’?

The first one is heavily influenced by my academic training to be specialized in technical approach. Figure 3 shows different people who were disappointed with me, or would be disappointed with me if I did my job in Aceh differently.

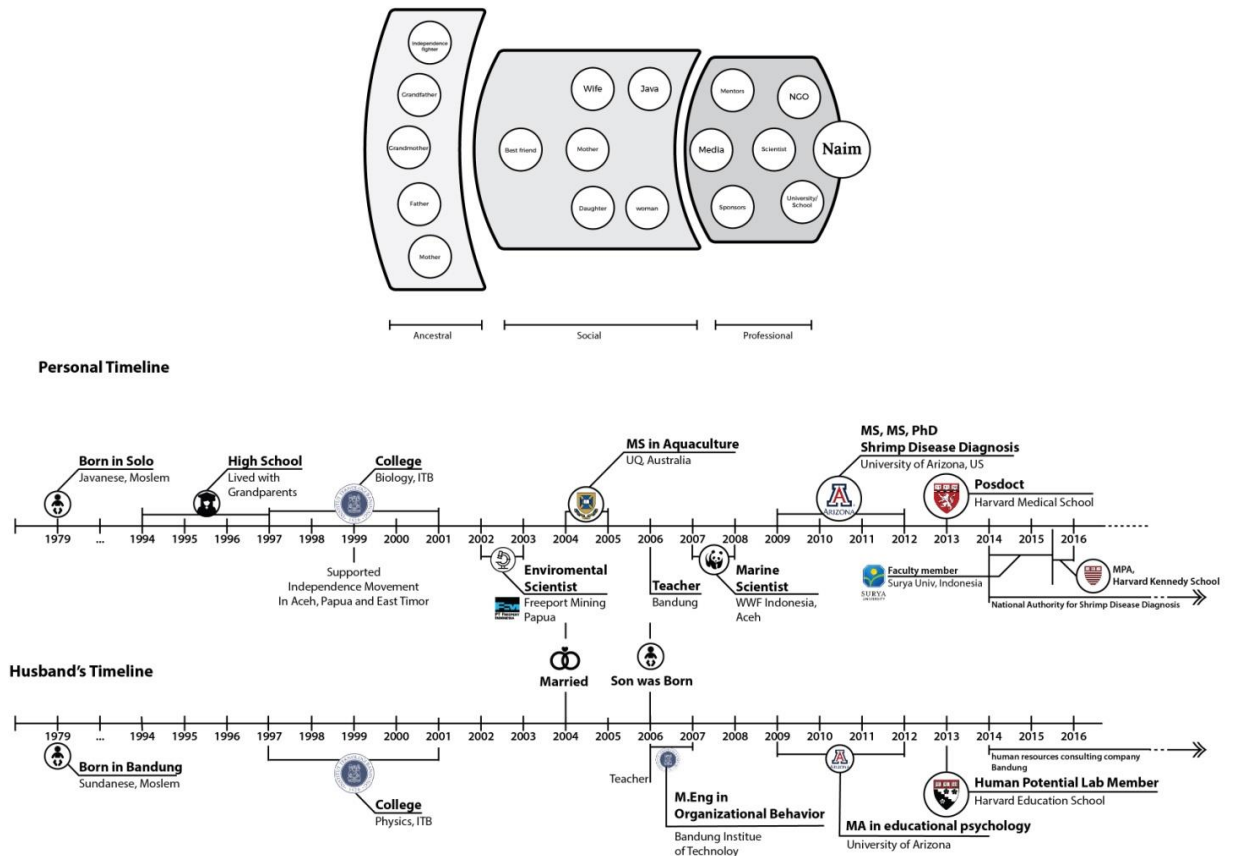


Figure 3. Personal diagram. Family upbringing, educational background and professional experiences have shaped my identities. There are critical moments in my life. This figure seems a perfect life, but there are many untold stories, the songs beneath each story. Reading different logos as one big picture, I may have accumulated knowledge and experiences more than most people with similar identities as me, at similar age. As a scientist, I have been trained to do deep reading, and thoughtful writing/ arguments based on available data. But, I do not do similar deep reading/ sensing for my own life even though I write a diary, my paternal side traditions for at least seven generations. As a scientist, I know that collecting experimental or field data is hard, to use/ analyze the data is even harder, and to learn from the data is the hardest part. Meaning is more important than data/ facts. I failed to provide technical solution for the challenge in Aceh, the main subject of this paper. I failed even harder in understanding the broader adaptive challenge, and more importantly the people. I have higher sensitivity in interpreting technical data, but less sensitivity about humanities, the complexity, the non linier process, the learning process along the way.

WWF authorized me to solve the technical problems, so I focused on this. Advanced education, on the one hand is my strength, but I also created an imaginary box that limited my movement not to step up out of my comfort zone. I would disappoint my best friend/supervisor at WWF if I solved the problem by switching to different things. For example, if I said that shrimp farming is impossible because it is too risky, and I proposed to start an opportunity in fashion industry, given the geographical position of Aceh on the Strait of Malacca for easier regional and international trade. She would say, “Didn’t I hire you to work on shrimp farming? There are people who are more competent than you for fashion industry. It would be shameful for you, for WWF, and NGO network, as we use public money entrusted to us to work on shrimp farming and not other things. Media has also worked together with us in sharing good stories from our works, from your role as a scientist. So, just stay focus!”

The second group of my professional life who would be so disappointed with me, would be my academic and professional mentors, and sponsors since my college years. They would say, “If you gave up with scientific approach after working in different places, after going to different schools, you’re a bad role model for the younger generation of female scientists and young girls. They would say, ‘Look, even Naim is giving up after she went that far.’” This voice is so strong that prevented me from trying different approaches out of my field of expertise.

My scientific training also played important roles in my slow decision to take actions, even after I calculated, calculated, and calculated. Most of the time, I do not brave enough to do/ test what I thought. In science, I use the word ‘probability’ very often. Probability

implies the chance things could happen or could not. Even five percent risk would prevent me from trying new things. I wish I was being exposed more to ‘possibility’ than ‘probability’, to give more freedom than fear. Possibility is the likeness of things to happen or to be successful. Options and values are available. As soon as I decided to operate myself only in the scientific mode, I killed other options. Working across boundaries or out of my comfort zone may speed up the process.

As I mentioned earlier, my disability to say ‘No’ is influenced by my social circles. I had to revisit many events from my past to understand this. When I was 7-10 years, neighbors came many times to my mother, borrowing money for their kids’ education, or even for food. My mother said ‘Yes’ even when she supposed to say ‘No’. Later she told me that bringing happiness for other people is more joyful than our own happiness. We may be poor, but they are poorer. When later I lived with my maternal grandparents for three years, they told me that as their first born, my mother received all the luxury. Her socioeconomic status completely changed after she got married at 20 to my father. She planned to go back to school. It never happened, as she gave birth to eleven kids within 22 years. She is truly the linchpin of our big family.

My father praised my mother for adapting herself to a new life as his wife. He went back to school, to do a college degree in economics, followed by a master’s degree in economics in the UK. He became a university lecturer and worked for the R&D department under the Ministry of Religion in Jakarta. This happened only for a very short time. Because corruption was in every corner in Jakarta, he preferred to go back to his simpler life as a teacher, and to raised us in our hometown.

Last week, I had an office hour with Professor Jasanoff. She asked me what my parents did. “You follow what your father did, being a teacher, a faculty, and now you are studying public policy, a kind of economics. You could have learned it from your father.” My heartbeats stopped. Unintentionally, she helped me to find the big part of my abandoned puzzles. My father’s identity as a Western trained economist in 1970’s was a blind spot for me and the whole family. This is another thing that I was aware of, but I did not read the meaning behind the data properly. I thought I never planned to follow his paths, it just happened by chance. I may be wrong. It is important to share our stories with others. As outsiders, they help me to give meanings that I did not see before.

While my mother was giving up her high socioeconomic status, my father was giving up his career as an economist, and later in his life, he ‘converted’ from Sunni to Shia after studying in Qom for six months, and met Khomeini in 1984. Both my parents refashioned their identities, things that matter for many people. My father lost his authority as an Imam, and became a leader for smaller Shia community.

Seven months before his death, he went for Hajj, and he said his journey was complete at 63. He lived a beautiful life, as an orphan since he was 2, he led social justice movement when he was young, he continued family tradition as an Imam, he was the first in the family to go to college and to go overseas, he questioned things, and he said that nothing in this world is perfect, even the Holy Book interpretation. This message while he was in Mecca was the most profound message, I received from him.



Many people thought that I had the vision to be the first PhD in the family to surpass my father's accomplishment. In 2005, I finished an MS degree in Australia, and I mentioned to my husband it would be the last. I wanted to focus on family.

2005-2006 was the best and most memorable moments in my life. I enjoyed every single second I spent with my son and husband, and spent my time as a teacher. My husband's business was good, until it was not. The IT-based company was collapse. I started to find job opportunities, and the offer from my best friend in Aceh came. I did not want to disappoint her, but I cannot accept a long term permanent position because I did not live in Aceh. It was meant to be short. I do not know if I really gave my heart to my work in Aceh, because I had this voice in my head all the time: "You're not supposed to be here. Your husband is in Java. What kind of wife are you?"

Aceh was my beginning to start thinking about doing a PhD, bringing my family to Tucson, and later to Boston. If live went well all the time, I might never go back to my professional life even though I enjoy living as a housewife and a teacher.

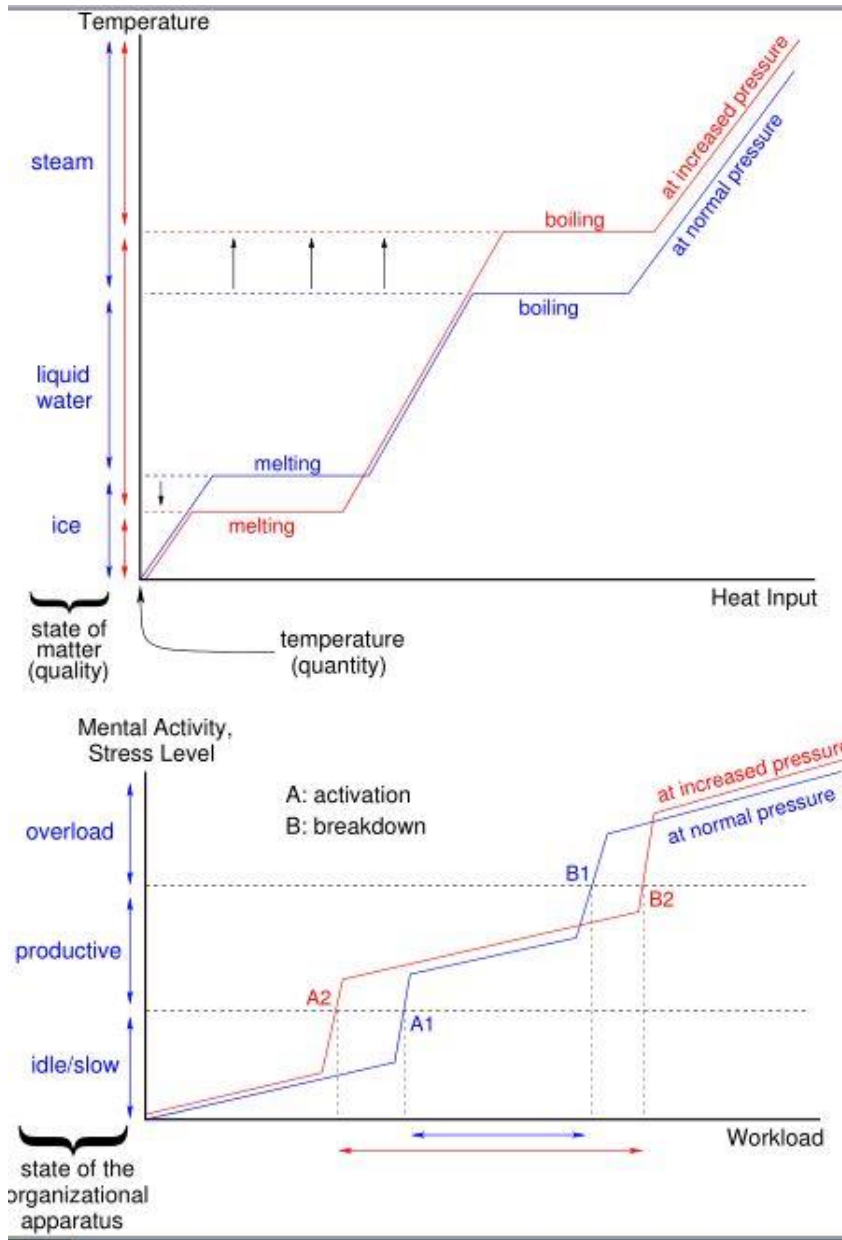
Now, I am a mother, a daughter, a scientist and all other role identities that I am attached to. They are not the real me. I am who I am, not my achievements. I have the spirit of my parents as hard workers. I am similar to them in many different ways, more than what I thought. I do not know how much I pass the traits to my son. In a good day or bad one, I am glad that he is the anchor of my life. I named him Elhurr, an Arabic word for a free man, as an opposite to a slave. You were born as a free man, and may you live your life in freedom. My husband is the biggest supporter to date. He has sacrificed his happiness, but at the same time, I believe we grow together through difficult times.

## **6. Conclusion**

Using adaptive leadership framework, external and internal challenges to professional failures have been diagnosed, and alternative options (solutions) have been proposed. The diagnostic part include: distinguishing authority and leadership, shrimp farmers are the most important actors in the shrimp aquaculture, where different levels of government offices have the formal authority. Several farmers shows that they are exercising leadership with informal authority to build a strong bond in the community, to start something new which can be accepted by the farmers. Creating strong bonds are adaptive challenges which will have long-term impacts. The technical challenges include the degradation of mangroves and the environment because of uneaten feed, drug/ chemical use, and knowledge/ technology transfer. Identifying all stakeholders in the industry becomes critical to maximize the optimal use of the resources. At the personal level, adaptive leadership framework explores an individual at a deeper level, using the same framework as the professional framework. One cannot reach her/ his full potential is she/ he cannot decode her/ his potential and challenges.

## Appendix

### Exercising Leadership (A model from scientific perspective)



From the equation of pressure and temperature ( $pV = nRT$ )  $p$  for pressure and  $T$  for temperature, higher pressure will increase the boiling temperature from  $100^{\circ}\text{C}$  to  $120^{\circ}\text{C}$ , and at the same time will decrease the melting temperature from  $0^{\circ}\text{C}$  to  $-20^{\circ}\text{C}$ . Here, the importance of higher pressure because it will expand the liquid (productive) phase (top picture). The analogy works for an organization (bottom picture). However, it is important to notice that humans are not uniform, there are exception, for example those who need maximum pressure to be productive.



## **Part Two**

### **Two Imagined Communities in Global Health Diplomacy: Virus Sovereignty, Access and Benefit Sharing of H5N1 Strains from Indonesia (2005-2012)**

#### **Introduction: Sociopolitical Context**

Highly pathogenic avian influenza A (HPAI) or H5N1 virus was first detected in poultry in Indonesia in 2003, and in humans in July 2005 (Sedyaningsih, et al., 2007). The cases and fatalities reached a peak (102 deaths) in the country between 2006-2008 (WHO, 2016), the highest in the world to date. Between 2006-2009, the Indonesian authority, represented by Minister of Health, spent energy and time on the issues of virus sovereignty, and access and benefit sharing related to research and vaccine development.

The Minister of Health made four important and controversial decisions related to H5N1: (i). stopped avian influenza virus strains sharing from Indonesia to WHO networks in 2006, (ii). announced the launch of the Global Initiative on Sharing All Influenza Database in 2007, (iii). terminated the leading scientist on H5N1 in 2008 because of different views on international collaboration (the re-elected President appointed the scientist as the Minister of Health, 2009-2012), and (iv). requested to the US Government to shut down the operation of the US Naval Medical Research Unit Two (NAMRU-2) in Jakarta in 2009.

This paper will analyze how the four decisions defined biocitizenship and sovereignty of biological materials to raise equity issues, how authority used biopower and

biopolitics to gain public support and international attention, and why the policy for the same issue changed when a new minister was appointed and subsequently shifted Indonesia and developing world's stance on international diplomacy. Tracking H5N1 sequences in the GenBank and published papers on H5N1 strains from Indonesia in PubMed database, the minimum involvement of Indonesian scientists and institutions between 2006-2016 in H5N1 scientific research, in particular vaccine related research, implies low international trust for Indonesia's research capacity, partly because complicated bureaucracy of the country, and the limited access to vaccine related research at the later stage.

At the national level, the health authorities at that time were already facing enormous tasks because of the December 2004 Indian Ocean tsunami with the epicenter in Aceh and Nias, where the death tolls reached 250,000 (Jakarta Post, 2015). Post-tsunami rehabilitation and reconstruction were already huge. The country was not ready, not prepared, and did not anticipate that avian flu from the neighboring countries would spread to Indonesia.

Avian flu hit Indonesia when almost everyone in the country was still in political euphoria to have a new beginning, after the first direct presidential election when Yudhoyono became the president in October 2004. Almost all the energy and focus were absorbed into it. In less than two months, tsunami happened with enormous rehabilitation and reconstruction, including public health sector. Six months later, the first H5N1 case in human was confirmed. Understanding the larger sociopolitical context provides a better explanation on how the country responded to a new challenge when H5N1 emerged.

Between 1998 and 2004, Indonesia had three different presidents, an indicator of political instability. Transforming from a history of six decades of centralistic government under two presidents with top-down approach to a more democratic one was not easy for any country, and it reflected in the way the country managed H5N1.

H5N1 became one of the main narratives in the country from 2005-2012, because the way the state (represented by health minister) used national pride, sovereignty, dignity, and also colonial and religious' narratives for virus sharing with the global network. The central player behind the narrative was Siti Fadilah Supari, the Minister of Health 2004-2009. On the contrary, Endang Rahayu Sedyaningsih who held the position from 2009 until her death in 2012, believed that in a global democratic world, H5N1 challenge was not contained by geographical and national borders. The Indonesian population, neighboring countries and world population would be better served if scientists shared information and worked together.

Even though Indonesia's stance for H5N1 virus sharing under two different ministers can be explained through power dynamics between different stakeholders (WHO, member countries, Indonesian authorities, society, patients and families, media, scientific communities, drug/vaccine companies), this paper will first outline the perspectives of the two ministers, and how their interpretations supported or contradicted with the concepts of biopolitics and biopower from Foucault (1990), and biocitizenship (Rose, 2007). The dominant power that both ministers played in the decision making process also showed that top-down approach were still important in Indonesia at that time, and until today.

As a tropical country with the second highest terrestrial biodiversity after Brazil, and with the highest marine biodiversity in the world (Tomascik et al., 1997), H5N1 sharing mechanism was an iceberg of the larger research challenge in Indonesia. Many scientists in Indonesia are still facing the dilemma to collaborate with international partners if we have to share biological materials. On the other hand, it is also debatable if highly pathogenic viruses with international thread are considered as biological materials under the Convention on Biodiversity. Understanding the perspective dynamics in H5N1 case, and potential policy recommendations from international relation's perspective, would help to solve the dilemma and the larger challenges.

#### **Siti Fadilah Supari: NAMRU-2, Dignity, Equity, and Transparency**

In 2007, during her active role as a minister, and after her drastic decision not to share avian influenza virus from Indonesia to the GISN (Global Influenza Surveillance Network), Supari wrote a book that detailed her duties, in particular her commitment and determination to work on H5N1. The Indonesian version of the book was published in 2007, and the English version in 2008. The complete title in English is "It's Time for the World to Change: In the Spirit of Dignity, Equity, and Transparency" with a subtitle: "Divine Hand Behinds Avian Influenza". The title implies her perspectives that something is wrong in the mechanism that WHO and global network have operated, and change is mandatory.

The publication was followed by her request to the US Government to shut down the operation of the US Naval Medical Research Unit Two (NAMRU-2) in Jakarta.



NAMRU-2 was the first institution to collect H5N1 samples from Indonesia, when Indonesian institution did not have the capacity. Historically, NAMRU-2 began operating in Indonesia in 1970, as a joint research lab under a partnership between the US Navy and the Indonesian Ministry of Health. Because of the dynamics H5N1 debate in Indonesia, in 2008, the House of Representatives demanded a review of the lab's scope of work, and the fact that the US government requested diplomatic immunity for all Americans working in the lab, and not limited to the director and deputy director (Jakarta Post, 2009).

The presence of NAMRU-2 in Indonesia for four decades was meant as US science diplomacy, but it created hidden conflicts along the way (Smith, 2014), reached a peak during H5N1 controversy, and the US decided to accept Indonesia's request to discontinue the operation. NAMRU-2 served the US's purposes for science diplomacy during Cold War, and it was no longer needed when Indonesia was in transition to a democratic country.

During her ministerial post, Minister Supari gained public support because the way she framed her narratives by highlighting NAMRU-2 and WHO which represented global power, and contradicted them with nationalism, dignity, equity, and transparency, that developed countries had been unfair and unjust to developing countries in dealing with H5N1. Minister Supari also received public support because the way she identified herself as the follower of Soekarno, our first President and one of the founding fathers, the symbol of nationalism, anti-imperialism during the independence movement in the 1940's, and anti-America in the early 1960's. Her narratives seemed to plug different strings in different people. Further than that, in different interviews with the media, she kept saying

that “I am chosen and guided by God to do the hard work in changing a global system of virus sharing.” The word ‘God’ or ‘Divine’ are mentioned many times in her book.

*“The domination of developing countries by developed countries is reflected on the virus sharing mechanism. In the long run, this will make the developing countries the preys of the developed countries. Until now, the developed countries have been producing vaccines from the virus originated from the affected countries, mostly from developing and poor countries.”* (Supari, 2008).

There are several events that led to different decisions taken by Minister Supari. From the beginning of the H5N1 case in Indonesia, the Minister was upset to find out the scarcity of Tamiflu (or Oseltamivir) because developed countries purchased the drugs from the manufacturer (Roche) in advance for stockpiling. Indonesia received Tamiflu after Thailand and Australia were willing to share their stocks. For her, this kind of act by developed countries is unfair. About a year later, in late 2006, Supari decided to stop sharing Indonesia’s strains of bird flu with World Health Organization laboratories, because of fears that any vaccines developed would then be sold for profit to developing countries with no benefit to Indonesia.

The Indonesian refusal to send influenza virus samples disrupted a 50 year tradition of free sharing of influenza viruses through the WHO network called GISN. In a paper by Sedyaningsih et al. (2008) where Minister Supari was one of the coauthors, it detailed the chronological events from 2005-2006 which they considered as unethical practices by the WHO networks. Indonesia had sent all human H5N1 cases to two labs under GISN, the US Centers for Disease Control and Prevention/CDC, and Hong Kong University, until June

2006. In April 2006, scientists at international meetings started reporting results of analyses of H5N1 viruses from Indonesia, without first getting permission from, or notifying, not to mention having Indonesian scientists as collaborators. A month later, the largest H5N1 case cluster hit Indonesia, seven of the eight relatives did not survive. Finally, in late 2006, the news that an Australian company planned to develop an H5N1 vaccine using a virus that Indonesia had provided to the WHO network was a threshold that Minister Supari could hold. The plan was not only a violation of the WHO guidance for virus sharing (because Indonesia never sent samples to Australia), but also unfairness and inequities of the global system. Not only stopping to share H5N1 viruses, later Indonesia also refusing to send timely reports of human H5N1 cases to WHO.

In general, scientists in Indonesia supported Supari's concern about developing nations' lack of access to vaccine supplies, and changes to the international virus-sharing system were needed. But, it is difficult to back up the claim that developed countries were conspiring against developing nations to boost profits for pharmaceutical companies. Second, sharing avian-virus for global surveillance and the concern about vaccine production should be treated as two different things. This voice and similar voices did not emerge in the country, because the main narrative had been built by the minister, and no one was willing to risk her or himself to be viewed as disloyal to the country.

President Yudhoyono also supported minister's demands regarding the H5N1 virus-sharing issue, that there are issues to be resolved in the world system. His stance for the second issue was not clear. After he confirmed his second term in the 2009 election, President Yudhoyono appointed Endang Sedyaningih as the Minister of Health. Different

from other ministers where the President did fit and proper test, Sedyaningsih was called by the President only hours before the announcement in October 2009, and she did not undergo physical examination. This led to a public speculation that President Yudhoyono received pressure to appoint someone who is more cooperative with the international community to deal with H5N1.

### **Endang Sedyaningsih: devotion, rational, trust**

A physician turned to epidemiologist, Sedyaningsih was the first and the only Indonesian to finish a ScD degree from Harvard School of Public Health (HSPH) in 1997, until her death in 2012. Her official affiliation was with the Indonesian National Institute of Health, under the Ministry of Health office. She was also posted in WHO Geneva in 2001, and affiliated with NAMRU-2 lab in Jakarta, collected and documented the first case of H5N1 in Indonesia. Sedyaningsih was the main author from Indonesia for H5N1 cases (Sedyaningsih et al., 2007; 2008).

Sedyaningsih's commitment to research and public health for the benefit of society, particularly vulnerable groups, has been reflected in the way she lived her professional life. Her dissertation title was "Determinants of the STD/AIDS-related behaviors of female commercial sex workers in Kramat Tunggak, Jakarta, Indonesia" (Sedyaningsih-Mamahit, 1996). It became a book in Indonesian language, and to this day is one of the most powerful accounts of how socio-economic and gender inequities foster the spread of AIDS in the country.

In H5N1 case, she maintained her integrity as a scientist, treated H5N1 viruses as international public good, choosing to collaborate with international colleagues and institutions even if it exposed her to suspicion and allegations of disloyalty to her country, because her views were contradict with the narrative Minister Supari had developed. In late 2008, Minister Supari terminated her as the National Institute of Health Director because of the different views they had on H5N1 research collaboration, but she could not terminate her status as a civil servant. Her story related to H5N1 was similar to Lazarus in the New Statement; a year after Minister Supari terminated her position as the Indonesian NIH Director in 2008 because the difference between them escalated, she was appointed by the reelected President to replace Supari who made her civil servant status idle for the whole year.

Nevertheless, Sedyaningsih continued Supari's decision in closing NAMRU-2, because it was officially a military unit. But, she opened research collaboration with the US to cover a wide range of areas, including the operation of biomedical lab to advance local capacity in vaccine and diagnostic tools development (Jakarta Post, 2009).

Unfortunately, after a year in office, she was diagnosed with stage IV lung cancer. She continued her role as health minister but resigned eighteen months later in April 2012, just weeks before her death. The public highly praised her dedication in carrying out her duties while fighting cancer and perceived that her illness strengthened her, in a not always sympathetic political environment. She sent a strong message that sick people have a lot to contribute and it would be a loss to society if they were neglected. The reason President Yudhoyono appointed her in the last hours after he already requested fit and proper test for

a strong candidate just a day before, remained unknown. The president's decision to bypass the standard procedure of medical examination for Sedyaningsih which turned out to be critical, was also remained unknown.

### **International Relation's Perspective**

Based on Hans Morgenthau, a state defined as an organization of society that has a legal order to govern a society with or without force (Morgenthau, 1948). A state is an essential part in the international relations as well as in the society. In the case of H5N1, what is the role of the state in defining its citizens? It is true that the patients are Indonesian citizens. What about the virus in their bodies? Are they also Indonesians? What if the virus then infected an American diplomat in Jakarta? Would the virus gain a new citizenship as an American (virus)? Who is the owner of the virus, the patients or the state? What if the patient agreed to share the virus with WHO, but the state refused, or vice versa? To what extent can a state claim its sovereignty over the biological materials in and on its territory: land, water, and air?

A state should provide legal continuity for society (Morgenthau, 1948). Legal continuity means many aspects that correlated with society such as institutions or law. The contribution of state to the society is indispensable. Thus, society needs to obey state as an absolute ruler, based on the classical approach from the realism perspective. Realism always provides a state-centric point of view. If we have to treat all viruses in Indonesia as Indonesian citizens, how do these biological materials obey the ruler/state?

Because of the dynamics of international relations, there is a certain change in the definition and concept of a state and its citizens. Globalization is the most critical point for the changing of definition and concept of a state because globalizations modify the role of state and change its definition too. The definition of a state must be redefined as the consequence of modernity in the human life. As Anthony Giddens argues, the state needs to be analyzed from the source of power (Keyman, 1997). The state no longer has the same power as Morgenthau's thought, but the state's source of power has already become more complex because of globalization. In the terms of epistemology, a state is not just about territory or sovereignty, but also the people, culture, and economy. In other words, the nature of the state as a political entity still persists, but its dynamics and certain improvement has been made. In the H5N1 case, because the disease has potentially threatened any citizens of the world, the disease and the viruses may be considered as 'public good'. A virus in Indonesia belongs to the world, and not to specific sovereignty.

Cooperation and interdependence between states are inevitable, stimulating the new concept of territory and sovereignty. In the globalization era there is no clear distinction between territory and sovereignty, because people nowadays have a technological improvement that increases mobility. Also, an ongoing improvement in transportation contributes the changing of the concept of sovereignty and territory. People can easily live in other countries as a foreign citizen and also people nowadays could easily enter a country as a foreigner. The common perception of a state as a rigid political subject now has been redefined because of globalization. However, each world citizen will still carry one or more passports, or other proofs of citizenship. For biological materials, in particular highly

pathogenic viruses with international concerns, the concept of citizenship is not an easy one.

By the same token, the problem of global health could not become a single entity jurisdiction. Even though the problem affects people regardless its citizenship, the context of sovereignty needs to be respected by all of the countries. In this context, cooperation between two or more states is the only solution responding the problem of global health. Cooperation and interdependence between states are inevitable. It is crucial for the state to conduct cooperation in order to formulate a respond for a global health problem. It is also critical to involve international or supranational institution (WHO) in this trajectory. The creation of international organizations intended to make the state's behavior more predictable (Keohane & Martin, 1995). Without a formal cooperation, it is highly unlikely that discreet cooperation could be conducted. The government and non-state actors must involve in any aspect of cooperation and form mutual understanding. Inconspicuous activity and cooperation will cause unnecessary incident and problem in the future.

### **Biocitizenship in Two Imagined Communities**

The Indonesian's stance on H5N1 virus sharing between 2006-2009 was based on the idea that viruses are biological materials, and therefore protected under the Convention on Biological Diversity (CBD). CBD sought to protect and regulate through the principles of sovereignty, prior informed consent, and mutual benefits from access and exploitation. Article 2 of the CBD defines biological resources to include "genetic resources, organisms or parts thereof, populations, or any other biotic component of ecosystems with actual or



potential use or value for humanity”. Indonesia claimed sovereignty property over the viruses because they were isolated within its territory, in or on its citizens, and that other countries or the international community cannot access and use them without Indonesia’s consent (Fidler, 2008). This claim, and therefore the imagined community it created, has a limitation. From biological points of view, viruses do not have biological functions without hosts. Independently, they do not have the actual or potential use and value for humanity as defined by the CBD. Viruses spread via water, land, air, or physical contact/human intervention. Avian influenza started in Vietnam, and spread to its neighboring countries. By the time Indonesia stopped sending H5N1 viruses in 2006/2007, it was not even known if the viruses were originated from the country. Viruses from Vietnam might invade Indonesia, and therefore it is hard to define the citizenship of viruses, because of the spread modes.

On the other hand, WHO viewed highly pathogenic viruses as international public good and created different imagined communities for the status and ownership of the viruses. Therefore, WHO interpreted CBD differently, that the avian influenza viruses affecting Indonesia or other countries are not biological resources under CBD definition. While Indonesia framed H5N1 as a CBD object for protection, sovereignty and biocitizenship under Rose’s definition (2007), WHO framed H5N1 as international threat posed by the viruses, and therefore they do not belong to any country. By framing H5N1 as a threat to biological diversity (of humans and birds), WHO used CBD from different angle. Two different frames, two different imagined communities as defined by Benedict Anderson (2006). The two different frames illustrate both the importance and the

limitations of international law in global health diplomacy for avian influenza. Anderson coined the concept of imagined communities to analyze nationalism, the unit is a nation (state) which is socially constructed, imagined by the people (citizens) who perceive themselves belong to the same group. In the case of H5N1, Indonesia used a country as a unit of community for viruses, while WHO expanded Anderson's concept to a global imaginary community, and framed H5N1 as a global risk, the world was the stake.

Rose (2007) views biocitizenship as not necessarily a once-and-done determination because it is continuously constructed. Different frames between Indonesia and WHO led to minimum involvement of Indonesia in scientific research. Tracing the scientific publication in PubMed database, using 'H5N1 human Indonesia' as the keywords, the next section will discuss the participations of Indonesia in H5N1 research.

### **H5N1 Scientific Research**

Based on relevance, PubMed search engine lists publications related to H5N1 human cases in Indonesia. This paper uses the first fifty publications on the list for analysis. The search engine came up with consistent lists/findings between March 3 to May 3, 2016.

Table 1. Year of Publications for H5N1 Human Cases from Indonesia

Year	Number of Publications
2016	3
2015	19
2014	15

2013	3
2012	4
2011	6
Total	50

Indonesia's decision to stop sending H5N1 viruses to the global network in 2006-2007 have contributed to the delay in research, as implied in Table 1. The involvement of Indonesian scientists was limited to clinical data from the field, epidemiology, and genetic diversity in the twenty three publications. Twenty seven out of the fifty publications did not involve Indonesian scientists and/or Indonesian institutions. These twenty seven publications focused on vaccine related research (22) and immunology (5). The year of 2014-2015 was not only the highest in terms of publications (29 papers) but also when most of the vaccine related research were conducted. The publications were by research institution and/or pharmaceutical companies from USA, UK, Canada, China, Australia (GSK), Germany (Baxter), Austria, Singapore, Japan, and Belgium.

From developed countries points of view, there are at least two practical reasons for not involving Indonesian scientists. First, if it is easier to use the human resources and institutions in developed countries. Second, vaccine related research has economic consequences. Different countries have different legal frameworks for patent. Multiple country research will add complexity of the legal consequences that might arise from the innovations. Third, for vaccine companies, they have invested in research and it is important to have significant result the soonest they can.

## **The importance of Genetic Information**

Collective genetic information is vital in understanding diseases. Prior to 2008, Indonesia had the most pathogenic H5N1 strains. But, from scientific points of view, one single data provides very minimum understanding of the epidemiology and evolution of the virus. The data from Indonesia is more meaningful when it is combined with other data. As comparison, it took almost 40 years since HIV/AIDS was noticed, the space and time origin of HIV was defined as Africa, 1908. The researchers reconstructed a phylogenetic tree based on ninety eight modern samples and two historical samples from 1959 and 1960 (Worobey et al., 2004). The concept of origin is important in defining citizenship, if citizenship is needed for viruses.

As important as collective data, each individual data contributes in understanding the disease. The uniqueness enriches the knowledge of the diseases and the pathogens. In this regard, Indonesia was not completely wrong by requesting benefit sharing. But, framing benefit sharing (from patent or commercialization of the products) may be too far. Involvement in research is the first step. Research collaboration between developed and developing countries requires both parties to work harder in sharing the knowledge and increasing research capacity. This challenge is not easy, and therefore if practicality is the only consideration, it is easier to run research completely in developed countries with the human resources from developed countries, as long as genetic resources are already in possession.

Genetic information is not to be underestimated or overestimated. In H5N1 case, pharmaceutical companies and research institutions in developed countries underestimated

the role of genetic information from each sample. If they better understood this, the reason to involve researchers from a country where the viruses were isolated became stronger. On the other hand, Indonesia overestimated the role of a single or several data as the most important ones because of their severity.

A possible intervention for collaboration is by involving a researcher from a country where samples are isolated. When this researcher goes home, instead of starting everything from scratch, s/he can use some of the materials. When I finished my research collaboration with Princeton, the professor let me bring the wildtype and mutant bacteria to be used for research in Indonesia. It took more than twenty years for her to develop a set of mutants to study specific gene of interest. If I had to start from zero, by the time I reached the same level, the research might no longer relevant. In one conversation, I asked her what if I used the bacteria as models, and then I found a new generation of non-antibiotic drug, and then filed a patent for the drug, and the contribution of her mutants were underestimated. “If you ever came to that stage, we could always discuss.” Research, particularly in universities, is a slow-business that takes so much time. It is too optimistic to think that research is linear: If A, then B. Because many challenges to reach B, to overvalue the potential benefits or potential risks that prevent any collaboration, poses more immediate risk than the potential risk.

When the Indonesian authority claimed that developed countries used the viruses to develop vaccines without acknowledging and involving Indonesians for future benefit sharing, another intervention could have worked better. Instead of confronting, Indonesia

could negotiate. The minister had a valid point, but the framing did not work to build a research alliance with developed countries.

In terms of H5N1 genetic information, the first human case from Indonesia (2005) was being deposited in the GenBank under different accession numbers. CDC deposited the first time in April 2008 (Accession number CY014335) with a comment/note: *“Please acknowledge the Indonesian Ministry of Health if used in a publication. Contact person for further information is Dr. Triono Sundoro, PhD at tsoendoro2004@yahoo.com”*. The contact person (Dr. Triono Sundoro) was educated in Yale, the Special Adviser to the Minister of Health, and the Director of Biofarma, a state own enterprise in drug development. In that note, he used a free email, and not an official one, which is unusual. This rare comment, which maybe the only one on the GenBank is in lined with the top-down approach. Between 2006 - 2008, Indonesian scientists who worked on H5N1 had difficult times to collaborate with international communities, so statement of loyalty was needed. Because of this research bureaucracy, a group of researchers from the Netherlands re-sequenced the sample, and submitted to the GenBank in June 2012 (accession number CY116650) and identified/ named the sample as (A/Indonesia/5/2005(H5N1), with subsequent publication in Science magazine (Herfst, et al., 2012). This sample is the one being used extensively in the vaccine related research found in PubMed database started in 2013.

The oldest sample, the prototype, is always the first choice in scientific research for different reasons. The availability of accessible sample, prototype, with whole genome sequence (genetic information) in the GenBank enables other researchers to do

experimental research and clinical trials, because the DNA identity is known to the deepest level. The twenty seven vaccine related research which utilized Indonesian strains between 2014-2015 presented in Table 1, is not a coincidence, because the identity was not revealed until 2012. Genetic information provides basic information for follow-up research. The delay in vaccine research for Indonesian strains, therefore, partly due to the strict policy between 2006-2009, and partly because no complete sequence for prototype was available prior to 2012.

### **Diplomacy and Negotiations**

Even though the world favors WHO's perspectives, it is also true that developing world has been left behind in scientific research. From 2007-2008, Indonesia initiated and participated in a series of formal and informal negotiations and diplomacy related to H5N1, including the Sixtieth World Health Assembly (WHA 60.28) on Pandemic Influenza Preparedness: Sharing of Influenza Viruses and Access to Vaccines and Other Benefits (May 23, 2007). Because of Indonesian diplomacy and negotiations, many developing countries supported Indonesia, but a new concrete agreement was never achieved (Fidler, 2010). Discussions around benefit-sharing and pandemic influenza surveillance and prevention continued, and Indonesia started to resume sending avian influenza viruses.

Solving the challenge of equity, transparency, and benefit sharing at the global policy level is hard to achieve, because pathogenic influenza virus sharing is considered voluntary at the beginning, but then became a mandatory tradition. The CBD or the

International Health Regulations (IHRs) adopted by WHO in 1969, did not include influenza as a disease subject to the Regulations (Fidler, 2008).

Indonesia has tried to change the tradition, with no significant results. One alternative strategy is to change the negotiation frame, to see international communities as collaborators rather than competitors or strangers. Another strategy, at a more practical level, individuals can start collaborations. Instead of institution to institution, it can be started from a researcher in developed country and a researcher from developing countries, as I experienced with my professor. Receiving research support from Howard Hughes Medical Institute (HHMI), she mentioned that her research findings are free for research/education purposes. Because she did not see immediate commercialization consequences of her wildtypes and mutants, and also the trust between us, so she let me to have the access to her collections for my research in Indonesia. Not only her (the researcher), HHMI has played an important role in stimulating research collaboration.

Instead of accusing WHO network and its tradition of virus sharing, and it became backfires for Indonesian research community, Indonesia could have started to work directly with researchers and research institutions from developed countries. Because the main challenge at that time was to be involved in research, so accusing or involving WHO would not make big differences, but building a connection with researchers and research institutions. Bilateral negotiation, one-on-one diplomacy will likely have more impacts in the future as the world becomes larger and larger.



## **Conclusions**

Bringing the concepts of identity, citizenship, risk, and imagined communities elevate our understandings of Indonesia's decisions related to H5N1, in particular between 2006 - 2009. Because theoretical approach often bring us to the level of abstraction, understanding the sociopolitical context, the top-down approach, provides insights into the dynamics at a larger scale. Indonesia did not have an immediate access to Tamiflu when it was needed. At the same time, developed countries had stockpiled the drugs, even for diplomats who worked in countries with high risk, based on my recent interview with a Canadian diplomat in India between 2005 - 2009. Equity became an issue. Post-tsunami crisis management prior to H5N1 emergence was another challenge. The presence of NAMRU-2 which happened to be the first to isolates H5N1 samples from Indonesia, and Indonesian strains were the most pathogenic ones, added more complexity. Things that seemed to not have direct connections before, all of sudden came at the same time during a H5N1 crisis. The absence of international regulations that deal with virus sharing was another one. At the peak of the challenge, when Indonesia decided to stop the tradition, it was a shock for others, but it was not a violation to any rules, but the tradition. On the other hand, the way the Indonesian authority approached the broader challenge of equity and transparency to more technical ones (research involvement and benefit sharing) had weakened the essence of the issues it wanted to advocate.

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