Local Wisdom as a Foundation for Regional Policy in Water Conservation (Case Study: Pondok Pucung Betawi Community)

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1. Introduction

1.1 Research Background
In 30 years, since the 1980s, Jakarta population has been growing into 10 million, while it sums up in total of 30 million people living in the area of Jabodetabek (Jakarta-Bogor-Depok-Tangerang-Bekasi cities). This massive changing becomes a driven power that also turns Pondok Pucung (PP), an area at Southern Tangerang turning from rural to urban district. Once, this vast land was inhabited by local people, Betawi indigenous community, who lived in harmonious ways with the nature as farmers. Now PP, in a mere three decades, is changing mostly into mega modern real estates and the remaining PP has become “islands of kampongs” surrounded and divided by these real estates. Thus, consequently the area has been facing challenges of losing its green open space and clean water availability. To the worse, PP also has to deal with cultural changes especially of losing local knowledge and wisdom on how to deal with the sustainability of their environment including on how to conserve water.

1.2 Research Statement
This paper aims to record the local wisdom of PP Betawi community in conserving water before massively changed in the span of only 30 years. The findings and outcomes especially the acknowledgement of the local wisdom of the previous indigenous generations will be a fundamental recommendation for culture-based regional planning on water conservation.

1.3 Theory Discussion
According to Nirwono and Ismaun (2011), a green open space ensures the balance of city ecology including hydrology and clean water availability, micro climate and clean air, and the aesthetic of the city [1]. Similarly, in his UN-HABITAT Lecture Award Series, Friedmann (2007) stressed that there are seven tangible assets for wealthy cities, including: (1) human assets: people and the quality of their lives and livelihood, (2) organized civil society: multiple self-organizing activities of local citizens, (3) the region’s heritage of its built environment and the distinctiveness and vibrancy of its cultural life, (4) intellectual and creative assets, (5) natural assets: farm, watersheds, lakeside, etc. (6) environmental assets: air, water, land, (7) the quality of (urban) infrastructure [2].
In different perspective but in parallel notes, Oliver (2000) argues that vernacular traditions, cultural thinking and doings, have evolved to meet socio-cultural needs helping local people to live in harmony not only with their fundamental aspects of community life but also with their nature [3]. Melenchon (2012) in more specific notes on water points out that “if we want to solve water problems, then we should see water as a cycle”, revealing that water is not only as ground water that we pump up and drink, but water as it comes down in raindrops, runs on the ground and rivers, absorbs into the grounds, and evaporates back into the air. A cycle portrays the origin of clean water to distribute, use, and conserve [4].

Julian Steward, an American anthropologist, (in Pillai, 2013) concludes that cultural change is cultural ecology. This process is a creative adaptation to circumstances or physical/natural environment and resources such as terrain, materials, weather, and is a creative adjustment to other groups. This cultural change is reflected through the use of technology, social grouping and economic organization. Moreover, Pillai (2013) states by studying cultural ecology, the interrelationship between people, place and use, reveals how the people have been subjected to or have reacted to certain historical and environmental circumstances for their sustainability. Thus, one way to study this is through cultural mapping [5].

2. Methods
Pillai (2013) explains that cultural mapping is a way to identify and record the occurrence of cultural tangible and intangible elements of a site. This involves synthesizing and interpreting data to discover significance, pattern or character of a culture in response to people, place and use. Cultural mapping consists of framing (preparations to conduct a mapping), mapping (collecting and recording data on the site), and evaluation [5].

In framing stage, the researchers formulate list of questions distributed evenly into 4 focusing on: profile, people, place and use (presented in Table 1). The questions are formulated to compare the conditions of today and previous generations. To recollect data of previous generations, the researchers interviewed the informants whom are leaders and elders at the age of 40s and above. To recollect today data, the existing conditions were observed.

In mapping stage, there are four key informants: (1) Mr. Syarifudin (A), male, age 46-year-old, lives at Karya Usaha Street – West of PP, works at PP District Office. His grandfather was a farmer and his father was a builder. His grandfather and father had paddy fields and kebons – backyards that well grown by fruitful and big trees. Now his house is wall-to-wall to his siblings’ houses and their rented houses. (2) Mr. Rosib Sulaeman (R), male, age 53-year-old, lives at Kampung Rawa Street – South of PP, works at PP District Office. His grandfather and father were farmers. He inherited a piece of land from his father that is his home now. His grandfather and father had paddy field, kebon and bulak – a field to growth vegetable and other starch plants. Now he lived in quite crowded neighborhood. (3) Mr. Moerdan (M), male age 63-year-old, lives at Mushola Street – West of PP, works as chicken farmer. His grandfather was district officer and his father worked in a shop selling log wood for cooking in Tanah Abang, Jakarta. He is the elder in the community and once a neighborhood leader. He lives on his inherited piece of land from his mother. His house is close to his daughter’s, his sibling families’, his rented houses and the outsider settlers’ houses, who had bought some lands from his family. (4) Mrs. Hj. Sati (S), female, age 66-year-old, lives at Mushola Street – North West of PP, works as housewife. Her grandfather and father were farmers. Before married, she lived near to one of the rivers passing through PP. Now she lives surrounded by her rented houses and her children’s houses and their gardens.

In evaluation stage, the researchers provide the assessment of cultural elements, site, character, significance of assets and resources on the site.

3. Results and Discussions
Pondok Pucung area, in Joniansyah (2010), is a 400 acres district, situated in south west of Jakarta, and a part of Pondok Aren sub district, in Southern Tangerang regency of Banten province. Most of
PP area is the house for 25,000 inhabitants with Betawi people as the remaining local people [6]. Joniansyah (2010), and Jurnal Tangsel (2014) pointed out the comparison to other areas of Southern Tangerang regency, in which PP is losing 20% of its rainwater conservation area [6], [7]. Djarot (2014) also argues that PP suffers flood due to the turning of rainwater conservation areas into housings [8].

![Figure 1](a) The Area of Pondok Pucung, (b) The water catchment area, (c) The flooded area [8]

**Mapping Stage: People, Place, Use**

In the mapping stage, the data cover the 4 previous generations of Betawi people who chose to expand their families (people), where they built the next dwellings (place), and the rituals for the next generation houses concerning weather, water, materials and location (use) (Table 1).

**Table 1.** Mapping of People, Place and Use of Pondok Pucung Area in Its Relations to Water

|   | PEOPLE |
|---|--------|
| (1) | How many of your family generations have been living in PP? |
|     | As far as all the interviewees remember, their families have been living in PP from 3 previous generations. Furthermore, S remembers that her both grand families were from PP. R adds the data that everyone who lived in PP were relatives and families. |
| (2) | Was there any habit to welcome rainy season in your family / neighborhood? |
|     | According to A, comparing to today’s program, there was no such program like saving rainwater in the old days, when most of the lands were well grown with paddy, vegetable and big fruit trees. There were enough rainwater infiltration areas. The water kept on coming out from the wells, as to why the people had never lacked of water. R says, when rain came, people worked in dry land called *bulaks* served as fields to grow vegetables and other starch plants. S adds, people also started sewing paddy seeds (*nandu*) in paddy field and swamps, keeping the fields and swamps clean from grass (*matun*), and then harvested brown paddy (*motong padi*) in 3 months. People also went to the paddy fields, the rivers and the *kalenans* – the opened dug channels on the ground for runoffs to end into the paddy fields- to catch fish. |
|     | Now the environment is different, consequently they do not do their old habits and they do not do anything special. |
| (3) | Was there any habit to prepare the coming of draught season in your family / neighborhood? |
|     | The dwelling areas of PP had always enough water. Nevertheless, if the wells dried, says A, people would call well diggers. According to R, the crops were bad in draught seasons so people made the famous PP’s *kubils* -wooden shoes heels- and also *pandanus* plaited mats and hats. A added that some went to Jakarta to work. |
|     | No special preparation that they do. But if the water pump cannot draw any water, people will call plumbing service to dig into 15-20 meters deep. |
| (4) | Was or is there any folk story about rainy season, |
|     | At the end of draught seasons or to end the long draught seasons, people would put some cooked rice on the streets, says M, and in the corners of the *bulaks*, says R, |
According R, back then people threw a stone from their house, thus the location of the stone landing would become the place to set their wells. A says, generally the 8-meter-deep wells were situated at the back of the house, at the west or the south. Some families put their wells in front of the houses so they could share the clean water with the surrounding neighbors. S adds, the wells were usually situated close to the kitchen doors. A says, some people also went to the galurs -a pond was located near to paddy field and got its water from the higher paddy fields- and the empangs in paddy field to wash their clothes. S adds, for a few months after delivering baby, she went to the river for washing. A says that not far from the well, there was an empang –an opened grey water disposal pond with catfish living in it. Since back then, there was no channel for clean or disposal water. M says that around 5 meters from the well, there was a cubluk –a roofless toilet on a pit in the ground. R adds that a cubluk could be as far as 30 meters away from the well.

Now each house has each septic tank with infiltration well for its grey and black disposal water. The septic tank is around 5 meters away from clean water resource. Interviewees’ neighborhoods have unmaintained and shallow sewers that mostly active only for rainwater runoffs. Meanwhile, the neighborhoods of housing estates dump their grey water to the sewer that some end into the rivers and big water disposal ponds made by developers.

A says that a new house location for a new family was decided according to his/her land inheritance from the parents. The facade was accidental decided by parents so not to face or align to the other facades. S adds, her late husband arranged their children’s houses surrounding their house. R adds, the previous generations set the new house for a new married son/daughter as far as 50 meter from parent’s house. Then the new family would apply the same conditions for clean, grey and black water.

Their newly married son/daughter will live in his/her inherited piece of land and apply the nowadays water condition. If there is no more land to share, the new family will live with their parents. M adds, the parents can buy a piece of land in other place and apply the nowadays water condition.

M says, the clean water resource for domestic needs were only from the wells. Other than that, people got clean water from the galurs, says A, empangs, says R and rivers, says S.

M says, the wells were closed mostly because of safety consideration. Now they use electric pump to pull ground water. A says, since 1980, the galurs and the empangs were gone at the same time the developers started to build the housing estates. S says the rivers were wider with ground & grassy riverside for the rivers to overflow. A adds, adjacent to the rivers were paddy fields. Now the rivers are still there but the riversides are less and the paddy fields had turned into housing estates. Back then, all the water resources were clean. People drank water without boiled it; R used to drank water from the empang in paddy field when he got tired from shepherding his father’s flocks. M used to have a terracotta jar & wooden coconut dipper for passerby quenched their thirst. S only boiled water for tea or coffee. Now the rivers still have some fish but the water is brown and even black muddy, contains garbage and produces bad odor. In heavy rain, the rivers overflow and paralyze the closest streets.

According to R, there were dry land and wet land with its own never ending spring or, adds A, with its runoffs from other kampons (villages). R says, people set their paddy fields in wet lands, bulaks in dry lands, and, adds A, let fruitful & big trees grew in kebons that surrounding people houses. A says, the highest land were the dwelling areas and the lower lands, in order, were the kebons, the bulaks, and the paddy fields and the swamps as the lowest grounds. Now the dwelling areas remain but get crowded. The kebons are rare and small. The bulaks and paddy fields had turned into the housing estates and their infrastructures & facilities.

In 1975, M says, a businessman bought a piece of kebon to start a chicken

| dry season or water? and prayed for rain to com. |
|-----------------------------------------------|
| B. PLACE                                      |
| (5) What and where were your family's clean water resources, grey and black water treatments? | According R, back then people threw a stone from their house, thus the location of the stone landing would become the place to set their wells. A says, generally the 8-meter-deep wells were situated at the back of the house, at the west or the south. Some families put their wells in front of the houses so they could share the clean water with the surrounding neighbors. S adds, the wells were usually situated close to the kitchen doors. A says, some people also went to the galurs -a pond was located near to paddy field and got its water from the higher paddy fields- and the empangs in paddy field to wash their clothes. S adds, for a few months after delivering baby, she went to the river for washing. A says that not far from the well, there was an empang –an opened grey water disposal pond with catfish living in it. Since back then, there was no channel for clean or disposal water. M says that around 5 meters from the well, there was a cubluk –a roofless toilet on a pit in the ground. R adds that a cubluk could be as far as 30 meters away from the well. Now each house has each septic tank with infiltration well for its grey and black disposal water. The septic tank is around 5 meters away from clean water resource. Interviewees’ neighborhoods have unmaintained and shallow sewers that mostly active only for rainwater runoffs. Meanwhile, the neighborhoods of housing estates dump their grey water to the sewer that some end into the rivers and big water disposal ponds made by developers. |
| How about now?                                |
| (6) Then, how did your family decide new house locations related to clean water resources and grey and black water treatments? | A says that a new house location for a new family was decided according to his/her land inheritance from the parents. The facade was accidental decided by parents so not to face or align to the other facades. S adds, her late husband arranged their children’s houses surrounding their house. R adds, the previous generations set a new house for a new married son/daughter as far as 50 meter from parent’s house. Then the new family would apply the same conditions for clean, grey and black water. Their newly married son/daughter will live in his/her inherited piece of land and apply the nowadays water condition. If there is no more land to share, the new family will live with their parents. M adds, the parents can buy a piece of land in other place and apply the nowadays water condition. |
| How about now?                                |
| (7) Were there any other clean water resources and where were they? | M says, the clean water resource for domestic needs were only from the wells. Other than that, people got clean water from the galurs, says A, empangs, says R and rivers, says S. |
| (8) How is the condition of the old clean water resources now? | M says, the wells were closed mostly because of safety consideration. Now they use electric pump to pull ground water. A says, since 1980, the galurs and the empangs were gone at the same time the developers started to build the housing estates. S says the rivers were wider with ground & grassy riverside for the rivers to overflow. A adds, adjacent to the rivers were paddy fields. Now the rivers are still there but the riversides are less and the paddy fields had turned into housing estates. Back then, all the water resources were clean. People drank water without boiled it; R used to drank water from the empang in paddy field when he got tired from shepherding his father’s flocks. M used to have a terracotta jar & wooden coconut dipper for passerby quenched their thirst. S only boiled water for tea or coffee. Now the rivers still have some fish but the water is brown and even black muddy, contains garbage and produces bad odor. In heavy rain, the rivers overflow and paralyze the closest streets. |
| C. USE                                        |
| (9) How to decide the locations for agriculture fields, plantations/gardens, farmings, cemeteries, factories and housings built by developers? | According to R, there were dry land and wet land with its own never ending spring or, adds A, with its runoffs from other kampons (villages). R says, people set their paddy fields in wet lands, bulaks in dry lands, and, adds A, let fruitful & big trees grew in kebons that surrounding people houses. A says, the highest land were the dwelling areas and the lower lands, in order, were the kebons, the bulaks, and the paddy fields and the swamps as the lowest grounds. Now the dwelling areas remain but get crowded. The kebons are rare and small. The bulaks and paddy fields had turned into the housing estates and their infrastructures & facilities. In 1975, M says, a businessman bought a piece of kebon to start a chicken |
farming. The man also rented other higher lands and expanded his farming. Afterwards he financed some members of the community to start their own home-chicken-farming in any possible space in their lands. According to R, there was also small cow farming, belonged to the community as a part of government farming program. The farm was located close to the paddy fields. Now, M is the only chicken farmer survives. The rest has gone or got financial lost forcing them to sell their lands. The cow farming is also gone when the paddy fields were sold and the government program stopped.

To date, the positions of cemeteries have been in the lands of *wakaf* – property donated for religious or community uses in Islam, which helps the community to zone together their family graves that previously scattered in each private land. In PP community cemeteries, there were sacred graves of each neighborhood religious elders.

Since 1980 PP had changed into housing estates. According M, the chicken farming changed into housing estates since the businessman sold his land to the developer. A says, there were local mediators who worked for the developers that bought piece by piece of land from his neighbors. When the sold lands –mostly paddy fields and *kebons*, and some parts of his neighbors’ houses that were in the developers’ master plan- were accumulated together and big enough, the developer started the housing development. A says, the first housing estate (Pondok Pucung Indah 1) were rubber plantations which were higher than the second one (Pondok Pucung Indah 2) that was paddy fields. The developer had leveled both areas with cut and field. However, both are still lower than the dwelling areas. A adds that his father generation was not keen on farming anymore. Therefore initially they sold the paddy fields than the *kebons*. Moreover, the developer needed big open areas and those areas were ideal.

### Evaluation Stage: People, Place, Use

| Question | Response |
|----------|----------|
| **(10)** What was the use of clean water? | S says, she mostly used water for drinking and domestic needs. Meanwhile, A says that for livelihood, people went to the *galur* to catch fish; to soak logs of wood and bamboos for building materials; and to soak *pandanus* leaves for woven mat and hat materials. People also went to the *galur* to wash clothes. R adds that people use water from the *empang*, in paddy fields, for watering the *bulaks*, cow farming needs, and water for private flocks. M says, he used water from the well for his farming. M still uses clean water for his chicken farming. The rest of them use clean water for drinking and domestic needs. |
| **(11)** How did your family and neighbors take care of the clean water resources so the resources stayed clean and available? How do your family and neighbors do now? | According S, people built a wall around the well to prevent soil or mud to contaminate the water. R adds that people would dig the mud out of the well bottom to ensure the clearness of the water. They do nothing special because the ground water in dwelling areas is still available and as clear as before. But R says, it is not as clean as before when the dwellings get denser and crowded and leave no ideal distance between a septic tank and infiltration well to a clean water resource. S understands if some of her neighbors are lack of water in draught seasons as the result of more and more people live in her neighborhood. According to R, people need to buy clean water especially the ones who live in the previous swamps or paddy fields. |
| **(12)** How did your family and neighbors manage the leftover, grey and black water? How about now? Did your family and neighbors reuse grey and black water after you purified the water? How about now? | S says if the *empangs* were too full, people dug out the deposit to the brinks of the *empangs*. Moreover people always kept catfish in the *empangs*. A adds, there were always the *kalenans* to make sure the overflow of the *empangs* passed the *kebons* and ended into the paddy fields. If a *cublucks* were full, R says, people would cover them and make a new ones next to the old ones. Now people use septic tanks and infiltration wells. They do not purify and reuse grey or black water. |
The researchers evaluate the findings from cultural mapping which consists of assessing cultural characters and significances, and analysis to come into outcomes or conclusions. The discussions are divided into three main focuses of: People, Place and Use as presented in Table 2.

Table 2. Evaluation of People, Place and Use of Pondok Pucung Area in Its Relations to Water

| A | PEOPLE |
|---|---|
| (1) | *The people of PP once lived harmoniously and in accordance with their natural environment, as they only used what they needed.* |
| | The indigenous people of PP have been living in clustered family lands until now. In the past when the families expanded because of marriage, the new ones would move and live 50 meters away from the established family settlements. The distance was a calculation of environmentally and socially impact considerations. They lived mostly as paddy field farmers until the 1980s and chicken farmers until the 1990s. At that time, they lived harmoniously with nature and only took whatever necessary, including in terms of water usage and distribution. The condition tremendously was altered by the coming of developers in the mid the 1990s. |
| (2) | *To PP, modernity changed the environment, thus changed the way of living and the culture of the people. The changes expenses are the disappearing of natural environment (physically) and local knowledge/wisdom on how to live environmentally friendly.* |
| | The community has been experiencing the changing types of work over the years. Whereas once they were farmers with knowledge associating to the nature, then they were builders and workers with crafting skills, and now they tend to be officers with managerial knowledge, as their lands are subsided and turning to be other properties and functions. However, the community has been enjoying access to urban modernity since 30 years ago through a considerable distance and railways to cities and towns such Jakarta. Nevertheless, when the modern development in the 1990s started, it excluded the local knowledge and wisdom of PP people regarding the natural environment. |

| B | PLACE & USE |
|---|---|
| (3) | *The people of PP once had a clear, sustainable and environmentally friendly system and knowledge on how to manage their settlements area.* |
| | The people of PP was used to arrange their settlements as follows: - Currently, the dwelling areas have been occupying the highest topography where the community lives in a family clusters. The expansion of a new settlement for a new family took a distance of 50 m away. The 8-meter deep clean water resource (well) was in 5-meter radius from the house. The opened grey water disposal (*empang*) with it organic treatment (catfish living in it) was 5-meter further away from the clean water resource. The opened black water disposal (*cubluk*) was situated 30-meter away from the house. They never dumped their black water disposal to any body of water. The community made *kalenans* to pass overflow, especially in rainy seasons, from the *empangs* (close to houses) to the *kebons* and to end to the paddy fields. - The community grew organically (without any chemical) plants for their food in their areas except their dwelling areas. These areas were productive and they divided them into 2: The wet land (paddy field) having never ending spring or runoffs and dry land (*bulaks, swamps and kebons*) only having water in rainy seasons. The community only farmed in the paddy fields, swamps and the *bulaks*, meanwhile they - They also build water controlling systems, in a form of *galur* ponds serving as the meeting point of all surrounding runoff from other kampongs and *empang* ponds (with their never ending springs) in paddy fields serving as communal clean water resource. - The bodies of water (rivers, *empangs, galurs, and kalenans*) gave them fish without they cultivated the crops. - It is hard effort to maintain the *kebons*. Yet, all never failed to give them prolific crops. - They had riversides as the lowest ground separating their paddy fields from the rivers, thus functioning also as absorption areas when the rivers overflow in the rainy seasons. |
The people of PP once saw that water was embedded in their daily lives and as inseparable parts of the natural environments they lived harmoniously within. The people of PP saw water as follows:

- As for the needs of clean water, in the past they never had a problem, because the clean ground water was never polluted and located in the vast highlands. The availability was relatively in insubstantial depth. However, today because of the environmental changes and how they were pushed to live in denser neighborhoods, the community starts having water scarcity in draught seasons and digging deeper for clean ground water resource.

- As for the use of water, in the past they used it for many things besides the primary needs of daily activities (to drink, cook, washed, etc.), such as for ponds, irrigating paddy fields and others. Since the lands subsided and the farms were long gone, the local only used water for primary activities.

- The quality of water in the past was also good. The ground water was fresh and clean, the water that ran into the ponds, paddy fields and even in the river was clean. They drank uncooked ground water and claimed that they were healthy. They even had a tradition of sharing water; they put water in ceramics jar outside houses for strangers/passerby consumed it freely. Now the quality of ground water is still good, but scarce and coming out from deeper ground.

- Because of the respect of nature in their settlements (always located in the highland surrounded by kebons) and water system -designated channels for runoffs (kalenan) from dwelling areas to rivers and lands for river overflows (riversides) and runoff junctions (galur)- back then the people of PP never experienced flood. But now, because of the rampant development and the loss of open and green space, some of the housing estates experience flood.

- Because of the water management system and vast open spaces, the people of PP in the past never had a problem with polluted ground water resources. At the present, in the dense dwellings and the modern knowledge of grey and black water disposal, many houses cannot apply the standard requirement distance of 5-10 meters between clean water resource to septic tank and its infiltration well thus fail to provide adequate water absorption.

4. Conclusion

4.1 The Recommendation: Culture-based Regional Planning on Water Conservation

Upon referring at Friedmann’s 7 assets (2007) [2], the previous generations of Pondok Pucung indigenous Betawi community in Southern Tangerang, Banten, West Java had at least 4 assets, which were: (1) human assets (people and the quality of their lives and livelihood), (2) organized civil society (multiple self-organizing activities of local citizens), (3) natural assets (farm, watersheds, lakeside), and (7) environmental assets (air, water, land). The irony is due to the development of urban housing and infrastructure in which all of these assets are dissipating. The previous generations not only lived in harmony with their fundamental aspects of community’s life but also with their nature. Oliver (2000) states [3] and mentions that the water as a cycle of equal activities of distribution utilizes conservation. Melenchon (2012) also suggests the similar idea [3]. Consequently, all of this wisdom was disappearing in alarming rate due to the modern developments and exclusive practices of knowledge.

By such presented phenomenon, the researchers offer several recommendations regarding water management and conservation policy by:

1. **Physical developments** especially the expanding of human settlements should respect to the existing natural water conditions and places as to make sure the water cycle can happen naturally, where the cycle needs places for raindrops to permeate, plants to hold ground water, springs to
leap out, runoffs to be channeled without deluge, overflows pour out without flood. In addition to this, redvelopments and expansions should respect the natural topography as it usually was zoned by previous indigenous generations accordingly to water availability and cleanliness.

2. **Modernity and development** which are always underway. However, the process should not exclude the knowledge of indigenous people, that seldom was considered traditional and old fashioned, and replace it merely because it is has not yet been proven and recorded scientifically. There should be synergies between local wisdom and modern scientific approach in building up policies including in water management and conservation policy aiming in a socio environmentally fairness area [9].

3. **The development of lapse** causing water management and conservation problems in PP, which should be valuable inputs for new design policies and evolving the user/settler needs and intentions. This can catalyze into a revelation, to become more adaptable, autonomous and resilient [10].

4. **The community involvement**, in order to become resilient, according to Lee (2016) the community needs to be actively included and engaged in the development process in generating district policies. They also need to be involved in decision making, implementations and evaluations. In the case of PP and any other areas that have changed because of modern developments, the approach should be the people-centered policy reconstruction. The policy should neither a top-down nor a bottom-up approach, but rather providing the community with the means to become the authority of their own decisions, supporting them to make appropriate decisions, and building their capacity to carry on the necessary action and work in a long run [10].

5. **Ecological democracy promotion** as a base for generating resilient water management and conservation policies, actions should respond to understand natural processes and social relationships within the indigenous own locality and the larger environmental context. According to Hester (2006) this will cause us to creatively reassess individual needs, happiness and long term community goods in the places we inhabit [11].

6. **The three approaches** that Hester (2006) suggested in forming the policy of water management and conservation, through: [11]
   a. **Enabling Form**: to reform our approach and act as communities, where we know each of our neighbors, their needs and abilities in terms of water management and conservation, thus to facilitate co-working communities that share specialties, tools, knowledge and local wisdom to solve a problem of water management and conservation collaboratively. Enabling form will provide the sense of centeredness of place and how we as people interconnected to each other and to our landscape as well, thus instill the responsibility to others and the environment. This in turn will develop rootedness and a collective destiny that is tied to place and inspired a shared higher civic purpose.
   b. **Resilient Form**: to reform our cities to become ecologically resilient. Resilient cities derive from the particular character of the surrounding ecology, including hydrology, and not reliant on merely technological advancement.
   c. **Impelling Form**: to reform our cities to impel us by joy. Impelling form invites us to be our natural selves awakening our consciousness of our oneness with distinctiveness within the ecosystem, which results in a sense of identity with the place we live and produces multiple avenues for the stewardships for healthier and sustainable earth. In this sense, it will be a celebrating live, as an evident of actual past relationship in Pondok Pucung (PP) local Betawi community in Southern Tangerang, Banten, West Java with their environment, where water was considered as a full cycle and integrated elements of their lives.

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