

APPLICATION OF “TIRTA BUDAYA SITU” CONCEPT FOR URBAN LAKE IN JAKARTA METROPOLITAN

Ami A. Meutia

UP 45 University

E-mail: ami.meutia@gmail.com

Abstract

In order to increase the quality of life of residents within the Jakarta metropolitan area (Jabodetabek), it is urgent to reinvigorate the local engagement with urban lakes and their surroundings. The previous research found that there is a need to organize the collaborations among residents, the local government and the private sector. Based on our previous research results, we have devised a new programme that seeks to engage with such concerns titled “Tirta Budaya Situ”. With a new water culture programme, communities will have a grounding from which they can begin to increase the conservation and maintenance of urban lakes and the surrounding environment. This new approach will tackle problems that the Central Government could not handle and which the Local Government has no authority to manage, with the role of the community being re-emphasised. Furthermore, within the scheme of “Tirta Budaya Situ”, the system of urban lakes certification will be created. Within our research project, the “Tirta Budaya Situ” concept was applied to several urban lakes in the Jakarta metropolitan area and also discussed within those communities. The research took place within the capital city of Jakarta and the surrounding cities of Bogor, Depok, Tangerang, Tangerang Selatan and Bekasi.

Keywords

urban lake, Jabodetabek, local community, water culture, certification.

Introduction

Jakarta Metropolitan/Megacity, also known as Jabodetabek, consists of the capital province, DKI Jakarta Province, as well as eight other surrounding local governments: Bogor Regency, Bogor City, Depok City, Tangerang Regency, Tangerang City, Tangerang Selatan City, Bekasi Regency, and Bekasi City.

Urban lakes, natural or man-made lakes, in Jakarta Megacity (Jabodetabek) have played important roles in irrigation, flood control and groundwater storage for a long time. Many man-made lakes are believed to have been built during the Dutch colonial period. JICA reported that there are 1016 urban lakes in Jabodetabek. For decades, these urban lakes suffered from unplanned rapid development, urbanization, and illegal occupancy. Lately, the

rapid development and expansion of urban areas have led to the physical loss of urban lakes, the loss of cultural activity focused around the lakes, the degradation of the ecosystem and the deterioration of the water quality. Hence, the actual function of the urban lakes have not been utilised to their full potential. Nowadays, their original functions are not fully realised, as there is a widespread failure to reduce flooding and maximize the ecosystems of urban lakes. Moreover, because of the government's neglect and the low awareness of the public, almost all of the urban lakes have been polluted and filled with untreated sewage and solid waste. This has caused a domino effect, best illustrated by the major flooding over the past five years, and the outbreaks of gastroenteritis diseases and dengue fever. The loss of culture also has led to changes in people's behaviours, such as a decreased appreciation of water and its surrounding environment, with the dumping of garbage and sewage directly into the lake being an ever-increasing occurrence.

In 2009, the collapse of Situ Gintung Dam awakened the importance of the urban lake and their surrounding green open space. The accident became a momentum to produce public consciousness for the maintenance and rehabilitation of urban lakes and their surroundings within the Jabodetabek area. However, a brief instance of rehabilitation will only be of so much help if it is not followed by the continuation of the lakes' maintenance. Due to a limited budget, the government itself cannot continue to maintain these urban lakes therefore the role of the community is vital. From the previous research, there is evidence that urban lakes which are currently maintained tend to hold, as the crux of its longevity, the activity of the surrounding community. This study applied the "Tirta Budaya Situ" programme, paying special attention to local environmental conditions and socio-cultural backgrounds. This study also intends to boost the multiple functions of the urban lakes so that this new model of urban lake community management will spread.

Definition

In this paper, urban lakes (called *situ* and *waduk* in Indonesian, *tameike* in Japanese) are a container of puddles on the surface of the soil which water flows into naturally or artificially from the above ground or from surface water via the protective hydrological cycle. Both *situ* and *waduk* (reservoir) have an area ranging from 1-200 hectares with a depth of 0.5 - 5 m. Water is coming from rivers, springs and out through the sluice.

Functions

Presidential Decree No. 54 of 2008, Article 21, Clause 2 mentions that the function of *situ* and *waduk* is for water storage, to overcome the water shortage in the dry season (raw water sources and irrigation), measure water infiltration in the balance of the hydrological cycle (groundwater recharge) and flood control.

Problems

Urban lakes in Jakarta Megacity are in deteriorated condition from unplanned rapid economic development, unplanned urbanization, no proper land use/zoning planning, illegal occupancy and pollution. Many problems such as land conversion, sedimentation, domestic & industrial waste/wastewater pollution, and eutrophication appear. Urban lakes filled with untreated sewage and solid waste are perhaps the most visible problems, with waste from households and factories being dumped into urban lakes, leading to their contamination. Also of note is the total abandonment of some urban lakes, which generally leads to an excessive weed growth taking place on the water's surface. Every year, flooding occurs, with the water level having reached up to four meters in 2002, 2004, and 2008. Although the extent of Jakarta Megacity's flooding can be easily predicted, hazardous annual floods inundate the cities every rainy season from December to February, engulfing tens of square-kilometres of residential areas. The water level can reach up to four meters of sewage-infused flood water for several days. Other factors which produce problems that remain unsolved are the lack of education and consciousness given to the role and benefits of urban lakes, as well as the often-relaxed monitoring and law enforcement around the lakes.

Urgent Community Needs

In order to improve the quality of life of the Jabodetabek residents, it is urgent to enhance the functions of urban lake and their surroundings. Namely, there ought to be a renewed engagement with abandoned urban lakes to reduce flooding. Our previous research (2010-2015) found that it was essential to organize the collaboration among residents, the local government and the private sector. According to the research results of the JICA, *situ* and *waduk* have an important role in flood control for Jabodetabek. If their original functions are utilized, they will be able to reduce the flooding within Jabodetabek.

A New Water Culture Programme “Tirta Budaya Situ”

“Tirta Budaya Situ” is a programme for the community-based management of urban lakes in Jabodetabek. The commitment of local people is promoted, especially for the management of urban lakes, so that urban lakes will supply more benefits and services to local people.

What is “Tirta Budaya Situ”?

Tirta of “Tirta Budaya Situ” means the sense of water in Sanskrit language, *Budaya* means culture, and *Situ* means a small lake in Indonesian. The community will practice the collective action to protect their own urban lake. The government can support or collaborate with them. Within the scheme of “Tirta Budaya Situ”, the management system of the urban lakes will be discussed. As a way to enhance the consciousness of people and introduce the management system, a certification system was created. The “Tirta Budaya Situ” is a new

approach to community-based management for the maintenance of urban lakes. The community role is re-defined by the programme and special credence is given to participation in conserving urban lakes so that the quality of these environments will be improved.

Why is a New Water Culture Programme “Tirta Budaya Situ” necessary?

Presently many urban lakes are abandoned because the people lack the feeling of belonging, and do not feel the necessity of these lakes, nor know their importance. We need to awaken the consciousness of local people dwelling around these lakes. Without the collaboration with local people, the Government cannot manage the resources of urban lakes. Based on our previous research results, we proposed a new water programme called “Tirta Budaya Situ”. With a new water culture, the community will feel the necessity and benefits from the urban lake. People will protect and maintain the urban lake and environment actively. This new approach will tackle problems that the Central Government could not handle and which the Local Government has no authority to manage, with the role of the community being re-emphasised.

“Tirta Budaya Situ” community involvement program

In order to further the involvement of the community, we drew upon the traditions of Indonesia that are still accessible to the cultural imaginary. People are more than willing to enjoy the celebrations and ceremonies that come with festivals, which involve contests, bazaars and lively gatherings. We invoked particular local customs such as monthly rotating credit and saving associations (*arisan*), and Islamic recitations for their male counterparts (*Al-Qur'an*) once every three to six months in order to conduct communal mutual assistance services. These include efforts to clean up the village, build and repair mosques, daily afternoon strolls (*jalan-jalan sore*) in contemplation of the environment, dragon fly watching, the annual Independence Day festival which takes place in August, and festivities like Lebaran (Islamic feasts after one month fasting) and New Year's, in which special collaborative care is given to the decoration of the village.

Methods

The surveyed urban lakes were pertained in eight types of urban ecosystem as described by Henny and Meutia (2014) [1]. “Tirta Budaya Situ” program provides two different types of urban lake assessment sheets, for communities and institutions. In this research, we used the urban lake assessment sheet for the community only. With the sheet, natural environment, biodiversity, water quality, waterside, history, culture, human activities, and management ability were evaluated. We also used pictorial questionnaire sheets to identify the characteristics of both fauna and flora within the urban lake and its surrounding environment. Several urban lakes were selected and analysed using the Cobweb chart

evaluation method (Fig. 1). A detailed interview was also conducted. Results from the evaluation and interview will be used for the issuing the “Tirta Budaya Situ” certification.

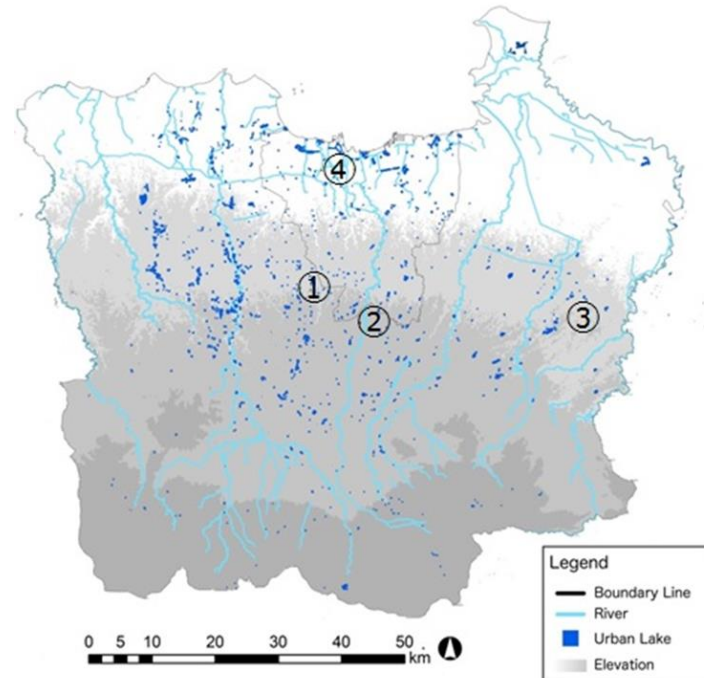


Fig. 1 Jabodetabek urban lake shows Situ Bojongsari (1), Situ babakan(2) , Situ Binong (3) , Waduk Pluit (4)

Results and Analysis

The reality

Urban lakes within the greater Jakarta area have lost their primary function to irrigate the rice fields. In their current condition, the urban lakes in Jakarta are incapable of supporting their intended functions such as curbing flooding, water sources for drinking and cleaning, as well as water purification. The role of the community in the management of urban lakes has changed, with communities being generally less interested and less committed. There are slight changes in the role and involvement of the community due to the increase of the awareness of people regarding the functions of the urban lakes due to recent flooding, but still this level of consciousness is insufficient. The participation of local people is essential considering the failings of government regulations and policies. Lands around the urban lakes, particularly outside Jakarta, have been increasingly dominated by the private sector especially for housing, offices, malls and the development of “new towns/cities,” much to the detriment of the ecosystem of urban lakes.

Lack of Management

Many urban lakes (*situ* and *waduk*) in Jabodetabek have not had clear management authority until now. Ownership of the urban lake in Jabodetabek is in hands of the Ministry of Finance and overall authority is given to the department of Public Works (headquarters). A small amount of urban lakes are under the control of provincial/local government authorities: DKI Jakarta Province, West Java Province and Banten Province. The majority of urban lakes in Ciliwung & Cisadane rivers catchment area are still under the control and authority of the Central Government/Public Works headquarters (Presidential Decree 12 of 2012). Government regulations concerning urban lakes have not been made yet, so there is no division of the management and authority of urban lakes in Jabodetabek. While government regulations are not yet written up and enforced, the Local Governments cannot manage urban lakes by themselves because the controls are under the authority of the Central Government (BBWS). Local governments can propose co-ordinations and submit proposals only to maintain urban lakes which are deemed by the Central Government. However, due to limited human resources and budget, the Central Government cannot maintain all urban lakes in Jabodetabek under their own authority.

Tirta Budaya Assessment results

Situ Rawa Badung in East Jakarta is in very poor condition in all aspects (Fig. 2, left). Situ Baru in Depok City is in better condition in terms of water quality, biodiversity, and waterside condition (Fig. 2, right). Situ Bojongsari in Bogor Regency has better water quality, biodiversity and human activity, although other aspects were very poor (Fig. 3, left). Situ Babakan in South Jakarta scores excellently for the maintenance of culture and human activities, although other aspects such as water quality and biodiversity were poor. Meanwhile, water quality and management were good (Fig. 3, right). In Situ Babakan, management of situ is conducted by a foundation set up by the local government.

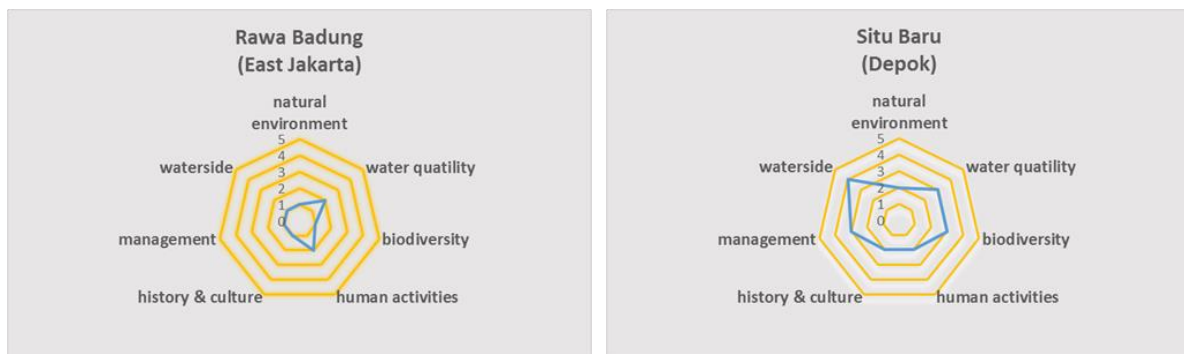


Fig. 2 Cobweb results of Situ Rawa Badung (left) and Situ Baru (right)

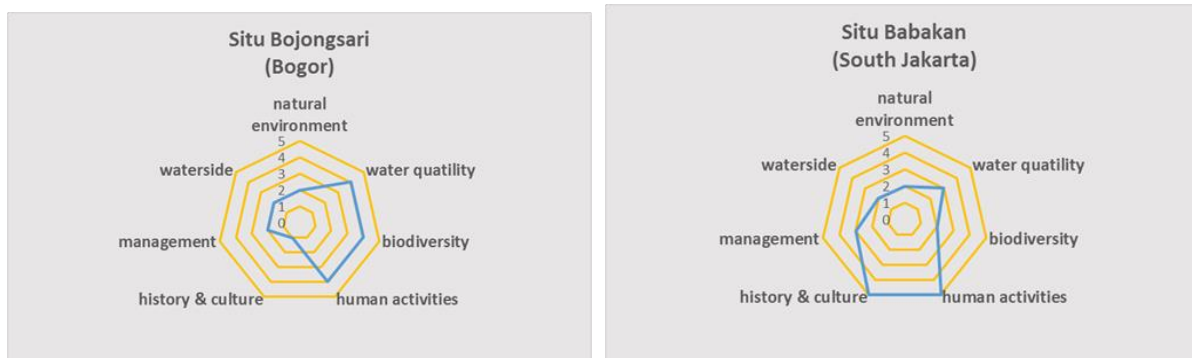


Fig. 3 Cobweb results of Situ Bojong Sari (left) and Situ Babakan (right)



Fig. 4 Cobweb results of Situ Gantung (left) and Situ Babakan (right)

Situ Gantung in Tangerang Selatan city has high human activity but other aspects were not good and the management was quite poor (Fig. 4, left). The *situ* is managed by the government under BBWS. Situ Binong in Bekasi Regency scores the highest points at all five criteria: natural environment, waterside, management, history and culture and human activities. Meanwhile water quality and biodiversity were good (Fig. 4, right). The result showed that the Situ Binong is managed well by the local community surrounding the *site*. Central government control does not guarantee good maintenance of the lakes, if local community does not commit to sufficient practices of management.

Study case of Situ Babakan

This is the case where the local government has the power to protect Situ Babakan because it is located within the area of Betawi culture preservation. Many of the Betawi people, local people of Jakarta, have lived there for a long time. They are often characterized by the architecture of their housing. Currently, there are less Betawi people living in the area. However, due to local government policy, local government disbursed much funding to expand the Situ Babakan and preserve surrounding environment. Management of Situ Babakan is conducted by LP-PBB under the authority of DKI Jakarta Province.

Situ Babakan is characterized by the community that keeps strong social ties and actively aims to preserve the Betawi culture. Wastewater from housing does not flow directly to the urban lake. They made a waterway that connects directly to the outlets for drainage. Due to strong community ties of the LP-PBB and much funds allocated by the local government, they keep good performance in maintaining the site environment and involving the local residents for the purpose. In 2010, the Situ Babakan was rehabilitated and an island was constructed in the urban lake. Unfortunately, the shore was covered with concrete. In contrast to this ill-intended outcome, the community wanted to plant more the *Cyperus babakan* – a species which is so important for the Betawi people along the shore. The name of the site was originated from the name of the tree. However this efforts has poor performance. Because the shore is covered with concrete, the biodiversity seems to decrease. Decrease of biodiversity reflects on the significant decrease in the number of dragonflies in the area.

Study case of Situ Binong

This is a good example of urban lakes that are managed voluntary by local residents. The local residents around Situ Binong have a high environmental consciousness, passed down from generation to generation. To protect the agriculture and water of their own area, the traditional practice of *Sedekah Bumi* has been carried out by residents. For preserving Situ Binong, local residents maintain and repair the lake mobilizing of their own funding. In 2002, residents made floodgates at the outlet for flood control. Flooding still occurs, but housing was not damaged because they are located on higher level of ground.

Study case of Waduk Pluit

This is an example where the private sector (JakPro) managed a reservoir (Waduk Pluit) under the control of DKI Jakarta local government. There is an agreement between the Director General of Water Resources from the Ministry of Public Works and the DKI government on flood control and drainage in Jakarta. To maintain the *waduk*, the local government has entrusted the management to the private sector. Companies, JakPro, manage the environment, and public facilities as well as security around the Waduk Pluit. Actually, the public facilities managed by JakPro are free of charge, but residents must get permission when they want to use it. Residents are also charged when they want to use some facilities.

Study case of Situ Bungur

Situ Bungur is a small urban lake (3.2 ha) located in Tangerang Selatan City. This is an example of an urban lake which is managed by a local youth organization. The youth organization called “Under Child Gathering Forum” started to clean-up Situ Bungur and surrounding areas once a month after the regular meeting of male recitation groups and

mutual assistance service activities. In 2013 they started to conduct a folk festival, which included rowing competitions, a picking-up garbage contest, a bazaar and free medication. They continue the festival every year, keeping the yearly programme fresh with other activities such as the Betawi people traditional *Palang Pintu* Festival, a fishing contest, the creation of a graffiti mural, etc.

Community Enhancement: *Forum Persahabatan Situ-Situ Jabodetabek*

On October 18th 2015, communities surrounding twelve urban lakes jointly declared “*Forum Persahabatan Situ-Situ Jabodetabek* (Friendship forum of the lakes at Jabodetabek)”. The forum was established to promote the community participation in managing the urban lakes. The members of the forum can learn each other how to manage their own lake. The initial budget for the Forum was funded by the private sector.

“Tirta Budaya Situ” Certification

Within the scheme of “Tirta Budaya Situ”, the system of urban lakes certification will be created. The community, their local government and the private sector will have the chance to work together to maintain and enhance the functions and services of urban lakes and reap the benefits of prestigious certification. Urban lakes which bear the certificate of “Tirta Budaya Situ” will give the respective local community something to be proud of and would encourage a stronger concern toward the preservation of urban lakes within their area. Through “Tirta Budaya Situ” Certification, we hope that communities, their local governing and the private sector will be actively involved in the collective management of urban lakes for both utilitarian and conservationist motives. The research results can be used for “Tirta Budaya Situ” certification.

Conclusions

Based on our research, it is necessary to improve the consciousness of the community because management can be successful only when people are willing to do it. Moreover it is difficult to manage urban lakes with the aid of the central/local government bodies alone. We applied a new water programme titled the “Tirta Budaya Situ” for maintaining and protecting urban lakes in Jabodetabek area. The idea will promote the participation and collaboration among the local community, the private sector and local government. We produced assessments for several urban lakes and gave the information based on the research to the local community and government. We formed the “Forum Persahabatan Situ-Situ Jabodetabek Tirta Budaya Situ” as a place for exchanging experiences of managing urban lakes and encouraging people to participate in the management. In order to promote the participation and commitment to urban lakes, we also created “Tirta Budaya Situ” Certificate as an extension of the initial concept. With the certificate, local people have increased their sense of belonging and pride to

urban lakes, and will be active in the preservation and protection of the lakes and their environments. The research results can be used for “Tirta Budaya Situ” certification.

References

[1] Cynthia H. and Ami A. M., “Urban Lakes in Megacity Jakarta: Risk and Management Plan for Future Sustainability”, *Procedia Environmental Sciences*, vol. 20, pp. 737–746, 2014.

Acknowledgements

This research is funded partly by The Resona Foundation for Asia and Oceania and Toyota Foundation.