
THE LAST LAKES

Facts & Figures #40

December, 2019





Sahmakum Teang Tnaut (STT) was founded in 2005 and officially registered in 2006 as a local NGO supporting urban poor communities. STT started as a small NGO that focused on technical upgrades in poor communities and has since grown to produce community maps, research and advocacy in order to achieve its goal of helping poor communities realise their rights to land and housing.

STT envisions urban poor and vulnerable communities receiving adequate housing, improved living conditions and prosperity. Its mission is to develop advocacy tools, empower, and support urban poor and vulnerable communities to obtain adequate and comfortable housing. The organisation's projects focus on community mapping and research; community mobilization and empowerment; ICT and media training; and land and housing rights.

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Boeung Tamok fishermen. STT, 2019.

1. INTRODUCTION

Since 2003, developers of satellites city and gated housing communities have poured sand into the wetlands and lakes, completely in-filling over 60% of Phnom Penh's lakes and more than 40% of Phnom Penh's major wetland areas.

Livelihoods based on the lakes and wetlands are being eroded, with thousands of families evicted or facing the threat of it as the development projects continue to threaten houses and jobs.

The environmental implications of these trends are not yet fully known, but predictions look dire, as flooding, environmental pollution and degradation of fishing breeding grounds is expected.

This Facts & Figures provides a look at the current situation on the last key lakes and wetlands and outlines the consequences of what might happen if they are destroyed. The report finds that lakes and wetlands are in the public interest and their preservation must be taken seriously and prioritised for Phnom Penh to become an inclusive and environmentally friendly city.

2. METHODOLOGY

The methodology employed in this research is based on STT's investigation reports, community-informed updates and questionnaires, desk reviews, mapping, and impact assessment methodology.

All findings are specific and are largely informed by community members and satellite imagery meaning they are often not fully accurate and provide estimates.

In order to calculate the number of lakes in Phnom Penh, STT's previous research on lakes was used to identify existing lakes¹. There are likely more lakes that have not been assessed in Phnom Penh due to their small size.

Wetlands were chosen based on satellite imagery from 2000, 2001, 2003, and 2006 and only wetlands with a total area of more of than 0.5km² were included in this study.

As such, although some wetlands and lakes were not included in the research, the research does assess all major wetlands and lake areas in Phnom Penh.

¹ Sahmakum Teang Tnaut, (2015), Facts and Figures #28: Phnom Penh's Lakes.

² Article 15.

3. BACKGROUND

Lakes and wetlands dominated Phnom Penh's landscape historically due to its low-lying elevation and the city being founded and built on the banks of the Mekong and Tonle Sap rivers. Phnom Penh sits in the middle of a great floodplain that spans from the Tonle Sap lake to the Mekong Delta in Southern Vietnam. As Phnom Penh has grown it has swallowed up many of its lakes and wetlands, filling them in with sand and dirt and building on top of them. Historically, the lakes and wetlands have provided economic benefits to aquatic farmers and fishermen. As the city has grown both have come under increasing threats from developers keen to in-fill the lakes and create real estate to generate profit, sometimes at the expense of the local communities.

What is a lake? What is a wetland?

Lakes

Under Cambodia's Land Law (2001), natural lakes are the public property of the State² and thereby the people. The Sub-Decree on River Basin Management (2015) provides a definition for what a lake is in Article 4, stating a lake '[r]efers to the vast water that come from slope or natural depth, which may or may not have water according to each season, and it has water source from rivers, stream, canal, creeks, or rainfall subdivision surface'³. This definition provides some clarity as to how the law decides the boundaries of a lake, but it fails to provide clarity as to how close one can live to a lake in Phnom Penh as Article 8 stipulates that another sub-decree will be issued to deal with this in the future⁴ but as of yet, no sub-decree has been published. Lakes, especially in monsoonal Cambodia, can change their boundaries on a regular basis, and can be created by flood and eliminated by drought. The need for clarity on what is and is not a lake, where the boundaries are drawn, and what the implications are will have very real effects on the populations living along, within, and next to the lakes areas.

In stipulating that natural lakes are public property, the Land Law makes it clear that claims to tenure in the natural lake area are in direct violation of the law⁵, but where the lake area starts and finishes remains unclear until official demarcation. In the case of Boeung Tamok, the border or the lake changes nearly every

³Sub-Decree No 98 (2015) on 'River Basin Management'. Article 4.

⁴ Ibid, Article 8.

⁵ Land Law, 2001. Article 43.

month and it was not until 2016 that the lake was finally established in law with clearly demarcated boundaries⁶.

Because natural lakes are public property, thereby owned by all Cambodian citizens through the State, the sale of lakes can only be done if the lake has lost its 'public interest use'⁷. Once a lake has been determined to have lost its public interest use, it can be transferred from state-public property to state-private property and then sold or leased to other groups⁸.

Royal Decree No. 339, sets out the rules and procedures on the reclassification of state-public property⁹. To be reclassified as state-private property, state-public property must meet the following conditions:

1. The property is no longer in the public interest; or
2. The property has lost its full functionality in the service of public interest; or
3. That property is no longer used directly by the public.¹⁰

Under Sub-Decree No. 129, which sets the principles, strategy and legal procedures for the managing and functioning of state properties¹¹, the State Property Management Authority is the authority responsible to publicly observe and report on the public interest conditions of state-public property.¹²

As will be shown in this report, most lakes and wetlands continue to have a public interest use and it is unclear how they have been reclassified and leased.

Wetlands

Despite lakes being discussed in the land law, there is no specific mentioning of wetlands, although it can be inferred that the wetlands fall within the criteria to be considered public land under Article 15 of the Land Law (2001).

This is not always the case though, and the lack of clarity may create issues in protecting wetland areas. Indeed, as will be shown below, the Boeung Tompoun wetlands were never legally demarcated and the lake area which was chosen to be classified as state-public

land under the Land Law is markedly smaller than the Boeung Tompoun wetlands appear to objective observers.

For the purposes of this research, a wetland is defined according to the Ramsar Convention of 1971, which defined wetlands as "areas of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six metres."¹³ The Ramsar Convention on Wetlands is an internationally coordinated effort to designate areas of wetland as significant enough for protection and to provide conservation efforts to protect them. Cambodia has been a signatory to the convention since 1999¹⁴ and has designated 5 wetland areas to conservation efforts, but none of these are in or near Phnom Penh.

Valuing a lake and wetland

The value of a lake or wetland can be calculated using numerous methodologies. Below we have outlined four ways of valuing a lake to different groups.

For the individual

For the individual, a lake or wetland can have value in its aesthetic beauty and its ability to provide a place to relax or exercise. Recent research has noted a link between living in an area with blue space and increased mental well-being¹⁵.

For a private group

For a private group, a lake or wetlands can add value to real estate nearby through creating a more beautiful, and thus valuable, area in which to live or operate a business. There is research to suggest that proximity to a lake can increase the value of property by 8 – 12% with a view of a lake increasing property value by up to 28%¹⁶.

For Phnom Penh and the public

For the public, wetlands and lakes are able to provide relief from flooding by drawing in large amounts of water and slowly releasing it. They also cool the air

⁶ Sub-Decree No. 20 (2016).

⁷ Land Law (2001), Article 16.

⁸ Land Law (2001), Article 17.

⁹ Royal Decree No. 339 (2006) 'Provisional Guidelines and Principles Regarding the Reclassification of the State Public Properties and of Public Entities'

¹⁰ Royal Decree No. 339 (2006) 'Provisional Guidelines and Principles Regarding the Reclassification of the State Public Properties and of Public Entities', Article 3.

¹¹ Sub-Decree No. 129 (2006) 'Rules and Procedures on Reclassification of State Public Properties and Public Entities', Article 1.

¹² Ibid, Article 41.

¹³ The Ramsar Convention on Wetlands (1971) Article 1.

¹⁴ "Contracting Parties to the Ramsar Convention on Wetlands". The Ramsar Convention on Wetlands. Last updated at 13 February 2013.

¹⁵ Gascon et al, (2017), 'Outdoor blue spaces, human health and well-being: A systematic review of quantitative studies.' *International Journal of Hygiene and Environmental Health*. 220, 1207-1221.

¹⁶ Luttik, J, (2000), 'The Value of Trees, Water and Open Space as Reflected by House Prices in the Netherlands'. *Landscape and Urban Planning*. 48. 161-167; see also Nicholls, S & J Crompton, (2017), 'The effect of rivers, streams, and canals on property values', *River Res Applic*. 1377-1386.

around them, making the city less hot and reducing the heat island effect that concrete in large areas produces¹⁷.

In addition, lakes and wetlands offer economic opportunities through planting of aquatic plants, scavenging for frogs and snails, fishing, and tourism opportunities. Environmental tourism can support local businesses while preserving the lake and wetland areas.

In addition, some especially valuable wetlands and lakes, such as the Tompoun/Cheung Ek wetlands, are able to treat wastewater, including sewage and chemical run-off, through natural processes that cleanse polluted-waters and reduce the dangers to the environment and society that wastewater presents. This can in turn save the city huge amounts of money by creating a low-cost option for dealing with wastewater treatment, which is typically very expensive.

For the world

Lakes and wetlands are invaluable to the overall health of the world. Fresh-water lakes and wetlands, like those found in Phnom Penh, are a vital source of drinking water, and are able to affect air quality by providing areas to grow aquatic plants and algae that draw in harmful chemicals, like CO₂ and release oxygen, providing clean air to the world and mitigating the effects of global warming.

Between 2003 and 2019, more than 40% of the major wetlands had been lost to in-filling by sand, or to the legal process of reclassification and leasing.

Satellite cities were found to be the most common cause for the loss of wetland areas.

4. KEY FINDINGS

Phnom Penh's lake and wetland areas are on the brink of elimination. Should the situation continue as expected, the city and surrounding areas may suffer the consequences of severe flooding, loss of fish species, loss of natural wastewater treatment processes, and loss of local livelihoods.

Lakes

Since 1990, of the 26 lakes identified within the city of Phnom Penh¹⁸, 16 have been in-filled and 10 have been partially in-filled. No lake studied has remained fully intact since 1990. The major causes of loss are the construction of boreys, residential housing, and satellite cities.

Wetlands

Not dissimilarly to the city's lakes, Phnom Penh's wetlands have also suffered huge losses in total area.

¹⁷ Gupta, N, A, Mathew, & S, Khandelwal, (2019), 'Analysis of cooling effect of water bodies on land surface temperature in nearby region', The Egyptian Journal of Remote Sensing and Space Science,22(1) 81-93.

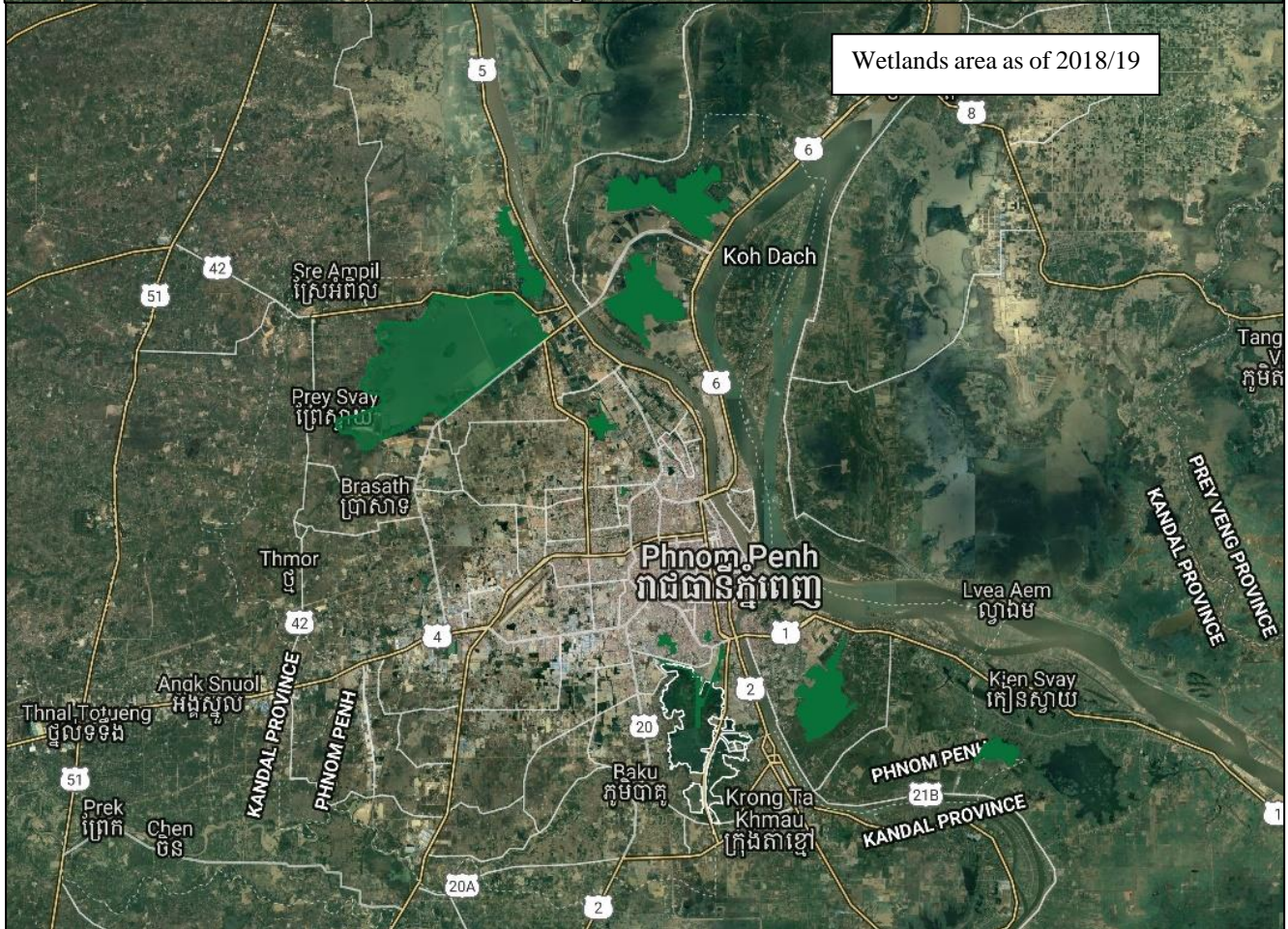
¹⁸ Sahnakum Teang Tnaut, (2015), Facts and Figures #28: Phnom Penh's Lakes.

Table 1: Phnom Penh lake status as of 2019

N	Name of lake	Status	Current use	Location (Khan)
1	Boeung Trabek 1	Filled-in	Residential area/other	Chamkar Mon
2	Boeung Trabek 2	Partially filled-in	Residential area	Chamkar Mon
3	Boeung Tompoun 1	Partially filled-in	Residential area	Mean Chey
4	Boeung Tompoun 2	Partially filled-in (on-going)	ING City (Satellite city)	Mean Chey
5	Boeung Cheung Ek	Partially filled-in (on-going)	ING City (Satellite city)	Dangkao. Mean Chey
6	Boeung Tamat	Filled-in	In-filled (real-estate)	Dangkao
7	Boeung Snor	Filled-in	Niroth Water treatment plant/residential/other	Chbar Ampov
8	Boeung Chhouk	Filled-in	Borey Peng Huoth (Gated community)	Chbar Ampov
9	Boeung Salang	Filled-in	Residential area	Tuol Kork
10	Pralay Lou 5	Filled-in	Borei Chey Chumneas, and Borei Vimean Phnom Penh	Mean Chey
11	Trapeang Chhouk	Filled-in	Borey and residential area	Sen Sok
12	Boeung Toul Popere	Filled-in	Borei Piphup Thmey	Dangkao
13	Boeung Tamok (Boeung Kap Srov)	Small in-filling/Unclear plan	Encroachment/fish-farming/in-filling for market place construction	Prek Pnov
14	Boeung Reach Sey	Filled-in	Grand Phnom Penh International (Satellite City)	Sen Sok
15	Boeung Chenhchemkrapeu	Filled-in	Vacant lot, fills when raining	Sen Sok
16	Boeung Kham Pong	Partially filled-in	Orkide Villa (Satellite City)	Chroy Chongvar
17	Boeung Chhouk	Filled-in	Borei Angkor Phnom Penh	Russey Keo
18	Boeung Payab	Partially filled-in	Borei Piphup Thmey, Borei Saensokh, Borei Peng Huoth, Camko City and Other	Russey Keo, Sen Sok
19	Boeung Poug Peay	Filled-in	Borei Piphup Thmey, Borei Peng Huot Destar light and Other	Sen Sok
20	Boeung Ou Angkam	Filled-in	WINCAM Corporation factory and Other	Russey Keo
21	Boeung Kak	Filled-in	Shukaku City (Satellite City)	Tuol Kork
22	Boeung Salang	Filled-in	Borei Sopheak Mongkul, Borei Reth, Borei Tuol Sangke, Borei Nay Sovann, Borei Sambath Meas	Russey Keo
23	Boeung Torteung Thngay	Filled-in	OCIC satellite city (official name unclear)	Chroy Chongvar
24	Boeung Chhouk	Partially filled-in	Residential	Russey Keo
25	Boeung Kbal Damrey	Partially filled-in	Borei Lay Kung Company and Grand Phnom Penh International City (Golf Club) and Other	Sen Sok
26	Boeung Samrong	Partially filled-in/preserved	Encroachments or fish farming, in-filling by Lay Ngy Co Ltd	Prek Pnov
TOTAL		16 lakes have been filled-in 10 lakes have been partially filled-in 0 lakes are untouched.		

Table 2: Phnom Penh wetlands 2019					
N	Wetland area	2003 (km2)	2012/13	2018	Reason for change
1	North Chroy Changva	21.5	15.19	14.67	Satellite city (Orkide, Garden City)
2	Boeung Reach Sei	5.48	2	0.78	Satellite city (Grand Phnom Penh, Borey Peng Huoth)
3	Tompoun/Cheung Ek	14.9	14.9	(2019) 1.07 legally demarcated	(Satellite city) ING City
4	Boeung Tamok	31.6	25.3	31.9 legally demarcated	Lake deepening/small encroachments/ in-filling for market place construction/natural reduction
5	Boeung Samrong	5.15	3.19	2.8	Sand-infilling/fish- farming
6	Chbar Ampov	10.8	9.08	5.84	Borey Peng Huoth – The Star Platinum Rosato
7	Prek Thom	5.52	6.01	1.43	Vattanac Golf Course
8	Tompun	0.542	0.386	0.333	Residential buildings
9	Boeung Kak	0.975	0.012	0.0	Shukaku Satellite City
10	Sen Sok	3.13	1.8	0.118	Borey Peng Huoth, Camko Satellite City, AEON Mall II
11	South Chroy Changva	1.5	1.15	0.17	Satellite city (OCIC project)
TOTALS		101.0	79.0	59.7	Loss of over 40% of wetlands area

Table 3: Total losses of lakes and major wetland areas in Phnom Penh		
Areas	Loss (%)	Main reason for loss of area
Lakes	All 26 lakes have been impacted, with 16 in-filled (61%)	Boreys, residential housing, and satellite cities.
Wetlands	Loss (or projected loss) of 41.3 km2 (41%) of major wetlands	Satellite cities.



Boeung Kak

Lake area: 90ha (legally demarcated area) - *no longer a lake as of 2013*

Population (at-risk of eviction/loss of livelihood): 4,253 families were evicted

Environmental importance: Flood protection, blue and green space



Up until 1988, much of Boeung Kak was unoccupied. Families began establishing themselves in the area around 1993 and communities grew aquatic crops on the lake. In 2007, the Royal Government of Cambodia granted a 99-year lease to Shukaku Inc. for an approximate US\$ 79 million, and sand-filling began in 2008¹⁹. The lake was completely filled-in by 2013.

Use by the people

Boeung Kak was the home to 4,253 families that lived directly within the boundaries or bordering upon the surface of the lake, and many of whom derived their income from the lake itself. Many community members were refugees from Thailand who had been displaced during the Khmer Rouge regime. As is common in Phnom Penh, poor communities are often forced to find places to live as no publicly funded pro-poor housing exists currently.

In-filling of the lake led many homes to incur damage and flooding and led to some families leaving by necessity and without proper compensation. Violence and intimidation were used against Boeung Kak families who protested against their evictions.

In 2010, over two thousand families were forced to accept compensation that was below market-value.

Environmental importance

Boeung Kak's environmental importance, as it relates to flood impacts, was independently assessed in a

flooding assessment report conducted by an international team of experts in 2008²⁰. The report stated that the project could have 'significant impacts on property and hazard to life downstream'²¹. Further, the report criticised the proposed drainage improvements in Shukaku Inc's Environmental and Social Impact Assessment, additionally noting that constructed culverts by the MPP were significantly undersized²². The report concluded that the in-filling would increase flooding severity and frequency and described the impacts as a 'risk to public health'²³.

The future of the lake

As of mid-2019, Shukaku's satellite city is still under construction.

¹⁹ Titthara, M. (2010). Boeung Kak villagers call on PM to intervene in land case. The Phnom Penh Post. Retrieved from: <<http://www.phnompenhpost.com/national/boeung-kak-villagers-call-pm-intervene-land-case>>

²⁰ Benham, S & B Caddis, (2008), Boeung Kak Area Drainage and Flooding Assessment.

²¹ Ibid.

²² Ibid.

²³ Ibid.



Boeung Tamok with the skyline of Phnom Penh in the background. STT, 2019.

Boeung Tamok

Lake area: 3,239.7ha (legally demarcated area)

Population (at-risk of eviction/loss of livelihood):
>319 families

Environmental importance: Flood protection, natural fresh water reservoir, fish species and bird species present in the area



Boeung Tamok, or Beoung Tumnup Kabsrov as it is alternately known, is the largest lake by surface area in Phnom Penh. Located in the north western part of Phnom Penh and ranging across 5 sangkats, it was historically used for rice growing and fishing.

On 3 February, 2016, the Royal Government of Cambodia (RGC) released Sub-decree No 20 which declares the lake state-public property covering 3,239.7 hectares. On 29 January 2019, Prek Pnov authorities provided a letter to some groups living and fishing on the lake to leave the area in 7 days. Other groups have not received letters to evict, but have received unofficial information notifying them that they occupy state land. No public forum has been held to discuss the plans for the lake.

Use by the people

Boeung Tamok is home to around 319 urban poor families, most of whom are located within the lake boundaries or are directly living along the borders of the lake. Of these families, the majority are fishermen and women who also use the lake for aquatic agriculture and daily domestic jobs such as washing clothes, washing dishes and as a toilet/bathing area. None of the families interviewed by STT have hard land titles, making them vulnerable to eviction.

The lake, due to its large size, offers a myriad of fishing opportunities. As a result, some communities have migrated to the lake in recent years for the sole purpose of the economic fishing opportunities it offers. Different cultural adaptations of fishing persist in the lake area, which boasts a rich tapestry of small-level fishing techniques including fish farming, fish

trapping, and fishing with nets. The below table provides information on the income available to families from fishing:

Fish species	Price / kilogram
Trey Nuy (Noodle fish)	2,000 R
Trey Labya (Lagoon fish)	4,000 R
Kam Peus (Lake shrimp)	10,000 R

Hundreds of families rely upon the lake for food security and income. In addition to the fish that live within the lake, there are also forage-able plants and animals that grow or live on its shores and inlets, such as morning glory, lotus flower seed pods, lotus stems, snails and frogs. These foods can help to subsidise poor villagers' daily expenses and increase their food intake and security.



Figure 1 – Fish farming is used to raise fingerlings to a size where they can be sold at market.



Figure 2 – Net fishing from a pedestal; Nets are cast from a height to catch small fish.



Figure 3 – Arrow traps guide fish into a net at the end of the trap; Fish can easily enter the trap but are unable to find the exit due to its cleverly designed entrance/exit mechanism.



Figure 4 – Dead wood traps utilise dead trees and large branches to create hiding places for fish; Fishermen then cast nets around the area and scare the fish out of the dead wood using sounds and long sticks.



Figure 5 – A large net at the front of a motorised boat can be dropped into water and then raised to catch fish on the move.



Figure 6 – Harvested lotus flowers, stems and seed pods that can be eaten and grow naturally upon the lake's surface.

Environmental importance

Boeung Tamok serves as a flood protector against northern-based water flows. The Boeung Tamok dike diverts water from the northern reaches of Kandal to the east or holds it within the massive lake. The dike which runs east to west along the southern shore of the lake effectively prevents northern-based floodwaters from entering the inner city and inundating large swaths of Phnom Penh (see Figure 8 below).

The future of the lake

The plans for Boeung Tamok remain unclear. The lake's dike also houses the Win-Win boulevard, and is currently undergoing 20 hectares of infilling to provide a location for a new market to the Municipality of Phnom Penh²⁴. Land prices in the area have skyrocketed recently²⁵, increasing by as much as 27% between January – June 2019. This has exacerbated land and housing security fears for local communities who have received information from authorities that

²⁴ Sub-Decree No 147, (2018), 'The Sub-Decree on Boeung Tamok Revision (Boeung Kobsrov) Located in Phnom Penh Capital as Public State Land'.

²⁵Phnom Penh Post, 7 July 2019. <<https://www.phnompenhpost.com/post-property/land-prices-three-capital-districts-see-sharp-increase>>.

they occupy state-public land, thereby alerting them to their lack of legal protection against eviction in the future.

The increase in land value, development of new roads and markets in the area, as well as notices to evict, is clear evidence of plans for the area to undergo significant changes. The lack of information fuels anxiety for local poor residents without land titles and gives rise to the opportunity for land grabs and land sales perpetuated by insider knowledge of the development plans.



Fisherman harvesting lotus flowers. STT, 2019.

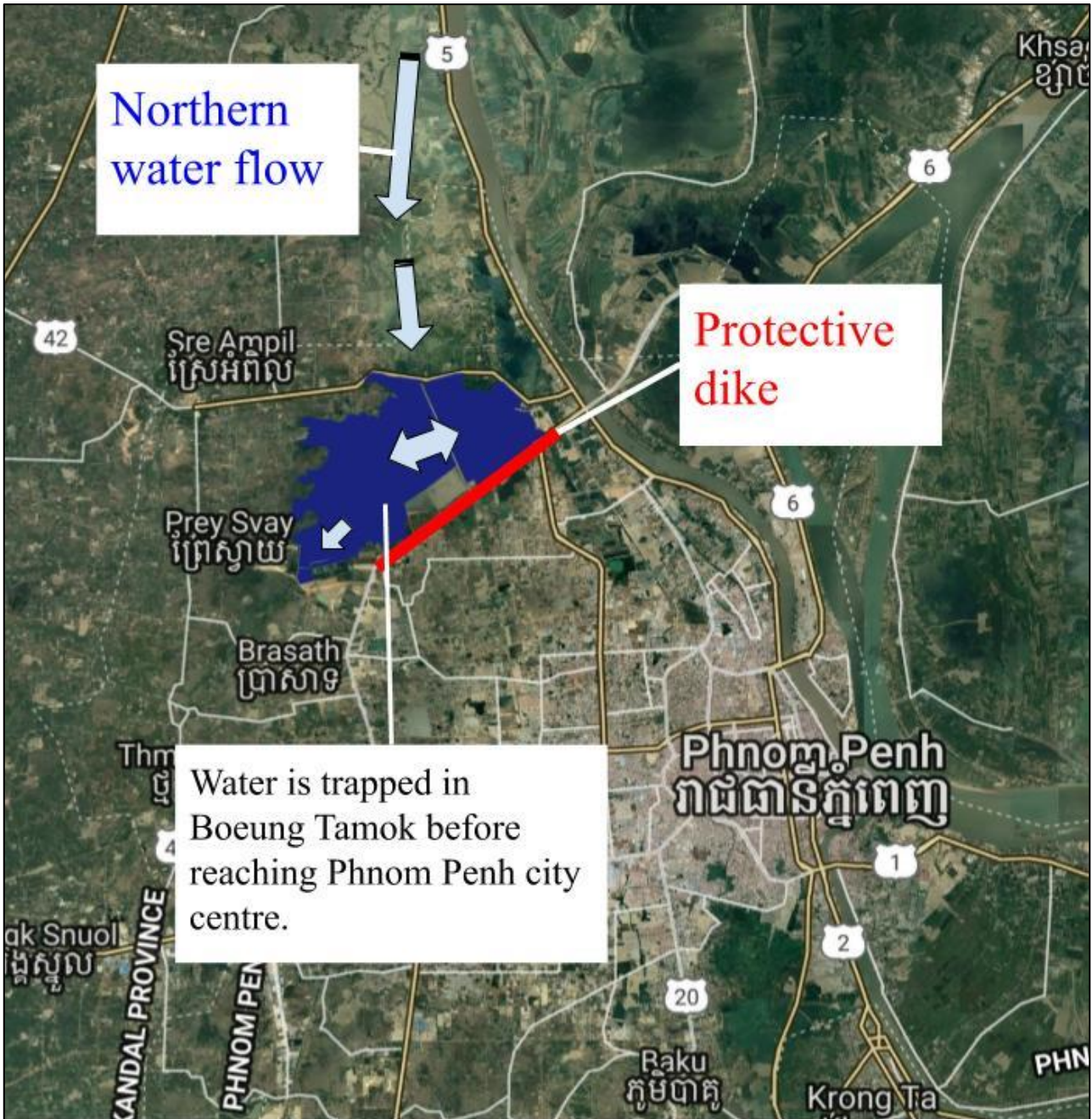


Figure 7 – Map of Boeung Tamok flood protection. STT, 2019.

Tompoun/Cheung Ek Wetlands

Lake area: Total wetlands area 2850ha (unofficial demarcation)

107ha (legally demarcated²⁶)

Population (at-risk of eviction/loss of livelihood): > 1000 families may lose livelihoods.

Some families may face eviction.

Environmental importance: Flood protection, natural wastewater treatment, climate cooling, green and blue space, spawning ground for fish from Bassac river



The Tompoun/Cheung Ek wetlands have no legal demarcation, but are located to the south of Phnom Penh, spanning a huge area with several lakes, rivers, lagoons and flood plains that have been used continuously by local residents since the repopulation of the city and Ta Khmao area after the fall of the Khmer Rouge.

Use by the people

Many communities use the lake to farm aquatic crops, such as mimosa and morning glory. Families can earn between \$100-200 USD a month from a hectare of aquatic agriculture plant yield. In addition, agriculture nearby the wetlands that is temporarily flooded during parts of the year provides rich soil to farming communities. Many fishing communities live on the outlet rivers of the wetlands areas with fish being found both in the lakes and the rivers within and exiting the wetland area.

²⁶ Sub-decree N 148, 'The sub-decree on Beoung Cheung Ek lake surface revision, located on Khan Meanchey and Donkor, Phnom Penh and Ta Khmao town, Kanda Province'. 1 November 2018.

²⁷ Irvine et al, 2015. 'Application of PCSWMM to Assess Wastewater Treatment and Urban Flooding Scenarios in



Rows of aquatic crops, cleaning the wastewater of Phnom Penh. 2019. STT.

Fish species	Price / kilogram
Trey Kampleang (Trout fish)	7,000 R
Trey Chhlang (Dart fish)	12,00 R
Trey Chhloun (Fisher's fish)	10,000 R
Trey Ros (Ros fish)	16,000 R

Environmental importance

The Tompoun/Cheung Ek wetlands are essential in the treatment of Phnom Penh's sewage and the prevention of devastating floods both in the city centre and the southern border town of Ta Khmao.

Acting as a large natural water treatment area, the wetlands have been found to be semi-effective through the use of plants such as Water Mimosa and Morning Glory, both of which are planted by local aquatic farmers, which assist in cleansing the water of harmful pollutants²⁷. As the city's wastewater, including sewage, drains directly into the lake through three major canals, the presence of the wetlands is a natural barrier protecting pollutants from entering the Bassac river downstream.

Current plans for a water treatment plant exist and are expected to go ahead with funding and technical expertise being provided by Japanese specialists at Japanese International Cooperation Agency (JICA)²⁸.

Nearly 70% of the rainwater and wastewater of Phnom Penh goes into the Tompoun/Cheung Ek wetlands²⁹.

Phnom Penh, Cambodia: A Tool to Support Eco-City Planning'. Journal of Water Management Modelling, v 23.

²⁸ JICA, 2019. 'Preparatory Survey Report

On the Project for Sewerage System Development in the Phnom Penh Capital City in the Kingdom of Cambodia'.

²⁹ Ville de Paris & Municipality of Phnom Penh, (2018) Livre Phnom Penh extensions et mutations.

According to a report produced in conjunction with the Municipality of Phnom Penh, significant loss of the Tompoun/Cheung Ek wetlands would result in 2.5-3 million cubic metres of water needing to be managed elsewhere³⁰, potentially leading to backlog (flooding of other parts of the city), or downstream flooding, across exit river areas and Ta Khmao city, or both. Sand infilling is ongoing in the area currently.

³⁰ Ibid.



Man throwing a net onto fish from above at Boeung Tamok. STT, 2019.

5. CONCLUSION

Lakes and wetlands are being eroded mainly due to the demand for real estate from borey and satellite city proponents.

The current loss of lakes within the city is such that only Boeung Samrong and Tamok will survive with more than 50% of their lake areas intact.

Wetlands face a bleak future also and over 40% of the major wetland areas are now destroyed or slated for destruction.

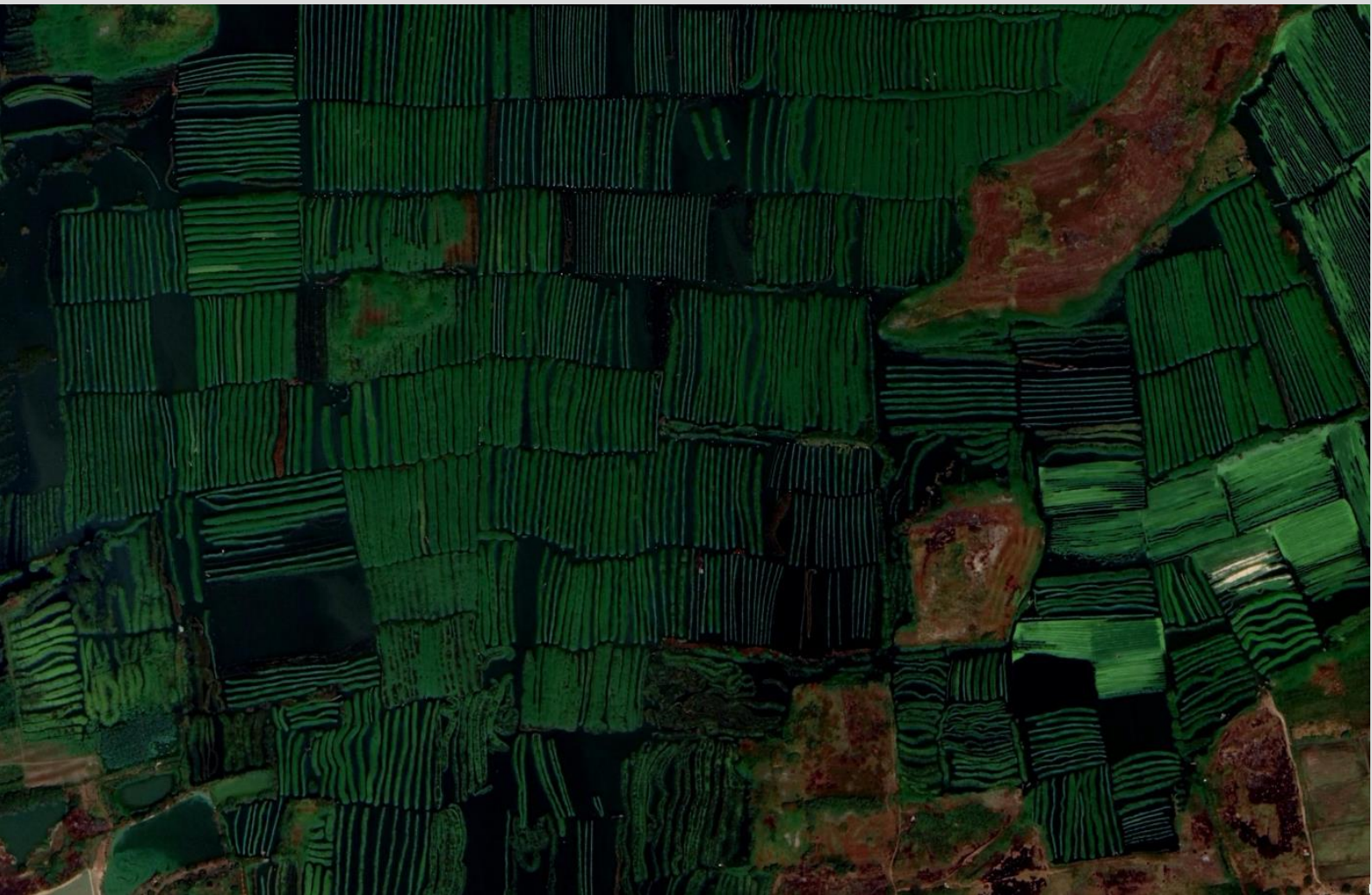
The major causes of this destruction of both lakes and wetlands, namely real estate creation, is not necessary and often caters to high-end housing projects that do not offer poor housing options.

The social and environmental effects of this loss have been and will continue to be devastating with expected evictions, loss of livelihoods, increases in flooding, pollution of the environment, and loss of biodiversity should trends continue.

6. RECOMMENDATIONS

Based on the findings of the report, the researchers recommend the following to Government authorities:

1. Make publicly available via internet publication an inventory of all state-public property.
2. More research is needed on the effects of lake and wetland loss on the city of Phnom Penh.
3. Environmental Impact Assessments should be publicly published and available online for review, in order to increase transparency.
4. Citizens who have an interest in the lakes should be given stakeholder consultations before areas where they live and use as for livelihoods are demarcated as state-public property.
5. Key lakes and wetlands, such as Boeung Tamok and the Tompoun/Cheung Ek wetlands, should be preserved under special laws and regulations that provide strict protections as to their development and destruction as the current protection afforded to them under the Land Law is insufficient and could lead to severe deleterious effects for the country.



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