OXFAM

European Union
Delegation to Cambodia

PAVILION
PHNOM PENH

CAPFISH program 'Support to Cambodia
Fishing Communities Livelihoods'

THE ECOTOURISM POTENTIAL

a Private Sector Assessment

by MAADS/Pavilion Team

Our warmest thanks

to all the villagers in the Tonle Sap communities who have kindly shared their time and knowledge with our team.

Summary

Introduction

The Tonle Sap Lake (TSL) (Khmer ទន្លេសាប, tonlé saab, literally 'Fresh River', also called 'Great Lake' to distinguish it from homonymous 120-km-long river joining the Mekong River south, Hylak ID:153) is the largest body of freshwater in Southeast Asia. Its distinctive hydrography, with the unique flow reversal of the Tonle Sap River at the peak of the rainy season, makes it a remarkable biodiversity hotspot – designated as a UNESCO biosphere reserve in 1997 --, and a major food source for the country and the whole region.

The wide variation of its size and depth due to seasonal changes (snow melting from the Himalayas feeding the Mekong in spring, adding-up to local rainy season) – from some 2,500 km2 (965 sq. mi), 1 km3 (0.24 cu mi) and a length of 160 km at the end of the dry season (late April) to up to 16,000 km2, 80 km3 and 250 km length in September-October, explains the particularity of traditional habitat (floating villages), the absence of urbanization along its shores and the specific challenges to a sustained tourism activity. But both the seasonal variations and the low human density can also represent important added value as the Lake is a lot better preserved than other parts of the country.

The fourth largest resource in freshwater fish worldwide, TSL contribution amounts to 10 % of Cambodia gross domestic product (year 2019, 2020 and 2021). This economic strength combines with unparalleled significance as ecosystem, since

> "its periodic and extensive floodplain provides unique habitats for many seasonally migratory 58 fish species with replenishment of nutrients from the Mekong River, offers provisions of freshwater resources and maintains crucial habitats for many endangered species. In addition, the lake's flood regime influences land cover change by delineating the area of cropland in the floodplain and affecting the forest cover change. Henceforth, TSL is the "heart of the lower Mekong", as the regional socio-economic development and ecosystem sustainability ultimately depend on its "flood pulse"[2]"

The present report assesses the ecotourism potential of the northwest area of the Great Lake from the private sector perspective, at a time when climate change and the negative impact of human activity on the hydraulic system of the whole region are threatening the biodiversity and the livelihood of local communities. According to the Ramsar Convention, 'with 35% loss globally since 1970, wetlands are our most threatened ecosystem, disappearing three times faster than forests' [3].

Any ecotourism project should be designed within the particular ecosystem of the TSBR and the knowledge we have of it, as summarized in the Ecosystem Management of the Tonle Sap Lake (ESMTSL) guidelines:

> "The functioning of the flood pulsing system in the Tonle Sap needs to be better understood before the changes and threats to it can be assessed and effectively demonstrated. This work can benefit a great deal from the studies made and experience gained in the Central Amazon floodplain by Junk (1997) and his colleagues since the 1960s. This can hasten and direct the investigations on the role of the terrestrial and aquatic shifting mechanisms, as well as the critical components that are driving and controlling the biological productivity of the Tonle Sap system. In addition to the flooding process itself and the material transports (sediments, nutrients, larvae), the role of different. organisms in channeling the food web items must be clarified. Concerted and coordinated research efforts must be amplified and accelerated, involving riparian institutions and researchers as well as international teams."[4]

[1] MoE Tonle Sap Information Guide 2007.
[2] CHEN A. and CHEN D. et al.: 2021.
[3] RAMSAR: 2015, The 4th Strategic Plan 2016 – 2024.
[4] See KUMMU M. et al.: 2006.

1.1 Ecotourism interest of destination

The Capfish/Foster Project in Lot 1 mapping is focusing on the Siem Reap and Battambang provinces wetlands in the Tonle Sap NW area (Tonle Sap Basin Reservoir, TSBR). Due to the size of the selected area in lot 1, frequent visits (once a month on average) are required to scout, identify and validate ecotourism sites. A resource map will be prepared based on general land-use classification. Then, within the area of those resources, validated ecotourism sites will be identified and ranked using Geographical Information System (GIS).
Seven criteria define the process of identification and validation for suitable ecotourism land use:

1.1.1 Investment Return Projection (IRP):
Considering the prospective profitability of developing ecotourist operations in RTPs (Recommended Target Point). sites recommended and available to private sector for commercial development. **14 RTPs have been selected at the end of exploration campaigns in May 2023** (see section 7.9).

1.1.2 Practicality of implanting required facilities:

In addition to terrain considerations, the juridical aspect of land ownership or lease will be considered. The existing legal status of the considered area is defined by the Royal Government of Cambodia dividing the Tonle Sap Lake land into three zones to facilitate management: Zone 3 is land that cannot be resided in nor be owned, Zone 2 is land that can be resided in but cannot be owned, and Zone 1 is land that can be resided in and can be owned. Recent developments in Pursat region show that this zoning is far from being written in stone, and can be instantly altered[5].

1.1.3 Detailed Site Interest (DSI):

Capacity to attract visitors by providing a high unique experience of nature immersion, involving naturalbeauty of the site and intensity of interaction. RTPs are defined by the density of POIs (Point of Interest) and CTDs (Cultural Tourism Destinations); existence of CSRTs (Corporate Social Responsibility Targets) are also a sizeable added value, highlighting possible social benefits from ecotourism developments.

1.1.4 Area Accessibility:

Road network, navigation, cleanliness and traveling distances.

1.1.5 Environmental Impact of regular and one-time visitors on site ecosystem and social dynamics:

See exploration reports.

1.1.6 Human resources, with recommendations for professional training programs:

Hospitality Training Program (in association with FACT) has been launched in May 2022. **Interim Report due September 2023.**

1.1.7 Social Benefits

Capacity of involvement from local communities, financial benefits for conservation, potential for CSR (Corporate Social Responsibility) projects to be considered by future investors. **Investment Road Map Guidelines due November 2023.**

1.2 Socio-economic dynamics of the Lake's riparian population

Sites/locations presenting ecotourism interest will also be based on recent research findings for strategic recommendations at regional level. Those recommendations will aim at respecting and developing socioeconomical dynamics of the lake's communities. Revealing a sustainable tourist potential matching with already existing conservation programs will only be profitable through a deep understanding of the local human dynamics.

The Tonle Sap Lake fishermen, men and women, have been an intrinsic part of the Khmer and Cambodian cultural and artistic references since time immemorial. They are depicted in the Bayon basreliefs at Angkor Thom, using the same ancestral seine net (robsa vea) Western travelers observed in themid-19th century. One of the latter, geographer and future French colonial administrator Jean Moura, described this particular fishnet in 1878: "The seine nets are 11- to 12-meter long, 1.8-meter high, are called "mea" (uncle) and manned by 30 to 50 fishers on rowboats."[6]

The connection between early accumulation of protein (with fishing) and rice (with floodplain "receding" or "recessional" agriculture stocks around the Tonle Sap lake, and the development of the Angkorianmegalopolis and state have been extensively studied. Some authors have even argued the abundance of food resources coming directly from the lake area allowed the Angkorian rulers to keep the water management in the temples and palaces areas purely as a "theocratic water system", instead of an agriculture-oriented irrigation network.[7] While recent archaeological finds in the northwestern part of the TSBR, in particular colored beads and post- Hellenistic coins point to the lake shores being connected to early maritime commercial routes[8],

[5] See 'PM hands over more than 3,000 hectares of land to people in Pursat', Khmer Times, 28 May 2022.
[6] MOURA Jean 1879, Notes sur la peche du Tonli-Sap, p 18.
[7] See for instance, BOOMGARD Peter ed., A World of Water: Rain, Rivers and Seas in Southeast Asian Histories, KITLV Press, Leiden, 2007.
[8] See LAPTEFF 2016.

Detail of the Archaeological Map drawn by Capt. Etienne Lunet de Lajonquiere in 1911. Note the high concentration of sites close to the northwestern shores of the lake. At the time, the Tonle Sap was seen as a galaxy of lakes rather than one single vast body of water (source: EFEO collection).

the first French travelers in the late 19th century the persistence of ancient Buddhist traditions amongst fishermen communities. Marveling at Wat Ek, a temple in the Battambang area that predates Angkor Wat and displays the same kind of architectural mastery, French emissary Jules Marcel Brossard de Corbigny, heading a 68 elephant-strong column sent to Bangkok by King Norodom in order to bring Cambodian princesses back home, remarks that near the temple "a pretty lake [possible Lake Boeung Kampei, which we identified as POI_B01] shelters waterfowl and marsh fish; for them the vicinity of the pagoda is a sacred refuge. It is said in the holy books that a Buddhist monk will not kill any animal (...), and accordingly the fishermen, respecting this law, leave the fish-laden lakes of the pagoda in peace."[9]

Water and fish symbolism is ubiquitous in ancient Khmer and modern Cambodian culture and religious practice[10]. Characteristically, several of the first novels written and published in Khmer bore telling titles such as Toek Roam Phka Roam (ទឹករាំផ្ការាំ, "Dancing Flower and Dancing Water", 1911) or Toek Tanle Sap (ទឹកទន្លេសាប, "The Waters of Tonle Sap", by Kim Hak, 1939). Fish remains a major staple in Cambodian diet to these days.

Recently, several alarming reports have portrayed local communities as on the brink of disintegration, and the Tonle Sap itself as a 'dying lake', to quote a book on the subject released in March 2022[11]. This ominous outlook is based on

a) the increasing man-made deterioration of the hydraulic sustainability of the lake and its fishing resources[12],which is currently pressing the lower Mekong nations to seek a real coordination in the flow management of the river[13];

b) a post-Covid economic recovery compromised by international tensions. Even if the World Bank is currently maintaining a projected 4.5% economic growth for Cambodia in 2022, hikes in energy and food prices due to the conflict in Ukraine are increasing inflation and narrowing the pace of poverty reduction, thus affecting vulnerable areas like the Tonle Sap Lake[14];

c) a trend that some have called 'climate doomers', tending to pile up concerning data without putting it in perspective, in a kind of "waiting-for-the-apocalypse" fashion[15]

While Cambodia remains the world's fifth producer in inland waters capture, overfishing and illegal (dynamite) fishing in the lake's waters are on the rise. What we are currently attempting to evaluate is the ratio between numbers of active fishermen around the lake and yearly fish production.

When considering fishing habitat by month and comparatively, Tonle Sap Lake fishing resources are remarkably stable around the year, as the below chart shows. This is a valuable indicator for future ecotourism developments in term of local human resources (see 1.1.6):

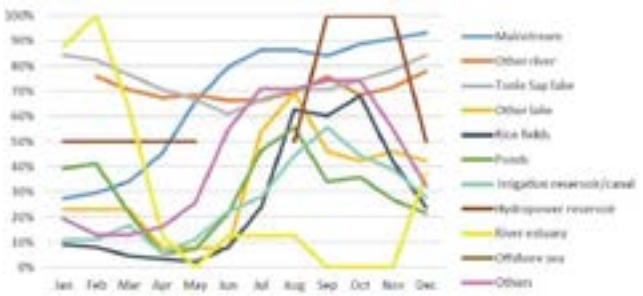


Figure 40. Fishing habitat by month in Cambodia

Source: VA MRC 2018

[10] See ROBERTS Tyson 2002.
[9] BROSSARD de CORBIGNY 1871 (2017), p 56
[10] See ROBERTS Tyson 2002.
[11] SEIFF 2022, *Troubling the Water: a dying lake and a vanishing world in Cambodia.*
[12] MRC annual surveys since 2014 show a steady decrease of fish catch in the TSBR area (Zone 5b in MRC geographical breakdown), with a peak in 2018 followed by slight improvement. See CATCH AND CULTURE Vol. 28.1, 2018.
[13] See RY 2022, 'Mekong River data sharing key to impact measurement'.
[14] May Kunmakara, 'GDP growth maintained at 4.5% for 2022: WB', The Phnom Penh Post, 6 April 2022.
[15] See Amanda Ripley, 'I stopped reading the news. Is the problem me — or the product?', The Washington Post, 8 July 2002.

TABLE 5
INLAND WATERS CAPTURE PRODUCTION: MAJOR PRODUCING COUNTRIES

Country	Production (average per year)			Production				Percentage of total, 2018
	1980s	1990s	2000s	2015	2016	2017	2018	
	(million tonnes, live weight)							
Top 25 Inland water capture producers								
China	0.54	1.46	2.11	1.99	2.00	2.18	1.96	16
India	0.50	0.58	0.84	1.35	1.46	1.59	1.70	14
Bangladesh	0.44	0.50	0.86	1.02	1.05	1.16	1.22	10
Myanmar	0.14	0.15	0.48	0.86	0.89	0.89	0.89	7
Cambodia	0.05	0.09	0.34	0.49	0.51	0.53	0.54	4
Indonesia	0.27	0.31	0.31	0.47	0.43	0.43	0.51	4
Uganda	0.19	0.22	0.33	0.40	0.39	0.39	0.44	4
Nigeria	0.10	0.10	0.21	0.34	0.38	0.42	0.39	3
United Republic of Tanzania	0.25	0.29	0.30	0.31	0.31	0.33	0.31	3
Russian Federation	0.09	0.26	0.22	0.29	0.29	0.27	0.27	2
Egypt	0.12	0.23	0.27	0.24	0.23	0.26	0.27	2
Democratic Republic of the Congo	0.13	0.17	0.23	0.23	0.23	0.23	0.23	2
Brazil	0.20	0.18	0.24	0.23	0.22	0.22	0.22	2
Mexico	0.10	0.11	0.11	0.15	0.20	0.17	0.22	2

The above FAO table of major inland water producing countries show that the Cambodian output has been going slightly upward since 2000s, while China's output was more erratic.[16] Below, a comparative table showing the increase of fisher population and steep decline of fish production in Lake Tanganyika, Burundian side[17].

	1995	2011	Increase / Decrease
Fishermen at Lake Tanganyika	44,957	94,886	+ 111.06 %
Fisher boats at Lake Tanganyika	13,192	28,212	+ 113.86 %
Burundian fishermen at Lake Tanganyika	2,021	8,202	+ 305.84 %
Burundian fisher boats at Lake Tanganyika	1,408	3,236	+ 129.83 %
Burundian fish production per year at Lake Tanganyika	20,000 t	15,000 t	- 25 %
Burundian fish production per year and per fishermen at Lake Tanganyika	9.89 t	1.83 t	- 81.8 %

Another factor impacting TSBR ecotourism potential is the way local fishermen adapted traditional fishing techniques to modern (and contaminating) resources, out of necessity:

Overall, the respondents [to the poll] preferred to raise fish in cage (6.9%) and plastic bag (3.6%). Only 0.6% of the respondent increased fish in natural ponds. In Battambang, 17.6% of the respondents raised fish in a cage, but 9.3% of the respondents in Banteay Meanchey preferred to raise fish in a plastic bag (Figure 4.10). Most of them were situated in the floating villages for a household that grew fish in cages. Households spared some parts or all parts of the house to construct the cages using wood and a net to cover it. Some households also built cages separate from their homes, as well. Regarding aquaculture through plastic, they brought plastic bags from local markets and deployed them, with a size on the land and a thatch roof.[18]

1.3 Current and anticipated trends in ecotourism

With the success of the epidemic management in Cambodia, post-COVID travel is kicking off along new trends. Even if family-oriented and diversified travel have dominated the domestic tourism market in the past two years, the great outdoors western trend is making his way up in the catalog of regional operators. This study will take in consideration local capacities to understand, operate and communicate on ecotourism through meetings with influent tourism stakeholders, targeted surveys and data gathering.

Since Cambodia (ahead of its closest neighbors) has eased international travel restrictions in February 2022, we have observed:

1. a slow yet substantial return of international tourists,

[16] FAO 2020, The State of World Fisheries and Aquaculture 2020.
[17] Source: Ministry of Information, Burundi.
[18] FACT Draft Report Sept. 2022, p 16.
[19] A 114% increase in January 2022 compared to January 2021. The trend picked up momentum in March, with a 44% increase compared to the previous month (source: Cambodia Airports). Projections for international travel to Cambodia pointed towards 700,000 yearly visitors for 2022 in March, projection revised to 1,1 million in May of the same year.

mostly individuals or young families with a marked interest in cultural (Angkor and other historic sites) and nature-oriented experiences,

2. individual tourism from Japan, Korea, and ASEAN countries which have resumed direct flights to Cambodia, in particular from Vietnam, Singapore, Indonesia and, more recently, Malaysia[19], signaling the emergence of a more balanced regional tourism,
3. the persistent rise of domestic tourism, with Cambodian travelers who have rekindled their interest in their country's destinations during the pandemic era and turn their attention to less-visited provinces in the past, in particular Battambang, Aural, Sisophon, Pailin and Pursat, but also to a freshly beautified Siem Reap after a massive remodeling and renovation of its road network,
4. Phnom Penh residents as the main agents of domestic tourism, a deciduous pattern change in the relation between the capital city population and provincial Cambodia which may favor less-explored destinations such as the TSBR.

1.3.1 Global factors

The substantial inflexions in European and North-American travel trends will probably have lasting repercussions on long-haul destinations such as Cambodia. New travel platforms launched in the aftermath of the pandemic, such as G Adventures in the USA or Explora Expeditions in France, for instance, and green-conscious campaigns such as 'Pledge Not to Fly' in the UK20, tend to put the stress on our local and regional destinations.

On the other hand, the post-pandemic appetite for 'slow tourism', 'adventure travel' and 'back to Nature'
experiences might be a plus for out-of-the-beaten-paths such as the TSBR. Local (in particular Phnom Penh
residents) and regional tourism will be the main force in ecotourist development around TSL We are noting the
growing awareness from travel operators and governments of the potential ASEAN market for tourism industry.

Malaysian Airlines, for instance, launched in July 2022 the first "ASEAN pass" allowing to buy bundles of plane
tickets in order to fly around regional destinations[21].

In the last two years, some regional private investors have expressed their interest in potentially substantial investments in eco-preservation and ecotourism, as the public sector is more focused on infrastructure development. For instance, it has been reported in May 2023 that

> "Vietnam-focused private equity firm Mekong Capital is looking to build a climate fund worth up to $200 million as early as next year, focusing on investments that will help with the regeneration of forests in the Mekong region. The Ho Chi Minh City-based firm is setting up a team for the fund, which will look at businesses that will help restore forests including those involved in organic and seaweed farming in the Mekong region comprising Laos, Cambodia, Thailand and Vietnam." [22]

The commitment and reliability of these actors remain however to be proven.

1.3.2. The Siem Reap context

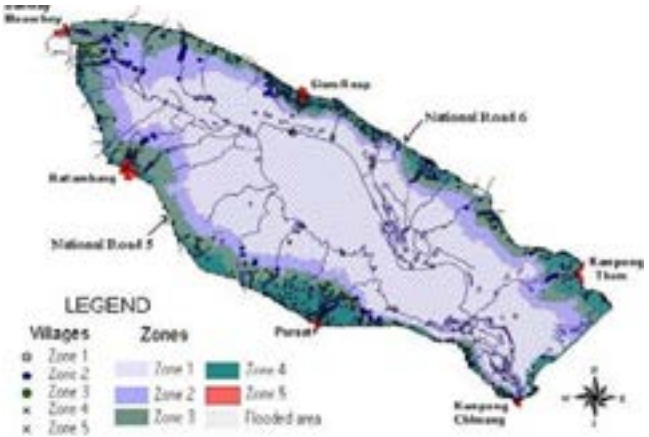
"Easing travel restrictions before Thailand or Vietnam and boasting a quite exemplary record in pandemic management, Cambodia has sent a reassuring message that was noticed worldwide", remarked in April 2022 David-Jaya Piot, the Siem Reap President of CHA (Cambodian Hotels Association)[23]; "it allows Siem Reap to gain the status of major regional pole of cultural tourism private and official strategists have been aiming for."

For the Siem Reap area, this means being in a more favorable position to address the conceptual and structural shortcomings at the core of the decline in the destination attractiveness prior to COVID-19 crisis, as they were listed and discussed in a 2019 technical assistance to the MTC report[24].

1.3.3 New trends in Cambodian tourism

Another noticeable trend in post-pandemic Cambodia is the growing attention given by younger generations to environmental issues and ecological preservation. This concern is no longer the exclusivity of 'woke' Westerners, and the interest risen by recent initiatives like the 'Sai [a hugely popular Cambodian singer] for the Mekong' events in riverside town, with the support of OXFAM[25], reflects this new mindset.

It has to be noted that a substantial number of eco-resorts, bungalow or tent retreats located in scenic areas have been launched by Cambodian entrepreneurs during pandemic times, with noticeable success among local travelers. Similarly, while typical luxury, big-chain hotels remain closed (for instance the Raffles and the Hyatt in Siem Reap), more green-oriented, low-density properties more or less situated in the same high-end category (as Phum Baitong or Templation Angkor Resort, also in Siem Reap)



Tonle Sap Area with topographic and urban zones and flooded area in 2000 (source: Keskinen, 2003).

[20] Initiated in Sweden under the term 'flygskam', the anti-airplane travel movement has recently developed into the 'train brag' trend in Europe.
[21] MHflypass ASEAN.
[22] Yantoultra Ngui ,'Vietnam's Mekong Capital plans Southeast Asia climate fund as early as 2024',Reuters, May 30, 2023.
[23] DJP 1.10.1
[24] TCBP and AFD 2019, 'The decline of international tourism numbers in Siem Reap'.
[25] Oxfam, British-founded confederation of 21 independent charitable organizations focusing on thealleviation of global poverty, founded in 1942, in the context of World War II, and led by Oxfam International. In Cambodia, one of Oxfam's many projects focuses on Clean water for communities hit by climate change.

have not only weathered troubled times but are currently benefiting from the post-Covid rebound, since they were able to avoid protracted close-downs and to keep most of their workforce in activity.

According to data released by the MTC in May 2022, more than five million national and domestic international tourists visited various areas during 2022 Khmer New Year and spent about $270 million, of which more than $260 million was spent by domestic (nationals and residents) tourists. In 2019, ecotourism accounted for 16 percent of all tourist visits, and the number of visits to ecotourism sites doubled between 2014 and 2019.[26]

1.3.4. Defining ecotourism

All around Cambodia, we have noticed and experienced the attraction to water-related leisure activities, near or on rivers, lakes and seaside. This is an intrinsic part of the Cambodian culture, manifest in popular destinations such as the Kampi stilted restaurants – particularly around Khmer New Year --, the recent expansion of waterfront restaurants at the northern tip of Koh Dach (Silk Island) in the Phnom Penh area, the gatherings of families and friends along the Kirirom River, the ongoing popularity of short-time river cruises in Phnom Penh, in the southern part of the Tonle Sap Lake, along Battambang, Kompong Cham, Kompong Thom, Kampot and Kompong Chhnang riverbanks.

Ecotourism was initially a niche tourism attracting discerning travelers, either on a budget or ready to splurge. Nowadays, the term definition is quite blurred, and it is only recently that a Cambodian inter-ministerial committee has been set up to put forward an official definition, with rules and regulations. According to several authors, ecotourism is essentially 'the direct opposite of mass tourism'[27]. In the eyes of several private sector operators in Cambodia we have consulted, ecotourism basically consists in offering travel experiences – including transportation, hospitality and activities – ensuring the durability -- and ideally the improvement -- of the surrounding ecosystem, as well as a fair and respectful interaction with the local communities. In addition to negative impact on local communities, mass tourism is now blamed to have generated no less than 8% of global carbon emissions in the years before Covid-19.

Nowadays, ecotourism developments are usually considered as such when they take into consideration the following essential parameters: a) Visitor Impact Management (VIM), b) Visitor experience and resource protection (VERP), c) Visitor activity management process (VAMP), and d) recreation opportunity spectrum (ROS)[28].

When listing the core indicators for sustainable tourism developments in 2017, authors from the School of Hotel and Tourism Management at Hong Kong Polytechnic University remarked that

> "water quality and solid waste management emerged as the two core issues under the dimension of environmental sustainability. Global concerns about water use and its role in tourism services warrant its inclusion as an indicator of sustainable tourism, with the key issue lying in the indirect water use of tourism, with food constituting a significant part of tourism's consumption of water. Solid waste management, similarly, represents one of the key environmental management issues of both small and large firms in the tourism and hospitality industry. It is also interesting to note that most of the other environmental thematic indicators lie outside the direct control of operators, with the exception of recycling and energy consumption."

TSBR case is a textbook illustration of the intrinsic tension between ecotourism and day-to-day economic and social preoccupations of the local communities. In considering An Giang area in Vietnam (see 1.7.2 below), researchers noted

> "the difficulties of balancing government initiatives that negotiate both support for communities and preservation of natural resources (...), delicate and controversial matters arising from the conflict between people's economic livelihood and local and international (visitor–tourist) notions of the ecological space (...) Perhaps more important than resource management is that we can see how community-based ecological cultural tourism has a contribution to make in addressing the persistent poverty in many localities in Vietnam.[30]"

The TSBR is intrinsically adapted to this specific kind of travelers looking for pristine natural areas and genuine interaction with local communities with a strong identity. However, the current ecological and economic strain on the lake and its riparian population requests a heightened responsible attitude and commitment from potential operators in the leisure travel sector. In term of national infrastructure, let us stress again here that the accessibility factor has to be always balanced against environmental risks. In its 2010 Final Report on 'Preparing the Provincial/Rural Road Asset Management Project', the Ministry of Rural Development (MRD) noted that

"none of the Project roads are located in the core areas or the buffer zone [of the lake] but rather in the transition zone where agricultural cropping and livestock are the main livelihood activities. However, improved road access might negatively impact upon buffer zone biodiversity values (flooded forests,fish and wildlife) and increase in squatter communes along these roads."[31]

[26] PHOUNG Vantha,'Great Outdoors Lures Eco-Tourists', Cambodianess, 9 June 2022.
[27] See ULLAH 2013, 'Finding suitable locations for eco-tourism development in Cox's Bazar', pp 36-8.
[28] See for instance COETZEE 2004.
[29] AGYEIWAAH E. et al. 2017.
School of Hotel and Tourism Management, The Hong Kong Polytechnic University, Hong Kong
30 LE HUE HUONG 2020, p. 875.
[31] MRD 2010, Preparing the Road Asset.

1.4 Attractiveness metrics for private investors and hospitality developers

This study will follow the OECD tourism recommendations for measuring competitiveness in tourism. Core indicators are:

- Tourism performance and impacts;
- Ability of a destination to deliver quality and competitive tourism services;
- Attractiveness of a destination;
- Policy responses and economic opportunities.

The evaluation has to be by essence a dynamic one, with ongoing reassessments impacted by

a) Natural changes: variation in water levels and accessibility are not only seasonal but more and more impacted by climate change (drought, violent and sporadic rains) and human activity (hydroelectric dams on the Mekong River). For record, an average of 62% of TSL waters originate from the Mekong River, and 38% from the TSL basin;

b) Demographic changes: lower fishing resources and evolving public regulations of land property status in the wetlands and in the buffer zone ('rezoning')[33] increase the variations in settlements and administrative districts and sub-districts;

c) Grey areas in environmental protection: until the legal frame for ecotourism development is not clearly defined and implemented, there is remaining risk that the attractiveness of RTPs might be unexpectedly affected by industrial or infrastructural developments nearby.

1.5 Survey methodology

1.5.1 Validation of locations and activities

At first stage, the study is focusing on field visits, gathering and perusing existing documentation, benchmarking worldwide lake-based travel experiences, and exploring possible solutions in ecotourism development with private operators familiar with the Cambodian context. The main objective is to identify and validate locations and activities suitable for ecotourism land exploitation, meeting with local communities. It reflects a private-sector approach to the issues at hand.

Also of note: conventional prospection tools such as questionnaires, polls, do not work in these communities. Our attempt to hand around questionnaires in May 2021 resulted unsuccessful. Lack of written practice, and the instinctive Cambodian rejection of anything seemingly too administrative, not 'poetic' enough, led us to discard our intended questionnaire, reverting to direct conversations with local elders and villagers.

1.5.2 Sustainable tourism indicators

We are applying several methods of evaluation based on Sustainable Tourism Core Indicators (STCI). While researchers agree on a number of STCI (7), definition and breakdown vary. Agyeiwaah, McKercher, and Suntikul[34] put forward a set of seven core indicators of sustainable tourism: (1) job creation, (2) business viability, (3) quality of life, (4) water quality, (5) waste management, (6) energy conservation, and (7) maintenance of community integrity.

Studying adventure tourism in South Africa, Tshipala, Coetzee and Potgieter select: (1) Sustainable tourism criteria (2) Socio-economic (3) Conservation of resources, (4) Culture and heritage, (5) Pollution reduction, (6) Conserving biodiversity, ecosystems and landscapes, (7) Indicators by Millennium Development Goals [MDG, a rather generic big-worded United Nations 2015 Program] and The International Ecotourism Society (TIES)[36].

On a global level, the Global Sustainable Tourism Council (GSTC) 163 Criteria and Suggested Indicators for Hotels were created "in an effort to come to a common understanding of sustainable tourism, and are the minimum that a hotel (or any type of built accommodations) business should aspire to reach. The Hotel Criteria are organized around four main themes: effective sustainability planning, maximizing social and economic benefits for the local community, enhancing cultural heritage, and reducing negative impacts to the environment.[37]"

We are following our own seven criteria (see 1.1), which does not exclude integrating STCI research in the study.

1.5.3 Documenting natural landscape and human context

Documenting traditional architecture and daily life (see in the area will help us in:

- recommending architectural motives and color palette for future resort developments;
- assess community needs in new technology (solar-based energy, waste management) that might be part CSR programs.

1.5.4 Toponymy

Around បឹងទន្លេសាប Boeung Tonle Sap, the toponymy reflects the poetic inventiveness of folktale traditions. Fauna- and flora-related naming is a staple, but legends and local traditions always lurk behind the toponymy. For instance មាត់ខ្លា Moat Klah, means literally 'Mouth of the Panther' but it is also the term used for 'funeral pyre". The folklore around the lake manifests many idiosyncratic traits referring to boating and fishing techniques, the water-land founding myths, and even some Javanese kings added for exotic effect.[37]

[33] See LAY Samean and KHOUTH Sophak Chakrya 'Tonle Sap Area in rezoning', 29 May 2022.
[34] AGYEIWAAH et al. 2017.
[35] TSHIPALA et al. 2014.
[36] GSTC website, with Criteria and Indicators downloadable. Also available in the onlinedocumentation for this report.
[37] See BAILLEUX 2002

1.6 Scope

1.6.1 Field Exploration

Phase 1 and Phase 2 field studies were directed by Jean-Benoît Lasselin, based in Cambodia since 2008 and leading partner at C4 Adventures. Since 2018. JBL has worked with travel agents, public institutions, companies and adventure agencies providing outdoor immersive tours, team building sessions, educational programs, location scouting, expeditions, C4 Adventures really made its full development since the pandemic, catering almost exclusively for people living in Phnom Penh, with a majority of Cambodian nationals. In August 2022, professional guide Valentina Mimiyeva joined the exploration team and conducted the field stuy for Phase 3 (rainy season). An expert in conscious adventure tours in Cambodia for 15 years, VM organizes jungle and hidden temples hiking tours with IndochinaVIP Tours, and also works as a private tour. Her popular activity of Sunday outings for urban residents, Phnom Penh One-Day Trip, congregates some 3.7 K followers on Facebook.

1.6.2 Coordination and Supervision

Project Supervisor Alexis de Suremain is the founder of Pavilion-MAADS, which develops its expertise in environment-conscious hospitality adapted to Cambodia since 2006. It operates the Siem Reap high-end resort with the largest solar energy system in the Cambodian hospitality industry to date (Templation). Adding to its own assessment of sustainable tourism development projects, it coordinates explorative visits by reliable travel influencers to widen the outlook on attractiveness of potential locations and activities. MAADS also persistently works in R&D on bioclimatic architecture and environment-friendly floating structures, and is now part of a laboratory project developing solar-based air conditioning. Important technological assets for future ecotourism developments such as waste and used water management are thoroughly considered with qualified companies.

1.6.3 Duration and Scope

The expected duration of this study will be 10 months, including 10 weeks of location scouting. As per the Research Protocol for Capfish Lot 1, we are not considering here homestay and other strictly community-based developments or activities. However, previous further experiences in that sector can be helpful for further recommendations aimed at private sector future stakeholders, in term of infrastructure, logistics, networking. Several lake-based ecotourist developments and

1.7 Benchmarking

projects have been considered throughout the process, including:

1.7.1 Inle (or Inlay) Lake, Myanmar

The loss of water surface and flooded areas in the lake situated by the foothills of the Shan Plateau, Myanmar, is even more drastic than what is observed at the TSBR:

> "From 1935 to 2000, the net open water area of Inle Lake in Central Shan State decreased from 69.10 to 46.69 km2, a loss of 32.4% during this 65-year period. Local beliefs are that losses in lake area have been even greater within the last 100–200 years. Various activities, including timber removal, shifting agriculture in the uplands by various ethnic groups, and unsustainable cultivation practices on the low- and mid-level hillslopes around the lake, have been blamed for both historical and ongoing sedimentation. We (...) propose instead that ongoing ''in-lake'' and ''near-lake'' agricultural practices are the main sources of contemporary sediment and loss of open water area. About 93% (i.e., 20.84 km2) of the recent loss in open water area of the lake is due to the development of floating garden agriculture, largely along the west side of the lake. Direct environmental impacts associated with this practice and with other agriculture activities within the wetlands and margins of the lake include sedimentation, eutrophication, and pollution."[38]

[38] SIDLE R.C. et al. 2007, 'Contemporary changes in open water surface area of Lake Inle, Myanmar'.

It has been also noted in the same essay that "residential and tourism development immediately around the northern part of the lake appears to produce more sediment due to the level of soil disturbance and their proximity to the lake". Contrary to the Tonle Sap situation, a large conventional hotel activity has developed on the northwestern shore of the Inle Lake – Nyaung Shwe area, in particular -- with some 40 high-end hotels in the 2010s, including international hotel chains such as Novotel.

So far, these hotels have operated within the relatively lax legal requirements for environment preservation, and assigned a part of their operative budget to CSR (3.3 pc in the case of Myanmar Treasure Hotel & Resort Group, for instance. Their contribution in solving crucial issues like wastewater treatment has been rather conventional, with the use of Johkasou Kubota Bio-Tanks in the case of the Aureum Palace Resort & Spa, a property which issued its Initial Environmental Evaluation (IEE) Report in 2015.[39]

With a rather rich cultural life – many pagodas are active on or around the lake, some of them 8- centuries old --, important religious festivals and craftmanship (silversmith, weaving), Inle Lake is easily accessible, with Heho Airport only 35 km far away. Yet the political situation since the February 2021 military coup has hampered post-Covid recovery of the tourism industry, local and international. We have asked the Myanmar Ministry of Hotels and Tourism (MHTM) for statistics related to 2021 and 2022 visits to the area, to no avail so far.

1.7.2a Vam Nao Reservoir Area, An Giang Province, Vietnam

This project set in the Mekong River Delta is a case study in the shortcomings of an ecotourism program involving local fishermen communities when the public-private-partnership (PPP) dynamics are unbalanced. A voluntarist approach by national and district-level administration was met with reluctance by local communities. Before operations were shut down by Covid-19 pandemic, surveys showed a rather low level of satisfaction from international and domestic visitors[40].

This example is an important indicator for Cambodia and particularly the area of interest, as PPP initiatives have been seldom implemented and are not yet part of the country's business culture[41].

1.7.2b Cai Rang Floating Market, Can Tho City, Vietnam

The clash between practicality of floating market places for local inhabitants and workers, and their attractiveness (or lack of) for tourists is particularly obvious and stringent in the TSBR area as well as in the Mekong Delta.

To the date, all efforts to make the Can Tho and Cai Rang floating markets fitter as 'ecotourism material' have collided against objective (increased contamination, noise and smell levels) and subjective (indifference or hostility from regular vendors and agents) obstacles. Researcher Nguyen Thi Huyn Phuong, who has studied said locations from the tourism industry angle, concluded that

> "the weakness in Cai Rang floating market development is the gap between the government's policies and their enforcement, as well as lack of understanding about tourism among stakeholders such as tourism companies, business owners and the local community. Because the tourism does not bring much benefits to the local residents, they do not care about what policies the government is trying to implement."

Earlier one, she had quoted the observation of a local stakeholder, commenting that

> "the birth of these markets was spontaneous and done by local residents; most stall-holders are farmers, who only know how to sell products for regular customers, so their communication and serving skills towards tourists are limited{...} In recent years, a number of projects have been designed to improve and develop the floating market, but there were few projects done. The reason for this situation is that most projects were too commercial, and they may deeply intervene in the floating market dynamic, risking the loss of the markets' natural and traditional beauty."[42]

It has to be noted that, to the date, all attempts to create floating markets attractive to international tourists on Tonle Sap Lake have been unsuccessful, as noted in FACT May 2023 Interim Report.[43]

[39] E Guard Environmental Services 2015, Initial Environmental Examination (IEE) Report for Aureum Resort & Spa.
[40] LE HUE HONG et al. 2020.
[41] See DOWNS Josh, 'Public-Private Partnerships: The modern face of public investment in Cambodia', Khmer Times, 11 March 2022.
[42] PHUONG 2017.
[43] Draft FACT Report: 'The Tonle Sap Lake has enormous eco-tourism potential, but the sector isunderdeveloped, suffers a lack of tourist infrastructure and hospitality services, and has not featured highly in national public policies or financial priorities. Agriculture, Non-Timber Forest Products (NTFPs), and fish processing are other income generation routes in the target areas, but communities lack skills for adding value, marketing, and business management. Access to affordable energy remains a significant impediment to productivity, with a third of HHs still off the grid, limiting opportunities for developing non-primary enterprises and services. The project's overall objective is to contribute to the socio-economic development and resilience of fishing communities in the TSBR. The aim is to improve sustainable livelihoods and increase access to essential services for fishing communities in the West TSBR and reduce the environmental pressures on the TSBR in the long term.'

1.7.3 Toba Lake, Sumatra, Indonesia

At over 1,145sq km, and up to a depth of 450 meters in places, Lake Toba is considered the world's largest – and one of the deepest -- crater lake as well as being the largest lake in Southeast Asia and one of the deepest in the world.

Heavy boat traffic on Toba Lake is substantial, especially since its nine major ports, most of them equipped for leisure cruises, have been renovated in 2021-2022, during the pause induced by the pandemic. An 'eco-friendly capsule hotel' has opened in the vicinity in 2021, reaching 50% occupancy rate in spite of the pandemic due to its innovative concept, is drawing travelers amid the pandemic. In collaboration between the Ministry of Tourism and Creative Economy (MTCE) and the private sector, the Toba Caldera Resort (TCR) boasts "semi-permanent buildings for an experience closer to nature, innovative facilities such as smart glass windows, mood lamps, and Bluetooth audio speakers controlled by a special mobile phone application, for an experience closer to nature"

1.7.4 Kenyir Lake, Malaysia

Capsule hotel in Lake Toba area (photo Antaranews)

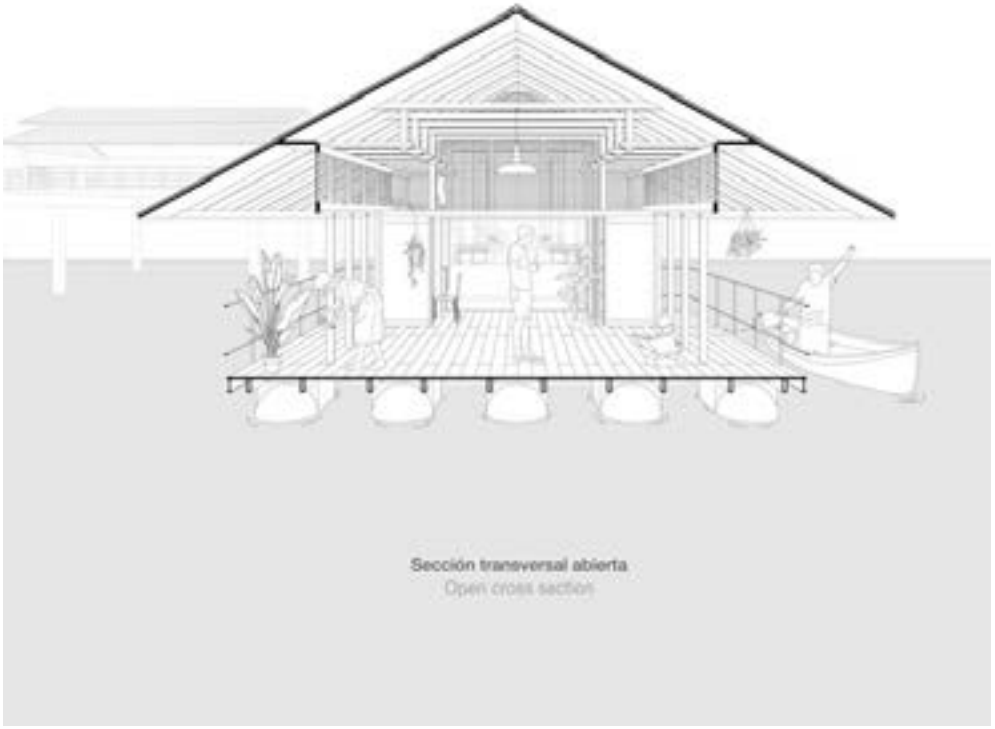
Labelled as one of the major ecotourism destinations in Malaysia, this artificial lake, the largest man-made lake in Southeast Asia (2,090 km2) is a fish – Kelah Fish Sancturary -- and bird haven surrounded by rainforests. The main tourism facility are houseboats for rent, with 2-night stays on average. Some 340 islets and 14 waterfalls make the lake a quite scenic area.[44] Boating (and kayaking) is comparatively easy, since the water level remains stable around the year.

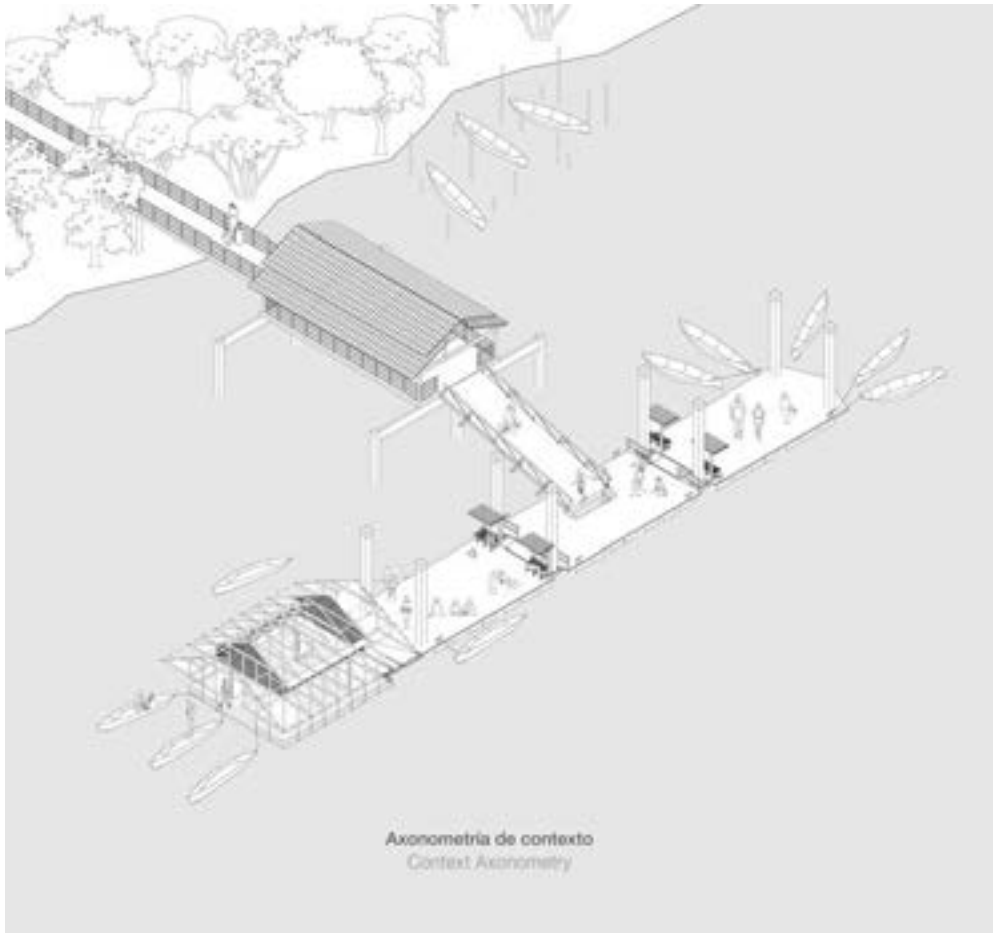
In September 2021, at its post-Covid reopening, the lake received some 35,000 monthly visits, almost all by local visitors since interstate travel inside Malaysia had not been reauthorized. According to the Central Terengganu Development Authority (Ketengah), 3,300 visitors per month stayed at the boat houses, while 3,000 used speedboats daily, and 1,100 the raft house services. However, the major high-end resort on the site, Lake Kenyir Resort & Spa, with 70 acres of land, has permanently closed in 2021.

1.7.5 Balkhash Lake, Kazakhstan

Lake Balkhash in southeastern Kazakhstan is one of the largest lakes in Asia and the 15th largest in the world, with a rare mix of saline and fresh water. Located in a basin draining seven rivers, in particular the Ili – mostly fed the snowfelt from China's Xinjiang mountains, it covers about 16,400 km2 (6,300 sq mi) but, like the Aral Sea, it is shrinking due to diversion and extraction of water from its feeders.

[44] ADVENTORO.COM, 'Kenyir Lake, Largest Man-Made Lake in Southeast Asia', 15 Aug. 2017.





Heavily industrialized (mining, metallurgy) during the Soviet era, the area has been set in 2020 for a major tourism development by the Karaganda Region Akimat (administration). More than 20 new coastal recreation areas will be developed until 2025 on empty parts of the coastline, along with the repair of the Karaganda-Balkhash highway and the reconstruction of the Balkhash city airport. While the lake area attracted 80,000 visitors yearly before Covid, authorities plan to accommodate 400 to 500,000 visitors by 2025, mostly on 20 km of coastline located around the 0Chubar-Tyubek and
Torangalyk villages.[45]

1.7.7 Islay Santay, Ecuador

The Observatory developed on the shores of Santay Island, Ecuador, is a floating structure adapted to tropical conditions, with zinc, wood and metal as core materials. A movable gangway gives access to the large platform, designed for nature watching yet easily adaptable into accommodation units.

According to ArchDaily review[46], "the Observatory reflects on new possibilities of habitability on

[45] See Yergaliyeva Aidana, 'Kazakhstan to Renovate Tourism Infrastructure Around Balkhash Lake', Astana Ti1 June 2020.

the water, where architecture is expressed as a convertible and adaptable space for local artists, visitors, and the community, sharing a vision that recovers the almost extinct traditional floating habitat systems, in the face of a development that moves away from the river as a resource to make a city." Architects: Juan Carlos Bamba and associates.

1.7.8 Biwa Lake, Japan

The shores of this lake near Kyoto have been intensively urbanized and developed, with several theme parks and ecotourism activities[47], a bridge and an extensive road network. The lake and its tributaries have attracted a particular interest from environmentalists and nature and culture preservation programs. In particular, the 'Harie Satoyama Mizu Hakubutsukan' (Harie Managed Land and Water Museum), describing the region's various connections to water including the regional Harie Okawa River and Lake Biwa, and focusing specifically on "Kabata," a network of canals linking natural springs at individual houses with other houses for water use by residents, has received Japan's Ecotourism National Award. Of note is the publication in 2018 of the Lake Biwa Guidebook, complete with updated geographical and human activity description, a document that we would recommend to develop for the TSBR, since the latest comprehensive MoE Tonle Sap Information Guide dates back to 2007. The guidebook assesses the threats the lake's biodiversity is facing, especially with "the deterioration of indigenous fish habitats and the segmentation of their migration from the lake to lagoons, attached lakes or paddy fields around the lake for spawning.[48]"

1.7.9 Great Salt Lake, Utah, USA

This emblematic body of water has attracted residential development – some 2,5 million people are now living on its shores – and tourist activity, with ski resorts on the mountain slopes nearby. Ecosystem threats are particularly alarming: due to human activity and climate change, "the lake, which covered about 3,300 [8,546 km2] square miles in the late 1980s, has since shrunk to less than 1,000 [2,589 km2], according to the U.S. Geological Survey." Erosion of dried-up areas is now an environmental hazard, with the risk of releasing toxic waste left by mining activity in the area, a factor deemed as "a nuclear time-bomb" by experts.[49]

1.7.10 Ecotourism in Rwanda

This case study in successful ecotourism development illustrates the key requirements for a fair, sustainable, in particular:

a) Creation of a department for community conservation to work on local education and social infrastructure projects.

b) Revenue sharing: Since 2005 ORTPN (which was absorbed into the Rwanda Development Board, or RDB, in early 2009), with the support of the government, has overseen a revenue-sharing scheme whereby 5 percent of tourism revenues from VNP fees are injected into local community projects around the national park to ensure that the local people feel some ownership of the parks (box 14.2). Although it is not known what proportion of the budget of local councils is represented by the shared revenue, it is clear that local governments must be actively involved in selecting local projects to finance.

c) Employment opportunities are offered through national parks: guides, trackers, and antipoaching agents, for example. Some of the private tour operators also offer community-based tourism activities, such as stays with local families, village walks, banana beer production, and even volunteer opportunities in local communities.[50]

The exemplarity of the Rwanda experience is also manifest in the strict regulation on visit frequency, waste collection, and other environmental preservation requirements. 1.7.11

1.7.12 High-End Floating Accommodations Worldwide

The demand for high-end glamping accommodations linked to body-of-water access is on the rise worldwide. More authentic (and sustainable) access to nature calls for the end of the outdated mapping of typical resorts before Covid: a dense concentration of accommodation units around the core of a traditional leisure concept, the swimming pool(s) and the restaurant area (s). Most tellingly, big hospitality brands are turning away from high-density structures in order to give priority to privacy, authenticity and remoteness. In 2021, for instance, the famous Indian chain Taj has launched the brand 'Ama by Taj', offering the privatization (with high-standard staffing included) of remote "villas, cottages and bungalows". A kind of gentrified mix of Airbnb and classic palace concept that would work wonders in a context such as TSBR.

1.7.13 The Mekong Delta Plan

This ambitious project, with the support of The Netherlands (a country expert in wetland management, started with a bang in 2013. The Road Map Statement stated that

> With regards to agriculture, the Mekong Delta is to further diversify its products, strengthen intensive farming, establish areas specializing in particular plant varieties like rice, fruit and short-time industrial trees. Natural materials for industries and animal feed will also be heavily developed. Aquaculture, a strength of the region, will have due attention paid to its expansion. The region will invest in developing the irrigation system and protecting ecosystems, especially the coastal salt-marshes. Small and medium-sized industries will be efficiently developed. The industrial sector will soon exploit the gas potential of the Southwest sea area, aimed at developin gas-electricity nitrogen fertiliser industry. Additionally, industrial clusters, sea transport, agriculture and aquaculture processing, engineering industry and construction material production will also

[46] See COULLERY 2022.
[47] See for instance the options across Shiga Prefecture.
[48] SHIGA PREFECTURE, Lake Biwa Guidebook, Chap 2.
[49] FARELLE Christopher, 'As the Great Salt Lake Dries Up...', The New York Times, 7 June 2022.
[50] NIELSEN Hannah and SPENCELEY Anna, 'The Success of Tourism in Rwanda: Gorillas and More', Background paper for World Development Report 2011, World Bank, 2011.

be developed. Can Tho city is considered the centre for these efforts. In the services sector, the Mekong Delta provinces will pour appropriate investments into developing trade and tourism, especially eco-tourism. King Giang province could be transformed into a tourist hub.[51]

While assessments for this project outcome remain scarce, the methodology applied there is a positive inspiration for TSBR ecotourism development.

1.7.14 Ganvie, Benin: 'Largest floating village in Africa'

Despite striking differences with the here considered area (floating village as safehouse from invaders and hostile tribes, shallow water with an average of 1.50 m), the large floating village of Ganvie (Benin) is a case study in lake-based sustainable community growth and the negative impact of tourism on this fragile ecosystem.

As Paul Yakubu noted,

> the story of Ganvié is one in which architecture is a product of a culture that is mindful of its surroundings, particularly Lake Nokoué. The village's residents held a deep respect and care for the lake, which influenced the design of their architecture and urban systems. The floating village's urban environment was sustained using innovative systems that were rooted in the residents' local occupation. This fostered a direct relationship between the people, their work, their lifestyle, and the village's sustainability. Ganvie's floating village serves as a model not only for designing potential floating cities but also for approaching sustainability in architecture.[52]

Photo © Victor Espadas González 2018

[51] Mekong Delta Plan Annual Report, 2013.
[52] YAKUBU 2023.

1.8 Documentation: existing reports and studies

We have gathered and perused existing documentation, mostly with online access (already online or uploaded by ourselves on a dedicated webpage). See Documentation section.

2 Exploration and Background Findings

2.1 Natural factors

The biosphere area covers 31,282 hectares at the northwest tip of the Tonle Sap Lake and plays host to species including Greater and Lesser Adjuncts, Black-headed Ibis, Painted Stork, Milky Stork, Spotbilled Pelican, Grey-Headed Fish Eagle and many more species. Of the three biosphere core areas on the Tonle Sap Lake, Prek Toal is the most popular with birdwatchers. The best time to explore is the dry season between December to May when flocks of migratory birds congregate at Prek Toal. While the dry season progresses and the water recedes, the number of birds increase, but the tour to some of the more important viewing areas becomes more difficult, requiring to rent a small motorboat for onehour drives along the stream to reach the bird-watching tower.

The Tonle Sap Lake is surrounded by floodplains and freshwater swamps, seasonally flooded rice fields and grasslands surrounded by national roads 5 and 6. 80% of the

floodplains are covered by swamp scrubland. Flooded forests serve as a natural protection barrier for villages against inundations and soil erosion. The Tonle Sap Lake is considered as a highly effective ecosystem (flooded forests in particular), providing crucial habitats for many flora and fauna species. Common species in the region include Macaca fascicularis (long-tailed macaque), Lutra sumatrana (hairy-nosed otter), Heliopais personata (Masked Finfoot, vulnerable and endangered species), Malayemys subtrijuga (a species traditionally thought to bring good luck to inhabitants), Crocodylus siamensis (Siamese Crocodile vulnerable and endangered species due to high demand) and Leptoptilos dubius (Greater Adjutant, vulnerable and endangered species). Overall, 225 bird species live within Tonle Sap, of which 17 are listed as endangered worldwide[53]. Nine important bird areas serve as protection and conservation sites – these are located at the reserve's boundary and cover approximately 23% of the total area. Browse an updated checklist of native birds of Cambodia.

TSBR is also inhabited by several endangered species, including Lutra sumatrana, the hairy-nosed otter (FR civette-loutre de Sumatra) which was considered extinct until 1998, except from a dwindling population inThailand[54].

[53] UNESCO 2015, Tonle Sap Biosphere Reserve.
[54] See Species of Thailand, 2022.

2.2 Demographic, social and environmental factors

The Tonle Sap region is the second most populated area in Cambodia, according to the 2019 General Census55, with 4,852,964 (52% women) out of a national population of 15,552,211. The ethnic origin of the North West Tonle Sap Lake residents includes Cham, Vietnamese and Khmer.

- According to MoE Tonle Sap Information Guide, 340,000 people lived "in the immediate surrounds of the lake" in 2007.
- Paradoxically when considering the Tonle Sap Area's relatively abundant natural resources, it remains surprising that "a large proportion of its population live in severe poverty: the region actually has the highest incidence of poverty within all the regions in Cambodia (MoP, 1999)
- In a 2004 RAP (Rapid Assessment of Perceptions) report for ADB, it was stated that "40% of rural households live below the poverty line in the TSBR while 82% of houses in rural areas have no toilet, and less than 1% have electricity."
- Battambang province had in 2019 a population of 490,424 male inhabitants, 506,745 female, and a total of 997,169, a slight decrease from the 2008 census (511,378 (M), 525,145 (F), total 1,036,523 people. Density is 68 per km2, slightly higher than the national density of 64.
- Siem Reap province had in 2019 a population of 497,450 (M) and 516,784 (F), total 1,014,234, an increase of 1.1 % from the 2008 Census (total 903,030 people (440,395 (M), 462,635 (F)) female or 6.3% of the country's total population (14,363,519 person in Cambodia, 2007, provincial government data), with a density of 87,7 per km2.
- From 2014 to 2018, TSL area population has decreased faster than in other parts of Cambodian countryside, according to MRC 2018 SIMVA Report. Our own field observation points to a reversal in this trend, with a) reverse migration from urban areas due to Covid-19 b) increase of households with mixed activities (fishing and farming).
- Another demographic evaluation resource is a 2018 study evaluating the ratio population-inflooded-areas/plastic waste production:

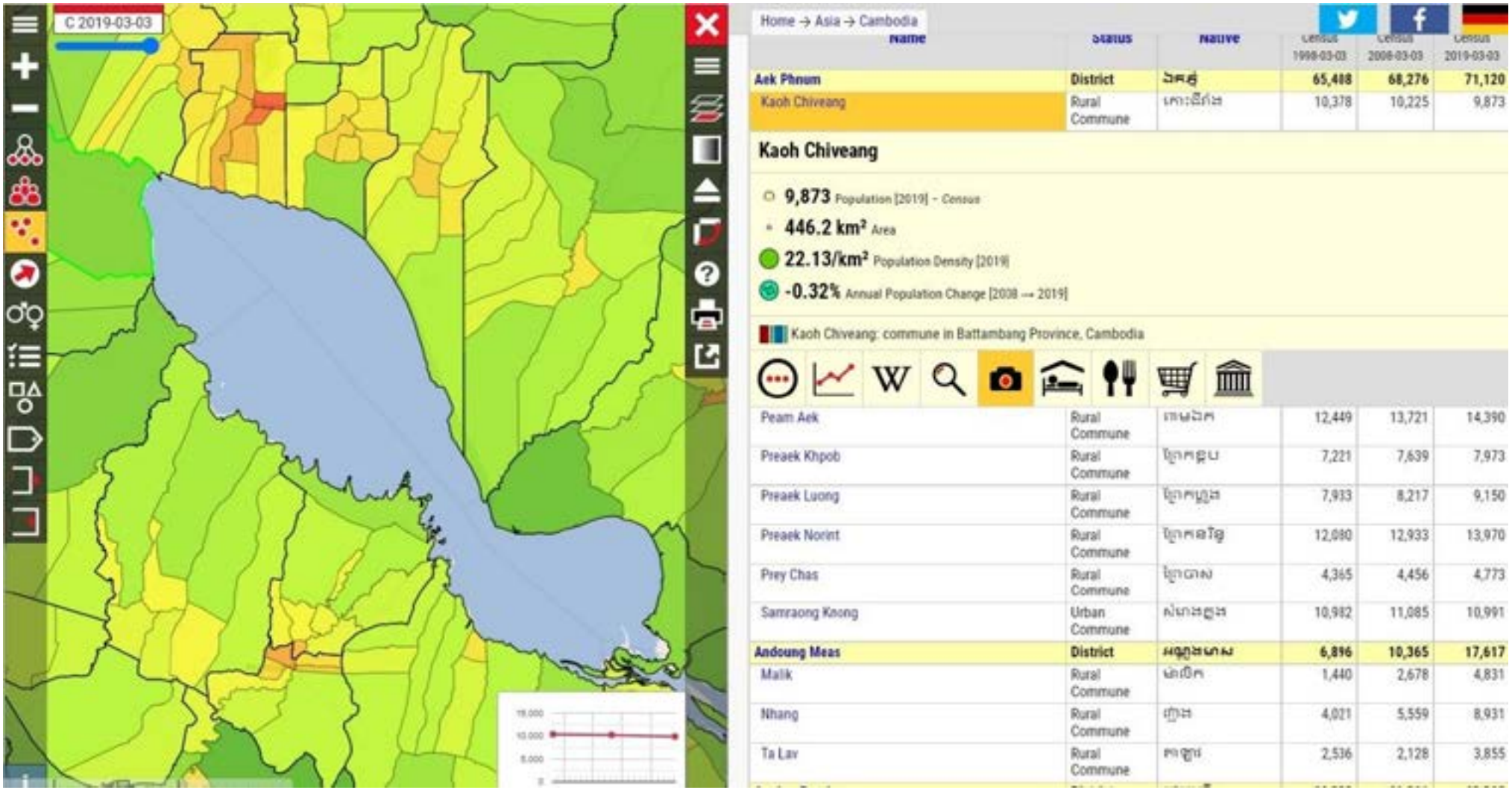
Province	Flooded Population	WGR capita^{-1} day^{-1} (kg)	TWC (%)	Plastic(%)					
				Middle (18.8)		High (19.37)		Low (10)	
				$MPWGR_{pc}$ (kg)	MPW_{pc} (tons)	$MPWGR_{pc}$ (kg)	MPW_{pc} (tons)	$MPWGR_{pc}$ (kg)	MPW_{pc} (tons)
Battambang	4311	0.63	86	5.07	22	6.32	27	3.27	14
Kampong Cham	130,085	1	83	9.43	1227	11.76	1529	6.08	792
Kampong Chhnang	124,730	0.4	62	8.66	1080	10.79	1346	5.58	697
Kandal Province	146,340	0.83	54	21.54	3152	26.85	3929	13.90	2034
Kampong Thom	35,495	1	52	27.27	968	33.99	1206	17.59	624
Phnom Penh	161,931	1	83	9.43	1527	11.76	1904	6.08	985
Pursat Province	5356	0.03	72	0.47	3	0.59	3	0.30	2
Siem Reap Province	48,170	1.38	61	30.78	1483	38.36	1848	19.86	956
Floating communities	7236	0.03	0	1.70	12	2.12	15	1.10	8
Total	663,656				9473		11,807		6112

This survey shows an estimated population of 4311 in Battambang Province wetlands, 48,1770 in Siem Reap Province wetlands, and a total of 7,236 for Floating Communities (source: FINNEGAN and GOURAMANIS 2021)

Impact of Covid-19 episode is constantly reassessed. The loss of job positions in the Siem Reap hospitality sector has triggered the return of a higher qualified, often bilingual workforce to the rural areas, which might be an asset for future ecotourism development in the TSBR area.

What we have found in our seasonal surveys is a more marked contrast between relatively high density areas andlow density ones. The TSBR alternates densely populated areas and semi-desertic ones. For instance, Kampong Khleang district had a 213/km2 population density rate in 2019, yet only 17 kms further south the Peam Bang ពាមជាង district showed 12.59/km2.

[55] NIS-MP 2020.



Name	Status	Native	Census 1998-03-03	Census 2008-03-03	Census 2019-03-03
Aek Phnum	**District**	ឯកភ្នំ	**65,488**	**68,276**	**71,120**
Kaoh Chiveang	Rural Commune	កោះជីវាំង	10,378	10,225	9,873
Peam Aek	Rural Commune	ពេមឯក	12,449	13,721	14,390
Preaek Khpob	Rural Commune	ព្រែកខ្ពប	7,221	7,639	7,973
Preaek Luong	Rural Commune	ព្រែកលួង	7,933	8,217	9,150
Preaek Norint	Rural Commune	ព្រែកនរិន្ទ	12,080	12,933	13,970
Prey Chas	Rural Commune	ព្រៃចាស	4,365	4,456	4,773
Samraong Knong	Urban Commune	សំរោងក្រោង	10,982	11,085	10,991
Andoung Meas	**District**	អណ្តូងមាស	**6,896**	**10,365**	**17,617**
Malik	Rural Commune	ម៉ាលិក	1,440	2,678	4,831
Nhang	Rural Commune	ញាង	4,021	5,559	8,931
Ta Lav	Rural Commune	តាឡាវ	2,536	2,128	3,855

The City Population Interactive Map is a useful tool to identify population density and potential workforce around sites of interest:
The major agglomerations located within the zone of interest are:

- Bak Prea ភូមិបាក់ព្រា. floating villages with seasonally fluctuating population.
- Chong Khneas ចុងឃ្នៀស (also Chong Knies, 1,400 households (1.200 according to General Ccnsuis), 5,931 registered inhabitants -- 2,981 M, 2,950 F --, with a household size of 4.9). A large harbor is at the moment under construction at Chong Khneas. A first renovation and extension phase was completed in February 2022, after the harbor operation license was granted to the public company now in charge of Angkor Archeological Park ticketing (Angkor Enterprise).[56]
- Kampong Phluk កំពង់ភ្លុក, 3,202 inhabitants in the 2019 census.
- Kampong Khleang កំពង់ឃ្លាំង, 10,709 inhabitants in the 2019 census. 2.2.1 Ecotourism in the TSBR

[56] CTN, 'Chong Khneas Tourism Port back in service after renovation works', 17 Feb 2022.

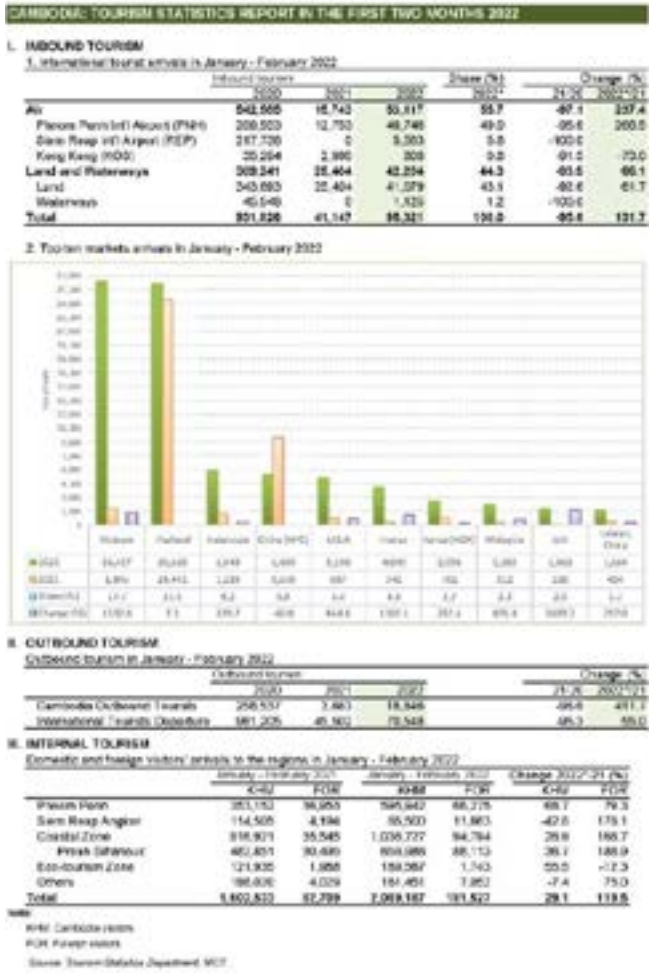
Kampong Phluk, 2021

2.2.1 Ecotourism in the TSBR

According to numbers shared with local authorities (not willing to be named), over 300 international tourists were visiting the Tonle Sap area daily before February 2020 (before COVID19 international crisis). Osmose (NGO operating self-proclaimed eco-tours on the Tonle Sap) estimates a number of 5,000 visitors in Prek Toal floating village in 2018. No information on eco-sustainable tourism is available as this concept is frequ ently confused with western hospitality standards by the representatives we met. However, the Ministry of Tourism has recently added the category 'Eco-Tourism Zone' to its geographical breakdown of visitors (international and domestic) statistics – along with 'Phnom Penh', 'Siem Reap Angkor', 'Coastal Zone 1', Preah Sihanouk' and 'Others':

In August 2022, in its Prakas (Executive Order) n 294 Bror.Kor.Bor.Sothor regarding small scale ecotourism development projects in Protected Areas (PA) and Biodiversity Conservation Corridors (BCC) – thus applicable to TSBR --, the Cambodian Ministry of Environment put forward an official and adapted to said areas definition of

- Ecotourism: "Travel to or tourism services and activities in Pas, BCCs and/or CPAs that have limited impacts on the natural environment within and surrounding the place, and are meant to supporting conservation efforts, enhancing awareness and appreciation of the nature and culture in the area, and benefiting local and regional socioeconomic development in a sustainable manner."


CAMBODIA TOURISM STATISTICS REPORT IN THE FIRST TWO MONTHS 2022

I. INBOUND TOURISM

1. International tourist arrivals in January - February 2022

	Inbound tourists			Share (%)	Change (%)	
	2020	2021	2022	2021	21/20	22/21
Air	542,666	16,743	53,317	55.7	-97.1	237.4
Phnom Penh Int'l Airport (PNH)	209,503	12,753	48,746	49.0	-93.6	282.5
Siem Reap Int'l Airport (REP)	287,726	0	5,393	5.8	-100.0	
Kong Kong (HGK)	35,254	2,990	309	0.8	-91.5	-73.0
Land and Waterways	309,341	25,464	42,254	44.3	-93.5	66.1
Land	345,883	25,464	41,079	43.1	-92.6	61.7
Waterways	45,548	0	1,525	1.2	-100.0	
Total	851,826	41,147	95,321	100.0	-95.6	131.7

2. Tourism markets arrivals in January - February 2022

II. OUTBOUND TOURISM

Outbound tourism in January - February 2022

	Outbound tourists			Change (%)	
	2020	2021	2022	21/20	22/21
Cambodia Outbound Tourists	258,537	2,483	18,946	-99.0	663.1
International Tourists Departure	981,205	45,160	78,548	-95.3	73.9

III. INTERNAL TOURISM

Domestic and foreign visitors' arrivals to the regions in January - February 2022

	January - February 2021		January - February 2022		Change 2022/21 (%)	
	KHM	FOR	KHM	FOR	KHM	FOR
Phnom Penh	351,153	56,955	595,642	68,276	69.7	19.9
Siem Reap Angkor	114,505	4,194	95,503	11,883	-42.6	175.1
Coastal Zone	616,901	35,545	1,036,727	94,784	29.8	166.7
Preah Sihanouk	462,451	30,680	809,986	88,113	36.1	188.9
Eco-tourism Zone	121,935	1,958	158,567	1,743	55.0	-12.3
Others	186,636	4,029	191,451	3,952	2.4	-7.5
Total	1,603,633	97,799	2,069,167	181,527	29.1	119.6

KHM: Cambodia visitors
FOR: Foreign visitors
Source: Tourism Statistics Department, MOT

Kampong Phluk, 2021

- Minimal Impact: "The least impact or change upon biodiversity resources, ecosystem, natural landscape, environmental condition, visual amenities of the place, socio-cultural characteristics and values in the area, tourist experience and quality of visit, local cost of living, as well as upon carrying capacity of the place, conservation efforts, and local and regional capability for economic development and growth."[57]

"Ecotourism is defined as responsible travel to natural areas that conserves the environment and improves the well-being of local people," stated TIES in its Founding Declaration (1990) In 2015, the NGO attempted to broaden this definition, adding: "Ecotourism is now defined as "responsible travel to natural areas that conserves the environment, sustains the well-being of the local people, and involves interpretation and education" (TIES, 2015). Education is meant to be inclusive of both staff and guests." [58]. Ever since, researchers and stakeholders have pushed for a more specific definition, and this effort is still going on. It is to be taken under consideration that ecotourism is a disturbance of the ecosystem per se. A minor controlled population on large natural spaces is a 'controlled disturbance' [59]. Ecotourism is based on the enjoyment of natural sites, which can only take place if ecosystems are not excessively disturbed.

We need to balance the pressure of our industry on nature and the need for income of the local population, also attempting to talk them away from more impacting activities (logging, mass fishing, hunting...). Policy Coherence for Sustainable Development (PCSD) recommendations have to be formulated according to the ecosystem specifics. For instance, infrastructural improvement such as road network is not always bringing social benefits to the area: negative impact has to be considered as well, particularly the risk of facilitating poaching and unchecked settlements. On June 29, 2023, King Norodom Sihanouk signed the **Environment & Natural Resources Code,** opening the way to a juridical and ethical framework unprecedented in Cambodia.[60]

2.3 Existing operations in the environment and leisure travel field

To date, many sustainable nature conservation projects have been financed on the Tonle Sap wetlands, including on the Northwest region on the lake. Most of these projects are focusing on the security of the critical benefits that nature provides to humanity. This report will mention selected and currently operational initiatives in order to give proper perspective and understanding of various projects:

2.3.1 Fisheries Action Coalition Team (FACT):

established in 2000, coalition of NGOs working on fisheries and environmental issues around the Tonle Sap Lake. FACT's program mobilizes provincial NGOs and Community Based Organizations (CBOs) to more effectively conduct advocacy programs that respond to development policies and development programs. FACT is also partnering with Oxfam and Tak Saat 1001 for providing purified water and water sanitation to the Lake's communities[61]

Mapping of FACT activities in 2022 (courtesy of Youk Senglong)

2.3.2 Conservation International:

founded in 1987, combining fieldwork, science, policy and finance toward global nature protection (biodiversity and well-being). Present on the Tonle Sap Lake since 2008, financing ecosystem wildlife and alternative economy awareness.

2.3.3 Cambodia Images:

Active since 2016, organizes photo tours in various parts of Siem Reap countryside, with a program dedicated to floating villages, in particular Mechrey and Kampong Khleang. Average rates for ½ day photo tour: USD 100.

2.3.4 Osmose:

NGO active in the area since 1999 with the aim of developing ecotourism activities around Prek Toal (ornithological reserve), of promoting wildlife conservation and ensuring economic benefits for local communities (restaurants, boatmen, crafts, accommodation). Osmose claims to be the first tourist and development actor in the Prek Toal area. No checkable numbers have been accessible so far.

2.3.5 Fondation Ensemble:

Tonle Sap Conservation Project implemented from November 2011 to October 2015 to increase local income generating opportunities, improve and develop new livelihoods and food security in and around Kampong Prak sanctuary in collaboration with local communities and the Cambodian government.

2.3.6 Cambodia Bird Guard Association (CBGA):

Founded in 2016 to protect and promote Tonle Sap wildlife. CBGA develops ecosystems awareness (distribution of educational material promoting responsible practices).

[57] PRAKAS 294, 2022, p 15.
[58] TIES Overview Page.
[59] SAVAGE 2019, Ecological Disturbance and Nature Tourism.
[60] Khmer Times, 7 June 2023.
[61] Oxfam Report, May 2022.

2.3.7 Wonders of the Mekong:

A partnership between the University of Nevada Reno's Global Water Center and the Inland Fisheries Research and Development Institute of Cambodia (IFReDI), with funding from U.S. Agency for International Development (USAID). Other collaborators in addition to FISHBIO include Utah State University, the University of Washington, and the University of Sydney. This interdisciplinary team is studying the economic, environmental, and cultural importance of the Mekong to describe the tangible and intangible benefits of this rich ecosystem. Launched the Mekong Conservation Heroes[62] program in 2018.

2.3.8 Sam Veasna Conservation Tours:

The most consistently operating eco-tourism initiative in the TSBR over the years, with a solid expertise in flora and fauna.

2.3.9 Easia Travel

A partner of EC-certified Travelife program, the sustainable tourism agency has organized homestays on floating houses built by the operator itself before Covid-19 pandemic.

2.3.10 "Establishment of Environmental Conservation Platform of Tonle Sap Lake"

This transdisciplinary research collabo-ration (TDRC) project was implemented during the period of 2016 and 2021, under the framework of Science and Technology Research Partnership for Sustainable Development (SATREPS) being funded by the Japan International Cooperation (JICA) and Japan Science and Technology Agency (JST), involving from the Cambodian side the Institute of Technology ofCambodia (ITC), the Ministry of Environment (MOE), Tonle Sap Authority(TSA), the Ministry of Water Resource and Meteorology (MOWRM)[63].

The above-listed initiatives are promoting the involvement of local communities. However, the village chiefs of Mechrey, Por Treay, Kampong Phluk and Beong Pearaing are reporting a noticeable and sudden disinvolvement of international initiatives since April 2020, which has left a feeling of abandonment in the individuals trained and involved in those projects. This depreciation is heightening village leaders' interest in fast cashable activities.

In Project Phase 3, we are asking these stakeholders about their stance regarding possible development of ecoutourism resorts in the area (see Questionnaire).

2.4 GIS software identification

While Google Earth Pro in the first stage exploration, we have opted for Google Maps, a tool more user-friendly and easy to share.

2.5 Location sampling

A total of 17 to 21 locations have been considered throughout the research-exploration.

a) As of the end of mid-season 2022, we had identified

- 2 RTPs, 10 POIs, 3 CTDs (Cultural Tourism Points) and 2 CSRTs (Corporate Social Responsibility Targets) in Battambang area;
- 4 RTPs and 6 POIs in Siem Reap area.

b) During the rainy season, we refined the exploration area and identified 6 new target points and 4 CTDs.

c) In the final recommendations, we are selecting 5 Zones with 14 identified RTPs, each with accessibility -- by road or boat, in November (High Water Level), January (Medium Water Level), April (Low Water Level). These recommendations include:

- **All-year-long recommended target points for resort development**
- **Pop-up activity infrastructures, movable exploration bases and leisure boat and trekking routes.** See Closing Exploration Report **(Sept. 2022-May 2023)**

2.6 Exploration schedule & challenges

2.6.1 Timetable

1 week per month depending on milestones validation. New deadline: March 2023 (after additional dryseason exploration).

2.6.2 Problems & Risks

According to the numbers shared with local authorities (not willing to be quoted), over 300 international tourists were visiting the Tonle Sap area daily before February 2020 (before the COVID19 crisis). Osmose (NGO operating so-called eco-tours on the Tonle Sap) estimates a number of 5,000 visitors in Prek Tuol floating village in 2018. No information on eco-sustainable tourism is available as this concept is frequently confused with western hospitality standards by the representatives we met.

Nowadays, the term definition is quite blurred, and it is only recently that a Cambodian interministerial committee has been set up to put forward an official definition, with rules and regulations.

Problems:

1. In several locations we had selected during the dry season, we found out that unexpected human activity such as road construction was severely impacting the attractiveness of said locations, for instance by driving away local fauna.

[62] Mekong Conservation Heroes

[63] Findings are collected in YOSHIMURA et al.: 2022.

2. The seasonal water was in much location lower than expected, natural factor that prevented us to evaluate possible activities in the area (ex: no water – no kayaking).

3. While trying to identify potential CSRTs (Corporate Social Responsibility Targets), we were often prevented to take photos or get background information by local guards.

4. Toponymy and exact localization of hamlets and villages in the wetlands are often challenging, as names and settings change often for these oft mobile settlements.

Risk:
1. We are encountering opacity and reluctancy whenever attempting to learn more about the land ownership status of potential developments.
2. We are in discussion with the Ministry of Environment to have these observables eased.

2.7 Meetings with relevant stakeholders in Phnom Penh/Siem Reap

This report is enriched with interviews with the following experts in tourism, heritage preservation, environment and sustainable development:

2.7.1 David-Jaya Piot
co-founder of Kulen Elephant Project (Siem Reap), president of CHA-Siem Reap (DJP, interview 6 April 2022)

2.7.2 Dimitri Bouvet
hospitality developer with 25-year experience in Cambodia, built and operated the Toum Tiou, first large cruise boat to navigate Tonle Sap Lake and River in the early 2000s, co-founder of CFM (Compagnie Fluviale du Mekong) (DB, interview 8 May 2022)

2.10.3 Youk Senglong
FACT Director (YS, interviews in April, May, June 2022)

2.7.4 World Bank team in charge of the 'Cambodia Sustainable Landscape and Ecotourism Project'
focusing on the Protected Areas of the Cardamoms, Siem Reap and the Tonle Sap Lake.

- In April 2022, a meeting was held at the Korea-Cambodia Cooperation Center at ITC with Emerging360[64], which is in charge of the related study and data collection, for gathering inputs from the Private Sector;
- Another meeting co-hosted with the Ministry of Environment was held at the Cambodiana Hotel on 15 May 2022 to get the Private Sector inputs on the draft of Prakas on micro concessions in Protected Areas (under 10 ha for less than 15 years);
- A head-to-head meeting was held at the Pavilion on 25 June 2022, with WB experts Jessy McComb and Sumit Baral to express our position in further details (see section 6.1). (WB 1-2-3, April-June 2022).

2.7.5 Noy Shoung
Green Energy and Sustainable Farming developer in Siem Reap area (NS, interviews in June, July 2022).

2.7.6 WFF Team (Richard Scotney in particular)
to discuss how we could join the 'Building Back a Climate-Friendly and Inclusive Tourism Sector in Cambodia' (WWF, several meetings in 2021-2022).

2.7.7 Gavin Bell
Tourism consultant for AFD (GB, interviews November 2021 and March 2022).

2.7.8 Antoine de la Tousche
Hospitality expert, key stakeholder in the '700,000 Hours' luxury pop-up resort on TSL in 2019 (AT, interviews September 2021 and February 2022).

2.7.9 Charles Amar
Cambodia's prominent hospitality lawyer, whose input will be of great importance in the next phase of the project (CA, several interviews 2021-2022).

2.7.10 Architects Hiroyuki Kubota and David Cole, Hospitality expert Valentin Pawlik
Specialists in sustainable architecture involved in Jungloo 1 and Jungloo 2 projects; on the same topic, Valentin Pawlik, founder of the Four Rivers Floating Lodge in Tatai, with whom we share experience in developing floating solutions (FLARC, several interviews 2021-2022).

2.7.11 Junior Architect Ly Pengkeang, "Keang"
Graduating in Architecture and Urbanism in 2020, Keang specializes in Housing design. After joining MAADS Studio in 2022, he focused on virtual development and projections of floating structures, also surveying 'Reflexion' prototype manufacturing process.

3 Report on field visits, dry season

Date: Dec. 2021-Jan. 2022

All selected activities are based on their eco-tourism potential (please refer to Key Deliverable Outputs #1 Detailed work plan for more information). All GPS coordinates are in UTM format. Please note that due to the past 2 years sanitary context and ongoing political situation, a lot of preselected wetland sites are not currently accessible without official authorization. MTB: Mountain Bike

[64] Emerging360, "a boutique consulting firm promoting women's entrepreneurship, SME development, mobile learning and elearning for international development, and inclusive tourism", has issued studies on Cardamom Mountains and Stung Treng areas in Cambodia.

3.1 MeyChrey ម៉ៃជ្រៃ Floating Village (RTP_ SR02)

GIS summary

Team members	Jean-Benoît Lasselin, fixer, driver	Selected vehicle	Civilian minivan
Departure point	48N 377349 1479643 (Templation, Siem Reap)	Road status	40% road, 60% trail
		Inbound travel time to arrival	1 hour 03 minutes
Arrival point	48N 359481 1467710	**point**	
Scheduled km	29,5km	Actual km	29,8km

Accessibility: MTB, ground vehicle (dry season only)
Available activities: birdwatching, traditional fishing boat in mangroves, MTB
Comment: chief of village is very enthusiastic about welcoming visitors.

3.2 Por Treay (Por Tree), POI_SR01

GIS summary

Team members	Jean-Benoît Lasselin, fixer, driver
Departure point	48N 377349 1479643 (Templation, Siem Reap)
Arrival point	48N 345023 1481463
Scheduled km	46,7km
Selected vehicle	Civilian minivan
Road status	50% road, 50% trail
Inbound travel time to arrival point	2 hours 21 minutes
Actual km	46,5km

Accessibility: MTB, ground vehicle (dry season only)
Available activities: birdwatching, camping, traditional fishing (from Wat Cheu Khmow)
Comment: Wat Cheu Khmow is a UNESCO site (Wat built in 1911, older Pagoda on Tonle Sap)

3.3.a Kampong Phluk កំពង់ភ្លុក Village, POI_SR5

GIS summary

Team members	Jean-Benoît Lasselin, fixer, driver
Departure point	48N 377349 1479643 (Templation, Siem Reap)
Arrival point	48N 345023 1481463
Scheduled km	34,1km
Selected vehicle	Civilian minivan
Road status	40% road, 60% trail
Inbound travel time to arrival point	1 hour 07 minutes
Actual km	34,4km

Accessibility: MTB, ground vehicle (dry season only)
Available activities: MTB from Siem Reap, fish reserve visit
Comment: chief of village is refusing any visitor until her considers the pandemic to be finished; 40% of the flooded forests being removed to make room for agriculture (from Kampong Phluk to Kampong Khleang)

3.3.b Kampong Phluk, RTP_SR03

Developed in subsection 4.6.

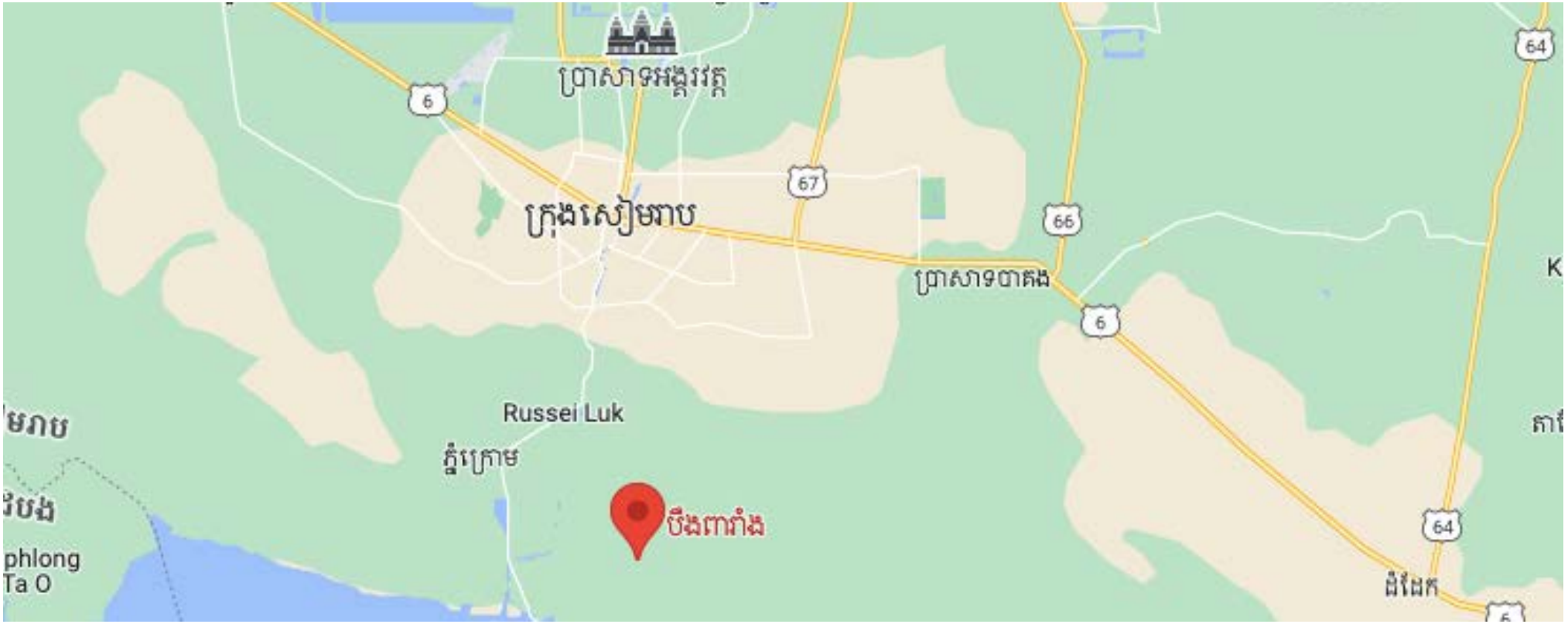
3.4 Kampong Khleang កំពង់ឃ្លាំង, RTP_SR04

GIS summary

Team members	Jean-Benoît Lasselin, fixer, driver
Departure point	48N 377349 1479643 (Templation, Siem Reap)
Arrival point	48N 402089 1445375
Scheduled km	58km
Selected vehicle	Civilian minivan
Road status	70% road, 30% trail
Inbound travel time to arrival point	1 hour 34 minutes
Actual km	58,2km

Accessibility: MTB, ground vehicle (dry season only)
Available activities: MTB, trekking, camping.
Comment: 40% of the flooded forests is being removed to make room for agriculture (from Kampong Phluk to Kampong Khleang)

3.5 Boeung Peareang បឹងពារាំង (POI_S03)



GIS summary

Team members	Jean-Benoît Lasselin, fixer, driver	Road status	50% road, 50% trail
Departure point	48N 377349 1479643 ((Templation, Siem Reap)	Inbound travel time to arrival point	37 minutes
Arrival point	48N 376801 1465244	Actual km	17,1km
Scheduled km	16,9km		
Selected vehicle	Civilian minivan		

Accessibility: MTB, ground vehicle (dry season only)
Available activities: MTB, trekking, birdwatching, camping
Comment: landowner is very enthusiastic about welcoming visitors.

4 Report on field visits, mid-season

Date: 5 May-19 June 2022 (Field Inspections); 6-8 June 2022 (Travel Influencer Visit)

All selected activities are based on their eco-tourism potential (please refer to Key Deliverable Outputs #1 Detailed work plan for more information).

All GPS coordinates are in UTM format.

Please note that due to the past 2 years sanitary context and ongoing political situation, a lot of preselected wetland sites are not currently accessible without official authorization. Since the dry season campaign, we have adjusted and fine-tuned:

a) Prospection and selection criteria (see section 1.1);

b) Continuity in RTPs and POIs identification from dry season to mid- to rainy season, with online editable description cards, all accessible here;

c) Tracing seasonal variations of major indicators-criteria (accessibility, water level, etc...) on a dedicated Excel Sheet (used as ongoing working sheet by the team)

d) On-site surveys, with custom-made questionnaire in Khmer language (see Appendix 7.a);

e) Collaboration with reliable travel influencers recommended by Pavilion-MAADS in order to document and test several locations; Appendix 7.a

f) An interactive map for Lot 1 is now available here:

4.1 Por Treay (POI_SR01); Road to MeyChrey (RTP_SR02); Kompong Khleang; Beong Pearaing; Kompong Phluk (RTP_SR04)

Note: In comparison with dry season, MeyChrey (cf 3.1 and 3.2) was not accessible by road, due to heavy truck traffic damaging the road.

4.2 RTP_B01b Phum Peam Seima ភូមិ ពាមសីមា

GPS 13.3451752,103.453703
- POI_B01: Lake Boeung Kampei
- POI_B02: Lake

4.3 RTP_B02 Phum Bak Roteh ភូមិ បាក់រទេះ

GPS 13.3451752,103.453703
- CTD-B1 Prasat Ek Phnom
- POI_B03: Sangker River
- POI_B04: Neal Khok Lake
- POI_B05: Lhal Lake

4.4 RTP_B01a Phumi Chheu Khmau ភូមិឈើខ្មៅ

GPS: 13.3439996,103.5275462,15
- POI_B06: Por Tree
- POI_B07: Prey Taol North
  48N 353834 1457545
  Closest village: Kbal Krâbei
  topography: wetlands, herbaceous plants, swamps dominated by shrubs, and wooded swamps dominated by trees.
  area's interest: strong wilderness immersion (bird watching, kayaking ...).
- POI_B08: Prey Taol South
  48N 353890 1452579
  Closest village: Kbal Krâbei
  topography: wetlands, herbaceous plants, swamps dominated by shrubs, and wooded swamps dominated by trees.
  area's interest: strong wilderness immersion (camping, bird watching, kayaking ...).
- POI_B09: Chuor Kom
  48N 364252 1438751
  Closest village: Champeam Kenong
  topography: clearing, wetlands, herbaceous plants, swamps dominated by shrubs, and wooded swamps dominated by trees.
  area's interest: strong wilderness immersion (camping, bird watching, kayaking ...).

4.5 RTP_SR02 MeyChrey មេជ្រៃ Floating Village

GPS 13.3075138,103.6817976
- POI_SR02: Chong Kneas

4.6 RTP_SR03 Kampong Phluk កំពង់ភ្លុក

GPS 13.2105239,103.9695025
- POI_SR03: Boeng Peareang
- POI_SR04: Chreav

4.7 RTP_SR04 Kampong Khleang កំពង់ឃ្លាំង

GPS 13.1113501,104.1157013
- POI_SR05: Boeng Kamphen and area
  48N 411406 1441230
  Closest village: Kompong Chikreng
  topography: wetlands, herbaceous plants, swamps dominated by shrubs, and wooded swamps dominated by trees.
  area's interest: wetlands immersion (bird watching, kayaking ...).
- POI_SR06: Lveaeng Russei and area
  48N 428565 1429759
  Closest village: Spean Tnot
  topography: network of land trails, clearings, wetlands, herbaceous plants, swamps dominated by shrubs, and wooded swamps dominated by trees.
  area's interest: wilderness immersion (trekking, MTB, camping, bird watching, kayaking ...).

4.8 Particulars of dry-mid seasons variations, year 2022

Note: as our field inspections started at a time the Kingdom of Cambodia was just emerging from the Covid-19 extraordinary context, they were still impaired by travel limitations and the unease of local communities. That is why we have suggested to expand the previously agreed-upon timeline to March 2023.

4.8.1 A belated water rise

Field inspections in all areas show none or marginal level water increase. In certain spots, villagers and fishermen told us that years before, mid-June, water was 1-high in spots where we did not see anything more than puddles. Oddly enough, MRC Drought Forecast did not issue drought alert for TSBR area in the considered time frame.

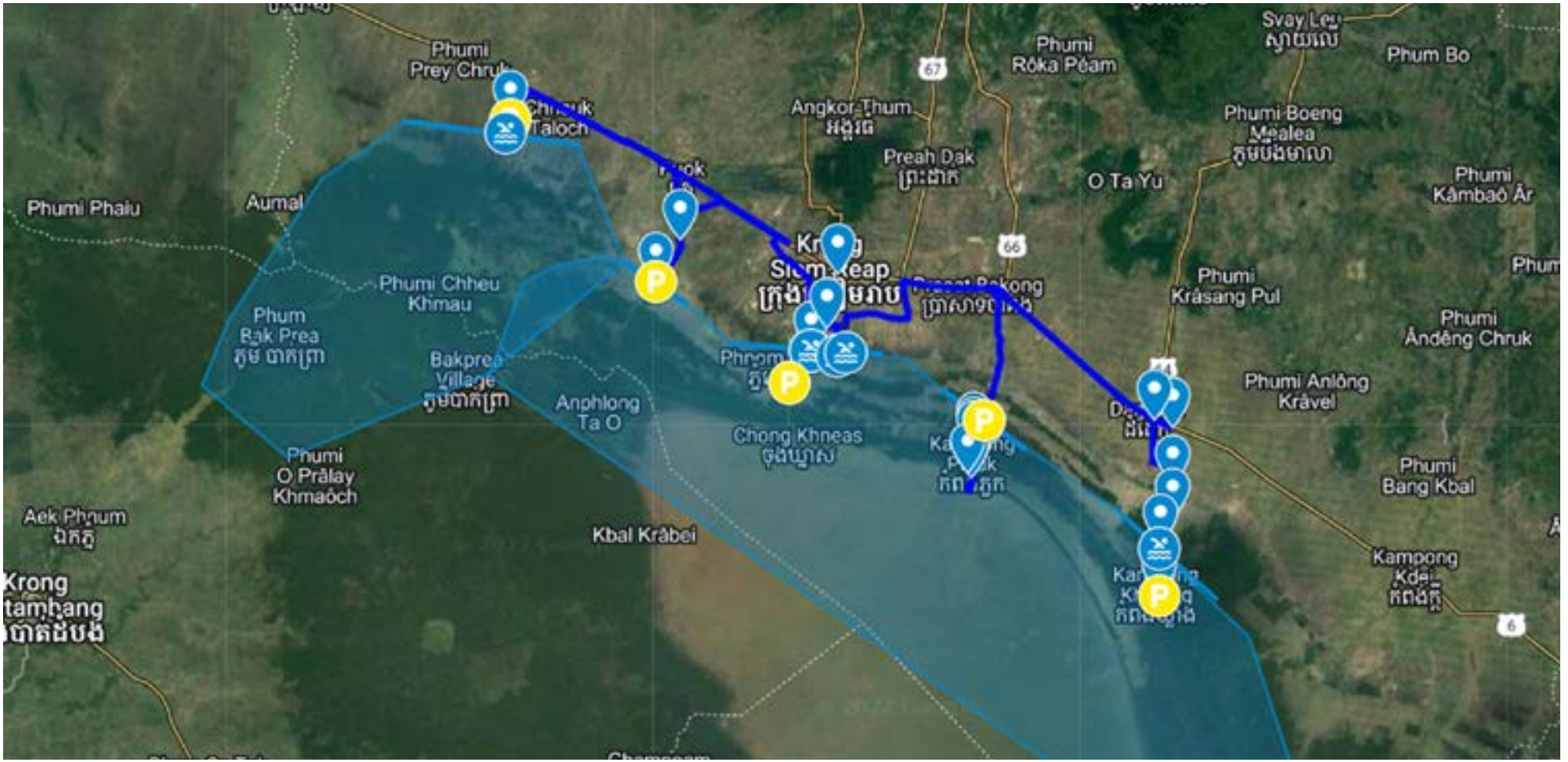
4.8.2 Human impact

Human activity, in particular road construction, has disturbed native fauna in areas we had earlier identified as POIs for bird watching.

Typical pagoda compound, Por Treay area, June 2022.

4.9 Documenting housing and daily life, general survey June 2022

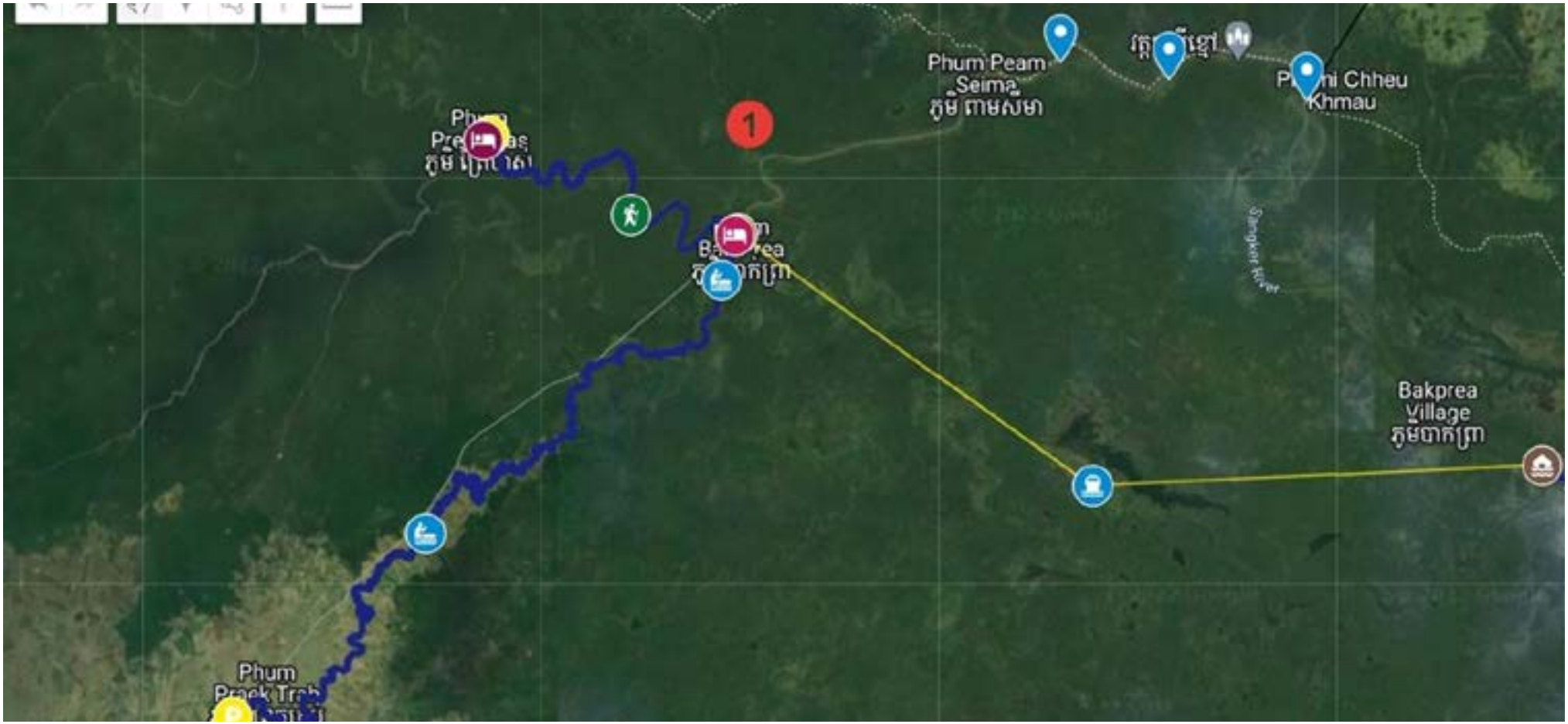
Although we are not dealing with homestay and community-based tourism in this report, we feel important to help future private investors in documenting major features of habitat and human activities across TSBR. These indications on local architectural specificities will hopefully be helpful for upcoming ecotourist developments.



Waterline and road access observed as of October 2022, with new RTP definitions
(online access on request here)

5 Report on field visits, rainy season

The survey was conducted from 19 August-12 September 2022, and 05-08 October, during the middle and peak part of south-east monsoon season.
Rain would fall every day, mostly in the afternoon during 1-2 hours, and there were also morning, midday, evening and night showers. One time it did not rain at all for three days, while at other times it rained relentlessly or two days.
Daytime temperatures exceed 32°C with nighttime lows near 26°C. Water level was 82% of highest registered. Increasing of delta wetlands around the lake: around 30 km.
We have identified SIX ROAD ACCESS POINTS to the lake from Siem Reap at highest level: see RAPRS module.



The commune of Prey Chas in the Aek Phnom district of Battambang Province is made of several villages: Prey Chas, Bak Prea, Kaoh Chiveang, Kampong Prahok, Anlong Sandan, and Peam Seima (RTPpB016).

a) Explored sites

5.1 Prey Chas ព្រៃចាស់ Area (Serei Sophorn River, Battambang Province), including Bakprea village | RTPN1

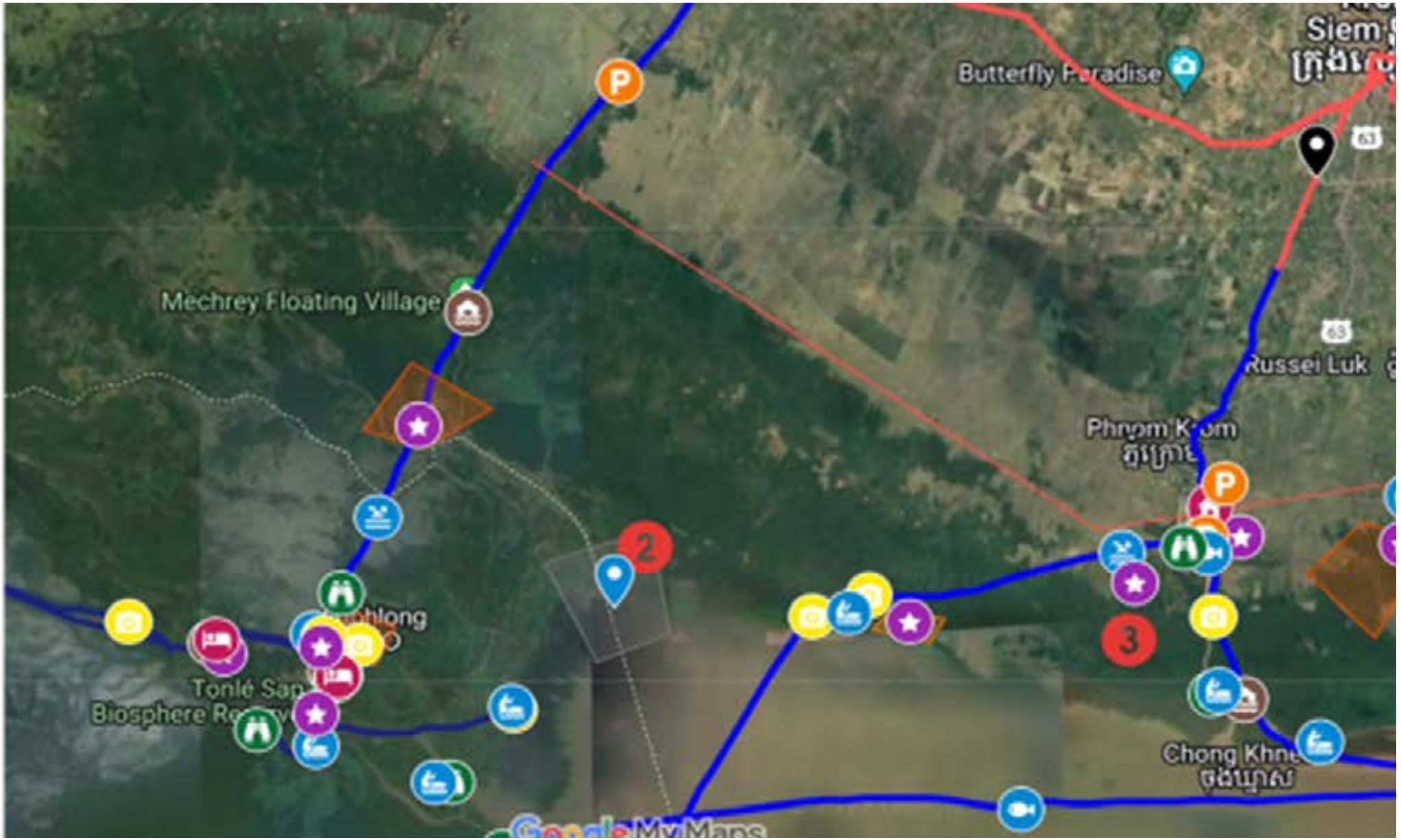
GPS: 13.3139, 103.40264.
Population: 50,000
Route from Battambang: 30 min by car (27 km), 5 hours by boat
Route from Siem Reap: 30 min by car (30 km), 5 hours by boat

Phum Prey Chas Floating Villages, Battambang will cast you away into a surreal world. The rural communities in Battambang, settled on the shores of Serei Sophorn River and Sreng River, are a hidden natural and cultural treasure.
Burmese and Thai style pagodas and houses, with walls made from woven water hyacinth stalks you will not see anywhere else in Cambodia. Elegant banyan trees define river bends; the banks gradually diminish, until dry land sits mere inches above the water's surface. Houses on stilts give way to tents that local citizens pitch along the river and relocate as water levels change. Some houseboats are attached to elaborate bamboo lift nets, called 'carrelets chinois' in French since the technique has been introduced in India and Southeast Asia by Chinese
fishermen.

Best cultural attractions are: Prey Chas village (500 families), Kampong Prahok (30 families), Bak Prea village (1000 families) and Wat Chheu Khmau (CTD_B2) at Chiveang village.

Nature attractions scenery viewpoints and routes	River banks, flooded bushes and flooded forest
Cultural attractions	Authentic floating and stilt villages life. Burmese style monastery. This monastery was built in 1887, and Wat Chheu Khmao's temple was made of purely Chheu Khmao tree. Wat Chheu Khmao was built on a hill, which in the past was rich of Chheu Khmao trees, and was cut off to make the temple that why it was named Wat Chheu Khmao. In the past, the hill was a magical hill in the middle of flooded forest of Lonle Sap
Biodiversity of plants	Poor. Eichhornia crassipes (water hyacinth), mimosa pigra (giant mimosa)
Biodiversity of animals	Poor. Water herons black and white, gray eagle, pheasant, migratory birds (November to January). Freshwater turtles, tortoises Fishing cat and leopard cat, otter are rare.
Biodiversity of fish and mollusks	Tilapia, bighead carp, common carp, golden apple snail
Potential outdoor activity	Fishing, handicrafts, birdwatching, kayaking
Existing homestay\lodge\camping	1. Homestay at Bakprea village (16 people 0978550782 Kao Sovannarith 2. Homestay at Prey Chas village (20 people dormitory and 5 double rooms) 012245615 Sinh
Existing restaurants	None. Only shops.
House\land for rent, price, contacts	Average price 100$ for one month. Land is negotiable
Local commune tourist information and support	Don't have.
Contacts	Ek Phnom district chief name Li Komsream 0979910966
Any previous tourism development projects	The eco-tours of floating villages in Battambang https://the-floating-village.business.site/
Any NGO, English speaking development projects	Prey Chas Boarding houses (Childs dream foundation) Sreylin Chum 017311382 sreylin@childsdream.org
Transportation	Feb-Aug: Medium transportation boat 10-12 people Aug-Jan: Big transportation boat (30 people)
Road network, traveling distances;	1) August -January: Good asphalt road from Battambang to Phum Doun Mea (14 km), red dirt road 7 km to Proek Trab. Road N156. Boat transportation 5 hours among Sreisophon river 2) February-July: Good asphalt road from Battambang to Phum Doun Mea (14 km), red dirt road 39 km to Phum Bakprea. The road N156. Boat transportation 1 hour among Sreisophon river
Boat transportation local price	80$ per day (8-10 people). 20$ per pax one way to Prey Chas
Opportunity for investors	The eco-tours of floating villages in Battambang. 1.One-day observation tour 2. 2-days home-stay tour 3. Birdwatching eco-stay 2-days tour(Nov-Jan) 4. Adventure transfer Battambang-Siemreap (12 hours rain season, 8 hours dry season)

1. Prey Chas village area. Distance to water edge from NR6 - 4,52km (dirt road). Distance from SR Old Market 35,9km. No parking area. No boat station.



5.2 Prey Toal, Kbal Krobay Bird Sanctuary | RTPN2

Nature attractions scenery viewpoints and routes	Prek Toal core bird Reserve. Prey Toal (Kbal Krobay) bird sanctuary
Cultural attractions	Authentic floating village Prek Toal. Water hyacinth handicrafts.
Biodiversity of plants	Prek Toal freshwater swamps. Flooded forest. Eichhornia crassipes (water hyacinth), mimosa pigra (giant mimosa)
Biodiversity of animals	https://www.birdguideasso.org/prek-toal-bird-checklist/
Biodiversity of fish and mollusks	https://www.fao.org/3/AB561E/ab561e07.htm
Potential outdoor activity	Birdwatching, eco-stay, boat adventures (kayaking, paddle boarding). Period – November – the end of January.
Existing homestay\lodge\camping	Many opportunities of homestay in floating wooden houses of Prek Toal village. 5 USD per person\night. You should bring your own hamok or tent and sleeping bag
Existing restaurants	Don't have. Only shops. Before it was the restaurant of Saray tonle community (restaurant and handicraft shop) – now doesn't work because of COVID
House\land for rent, price, contacts	Average price of house rent (50mx30m) 100-150$ for one month. 1000$ per 1 year. Land is free behind the house. There are the opportunity to buy (rent) land at the border of wildlife sanctuary. Many of the owner are ready to provide the houses or land for rent. Need to make notice to the chief of Prek Toal commune. Khum Chang 099302927 (Battambang).
Local commune tourist information and support	Prek Toal Environmental Office (6 guides, 4 boat drivers, 4 rangers) Before Covid office has 40 employees Foreigner entrance ticket 10$. The small boat (10 people) to Prey toal bird sanctuary 40$ 2-3 hour of birdwatching exursion
Contacts	Chief Chumnet 017539996
Any previous tourism development projects	1. Cambodia Bird Guide association 2. Prek Toal Tours&Travel. Prek Toal village 077797112, booking@prektoal-tours.com 3. Sam Veasna bird conservation tours. https://samveasna.com/ +855-92-554473
Any NGO, English speaking development projects	https://osmosetonlesap.net/wp/index.php/en/saray-tonle-community/ Saray Tonle community
Transportation	Feb-Aug: Medium transportation boat 10-12 people Aug-Jan: Big transportation boat (30 people)
Road network, traveling distances;	1) Good asphalt road from Siemreap to Chong Kneas pier (9 km) 2) Good asphalt road from Siemreap to Meychrey commune (13 km
Boat transportation local price	1. Boat from Meychrey village to Prek Toal village 40$ per day (8-10 people). 60$ day (30 people) (2 hours) 2. Boat from Chong Kneas village to Prek Toal 120$ per day (8-10 people). 160$ day (30 people) (1 hour)
Opportunity for investors	1. One-day birdwatching tour 2. 2-days home-stay birdwatching tour (Nov-Jan) 3. 2 days eco-stay birdwatching tour (Nov-Jan) 4. Eco-stay lodge construction (min 40 guests) 5. Kayaking station rental SUP and kayaks

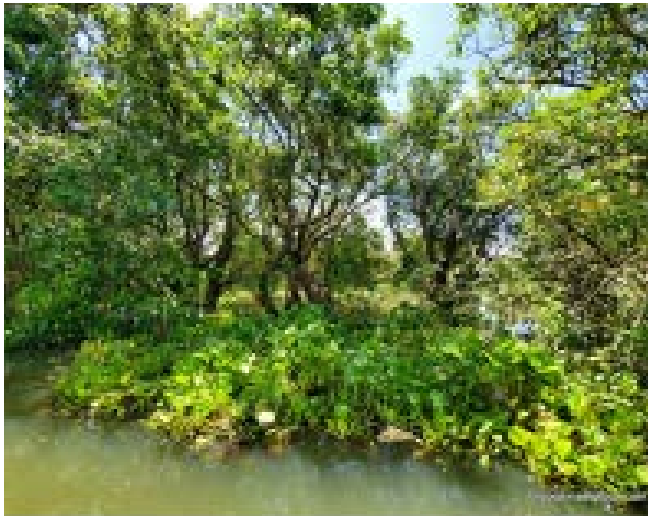
Nature attractions scenery viewpoints and routes	River banks, flooded bushes and flooded forest
Cultural attractions	Authentic floating and stilt villages life. Burmese style monastery. This monastery was built in 1887, and Wat Chheu Khmao's temple was made of purely Chheu Khmao tree. Wat Chheu Khmao was built on a hill, which in the past was rich of Chheu Khmao trees, and was cut off to make the temple that why it was named Wat Chheu Khmao. In the past, the hill was a magical hill in the middle of flooded forest of Tonle Sap
Biodiversity of plants	Poor. Eichhornia crassipes (water hyacinth), mimosa pigra (giant mimosa)
Biodiversity of animals	Poor. Water herons black and white, gray eagle, pheasant, migratory birds (November to January). Freshwater turtles, tortoises Fishing cat and leopard cat, otter are rare.
Biodiversity of fish and mollusks	Tilapia, bighead carp, common carp, golden apple snail
Potential outdoor activity	Fishing, handicrafts, birdwatching, kayaking
Existing homestay\lodge\camping	1. Homestay at Bakprea village (16 people 0978550782 Kao Sovannarith 2. Homestay at Prey Chas village (20 people dormitory and 5 double rooms) 012245615 Sinh
Existing restaurants	Don't have. Only shops.
House\land for rent, price, contacts	Average price 100$ for one month. Land is negotiable
Local commune tourist information and support	Don't have.
Contacts	Ek Phnom district chief name Li Komsream 0979910966
Any previous tourism development projects	The eco-tours of floating villages in Battambang https://the-floating-village.business.site/
Any NGO, English speaking development projects	Prey Chas Boarding houses (Childs dream foundation) Sreylin Chum 017311382 sreylin@childsdream.org
Transportation	Feb-Aug: Medium transportation boat 10-12 people Aug-Jan: Big transportation boat (30 people)
Road network, traveling distances;	1) August -January: Good asphalt road from Battambang to Phum Doun Mea (14 km), red dirt road 7 km to Proek Trab. Road N156. Boat transportation 5 hours among Sreisophon river 2) February-July: Good asphalt road from Battambang to Phum Doun Mea (14 km), red dirt road 39 km to Phum Bakprea. The road N156. Boat transportation 1 hour among Sreisophon river
Boat transportation local price	80$ per day (8-10 people). 20$ per pax one way to Prey Chas
Opportunity for investors	The eco-tours of floating villages in Battambang. 1.One-day observation tour 2. 2-days home-stay tour 3. Birdwatching eco-stay 2-days tour(Nov-Jan) 4. Adventure transfer Battambang-Siemreap (12 hours rain season, 8 hours dry season)

5.3 Preak Toal village (Sreng River, Battambang Province), including T chwang district, Kampong Prahok village | RTPN3

Prek Toal village

Milk Storks

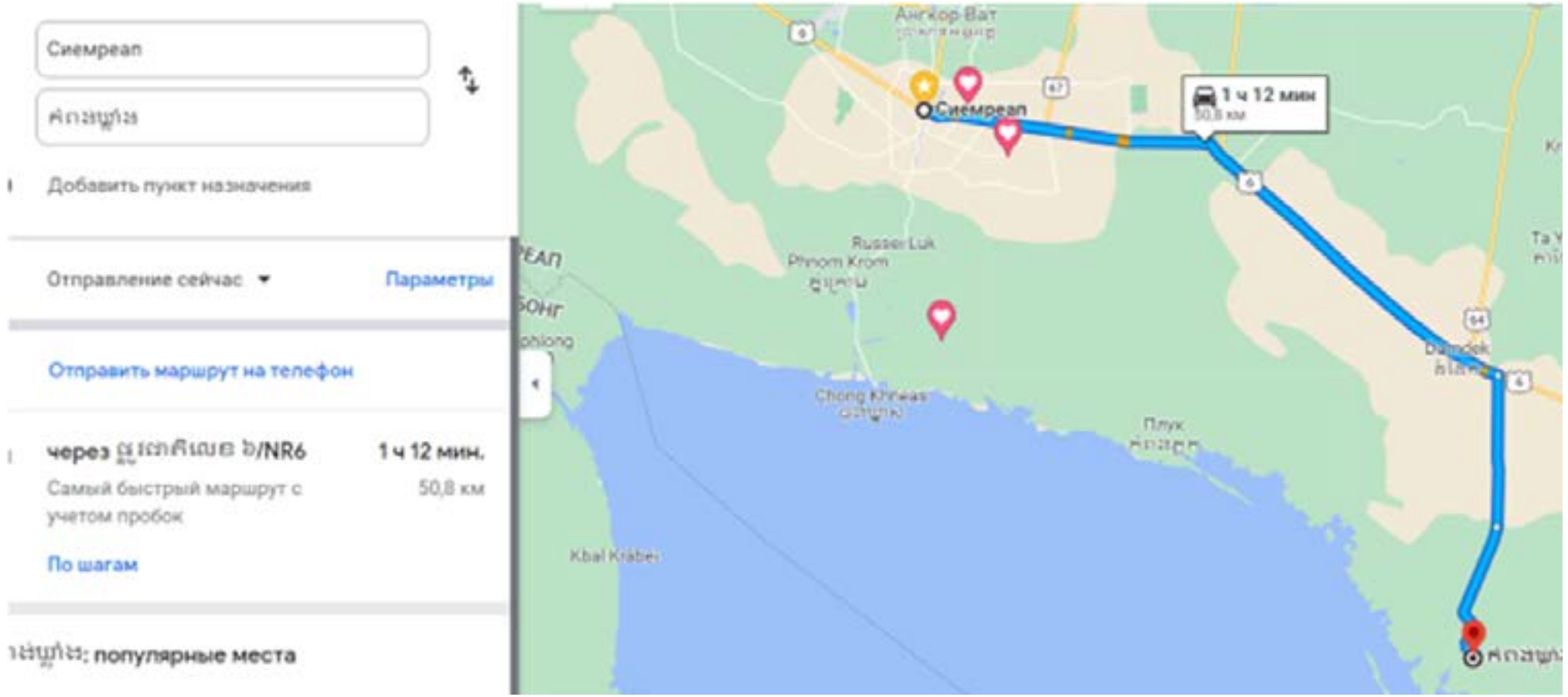
Kayaking tour room Siemreap at 2015



Bushes of Kbal krobay

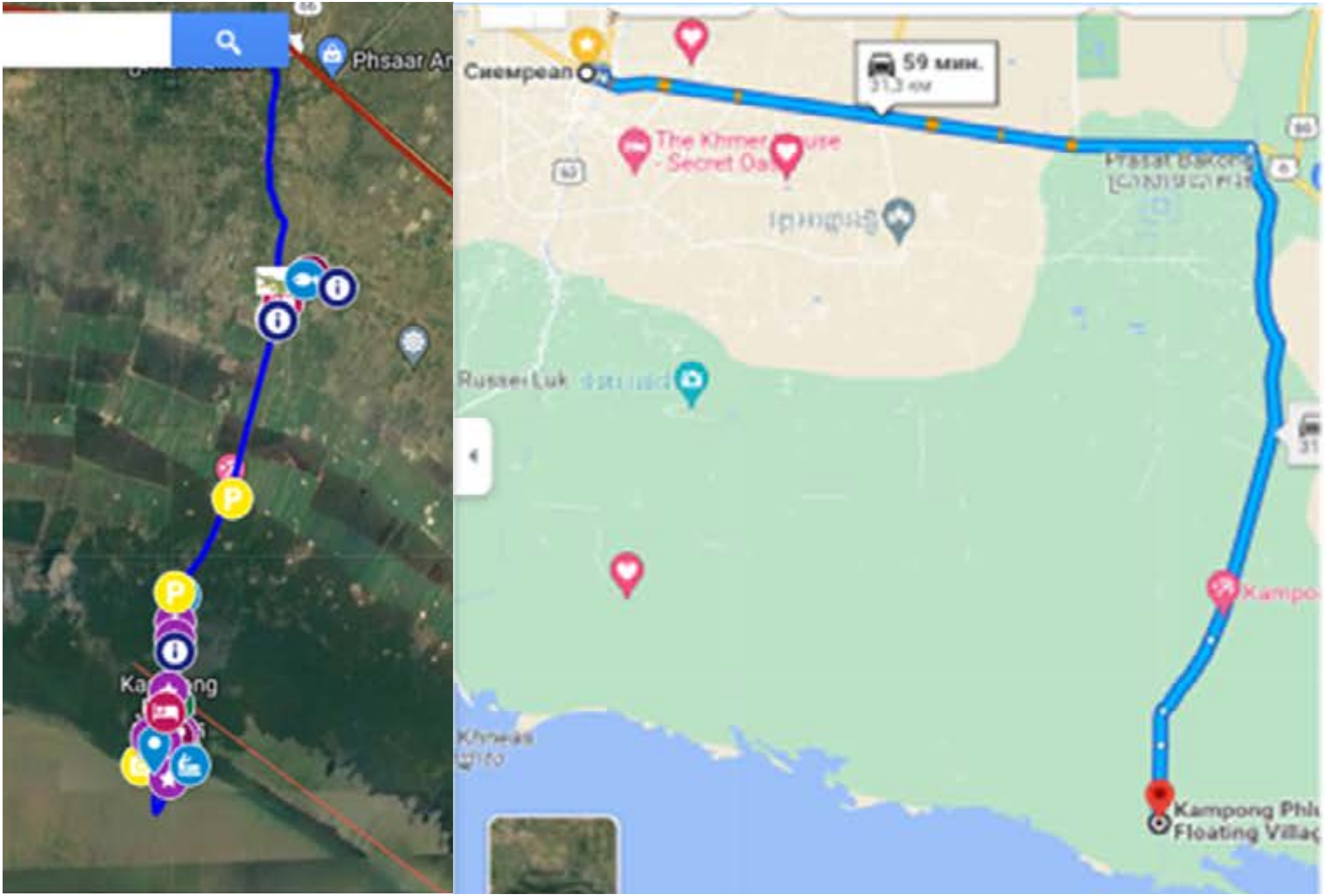
Birdwatching tower

Birdwatching area



Road to Moat Kla (via Kampong Kleang village

5.4 Moat Kla មាត់ខ្លា Village, Nature and Wildlife Area I RTPN4


Phsaar Ar
Ka ng
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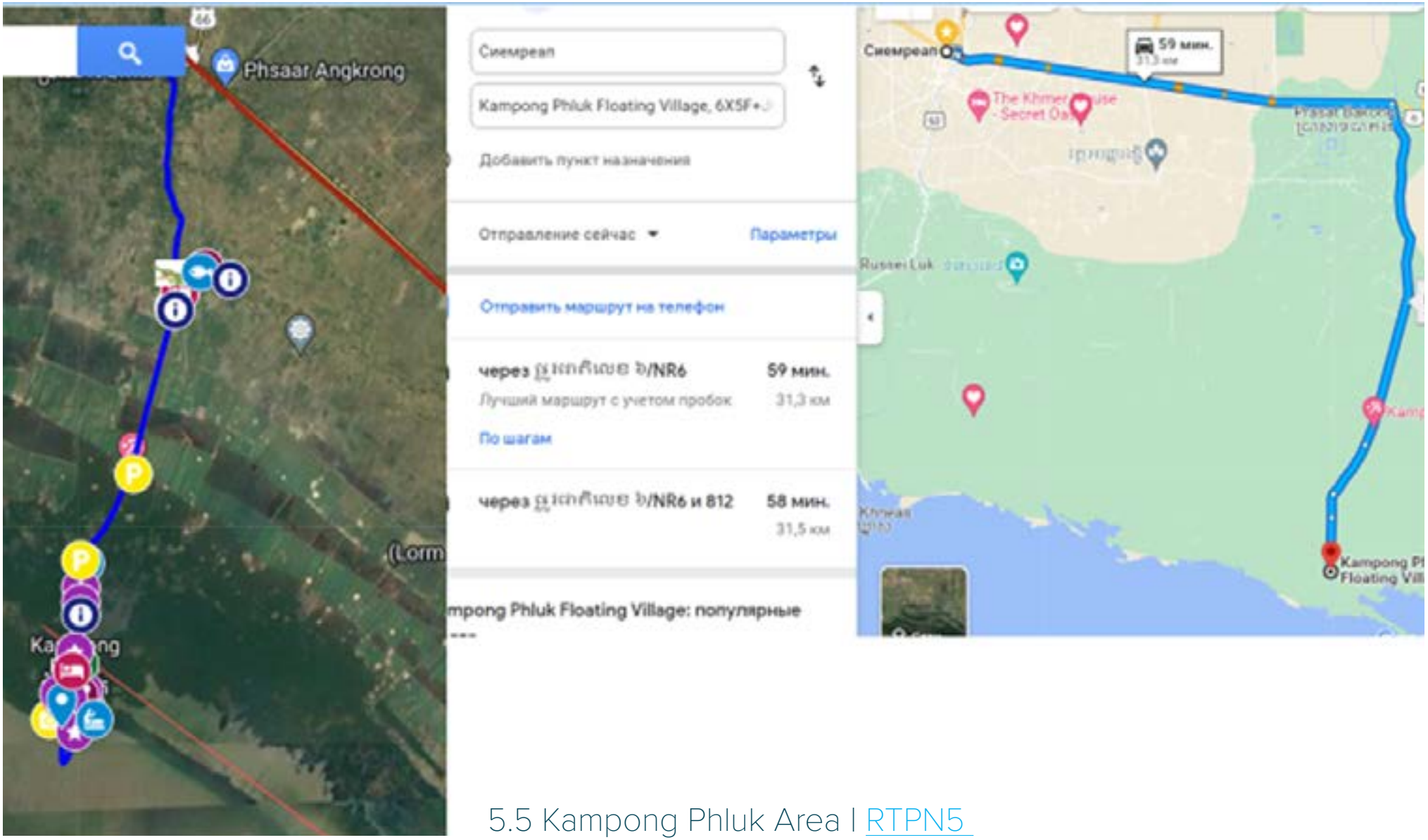
The Khmer
- Secret Oa
Russei Luk
Kampo
Kampong Phl
Floating Villa

Nature attractions scenery viewpoints and routes	Moat Kla area
Cultural attractions	Moat Kla floating village
Biodiversity of plants	Moat Kla flooded forest. Eichhornia crassipes (water hyacinth), mimosa pigra (giant mimosa)
Biodiversity of animals	https://www.birdguideasso.org/prek-toal-bird-checklist/ Fishing and leopard cat, python, freshwater turtle, squirrel
Biodiversity of fish and mollusks	https://www.fao.org/3/AB561E/ab561e07.htm
Potential outdoor activity	Birdwatching, eco-stay, boat adventures (kayaking, paddle boarding). Period – August – the end of January.
Existing homestay\lodge\camping	One small open house at Meat Kla village. 5 USD per person\night. You should bring your own hamok or tent and sleeping bag
Existing restaurants	Don't have. One shop
House\land for rent, price, contacts	Average price of house rent (50mx30m) 50$ for one month. 500$ per 1 year. There are the opportunity to buy (rent) land anywhere at the area. Many of the owner are ready to provide the houses or land for rent. 087248021 Srey Oum
Local commune tourist information and support	Kampong Kleang Tourism commune. Foreigner entrance ticket 2$.
Contacts	Chief of CBET Sein 017519898 Chief of commune Papoo 077964311
Any previous tourism development projects	Don't have
Any NGO, English speaking development projects	Don't have
Transportation	Feb-Aug: Medium transportation boat 10-12 people Aug-Jan: Big transportation boat (30 people)
Road network, traveling distances;	1) Good asphalt road from Siemreap to Kampong Kleang pier (45 km)
Boat transportation local price	Foreigner entrance ticket 2$. The small boat (10 people) to Meat Kla $90. 3 hour of journey one way
Opportunity for investors	There are great opportunity to establish new freshwater flooded forest wildlife sanctuary Eco-stay lodge construction (min 40 guests) Kayaking station rental SUP and kayaks Wildlife rescue centre and zoo

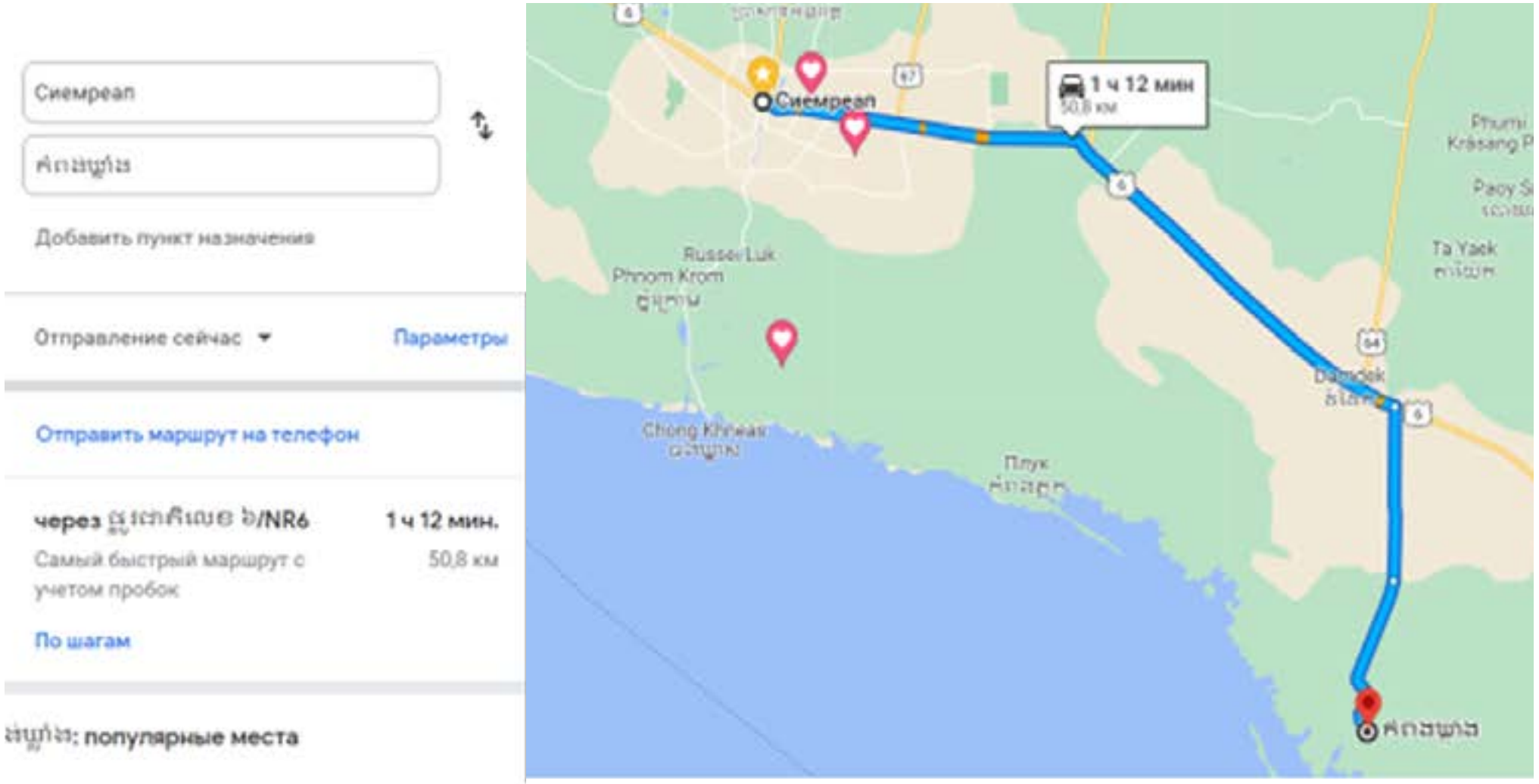
RAPRS6. Kampong Khleang village area. Distance from NR6 - 11,2km. Distance from SR Old Market 43,2km Parking. Permanent boat station.



5.5 Kampong Phluk Area | RTPN5

Nature attractions scenery viewpoints and routes	Open water area, flooded forest, the awe-inspiring sunset when the sun peaks below the clouds as the sky changes from a bright blue to a luminescent orange.
Cultural attractions	The local community is busy fishing, especially shrimp harvesting. An out-of-this-world experience is taking a boat tour to witness the daily village life as well as take a look into the domestic animals like pigs, cats, civettas, storks and cranes living inside paddle boats floating around.
Biodiversity of plants	8 hectares of flooded forest area
Biodiversity of animals	crab-eating macaques, squirrels, otters, palm civetta, and many birds
Biodiversity of fish and mollusks	Many of small and big fish types, crabs, shrimps and mollusks at the fishing area
Potential outdoor activity	Fishing, kayaking, boat riding, eco-stay, night flooded forest eco-stay trip
Existing homestay\lodge\camping	There are one homestay place 15$ per pax.
Existing restaurants	4 floating restaurants with sunset viewpoints (60 people each).
House\land for rent, price, contacts	Have land for rent and for sale and long-time operating. Have restaurants for sell. See at the map 092773498 Serei, 012415535
Local commune tourist information and support	Have well done local initiative CBET office and security. 4 toilets. No corruption. 2$ per foreigner ticket. 15$ overnight.
Contacts	CBET manager 092734869, 012569044 Mey Phum Sok Plang 0885998889
Any previous tourism development projects	Kampong Pluk local initiative CBET, Korean restaurant
Any NGO, English speaking development projects	https://www.hurredo.org/latest-news.php?page=5 https://sgp.undp.org/spacial-itemid-projects-landing-page/spacial-itemid-project-search-results/spacial-itemid-project-detailpage.html?view=projectdetail&id=19913
Transportation	Feb-Aug: Medium transportation boat 10-12 people Aug-Jan: Big transportation boat (30 people)
Road network, traveling distances;	15 km from Siemreap, good asphalt road, 16 km red dirt road
Boat transportation local price	Kampong Pluk area 1-9 22$, 10-17 36$, 18-27 45$, 28-36 50$, 37-46 60$ 3 hours tour with sunset viewing
Opportunity for investors	Night eco-stay fishing cruise boat Eco-lodge construction Restaurant with viewpoint construction Big hotel

RAPRS6. Kampong Khleang village area. Distance from NR6 - 11,2km. Distance from SR Old Market 43,2km Parking. Permanent boat station.

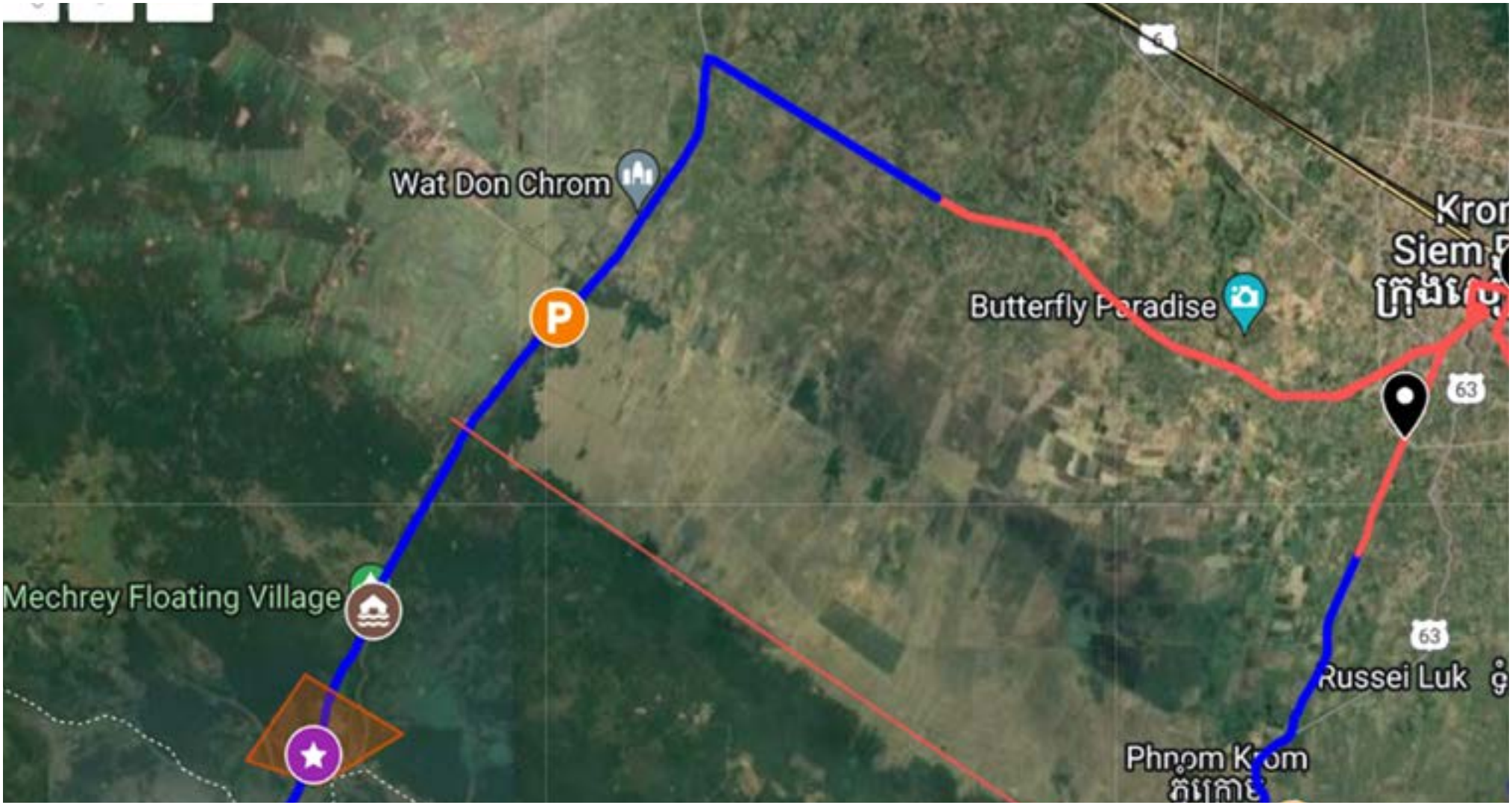


Road to Kampong Kleang village

5.6 Kampong Khleang Village | RTPN6

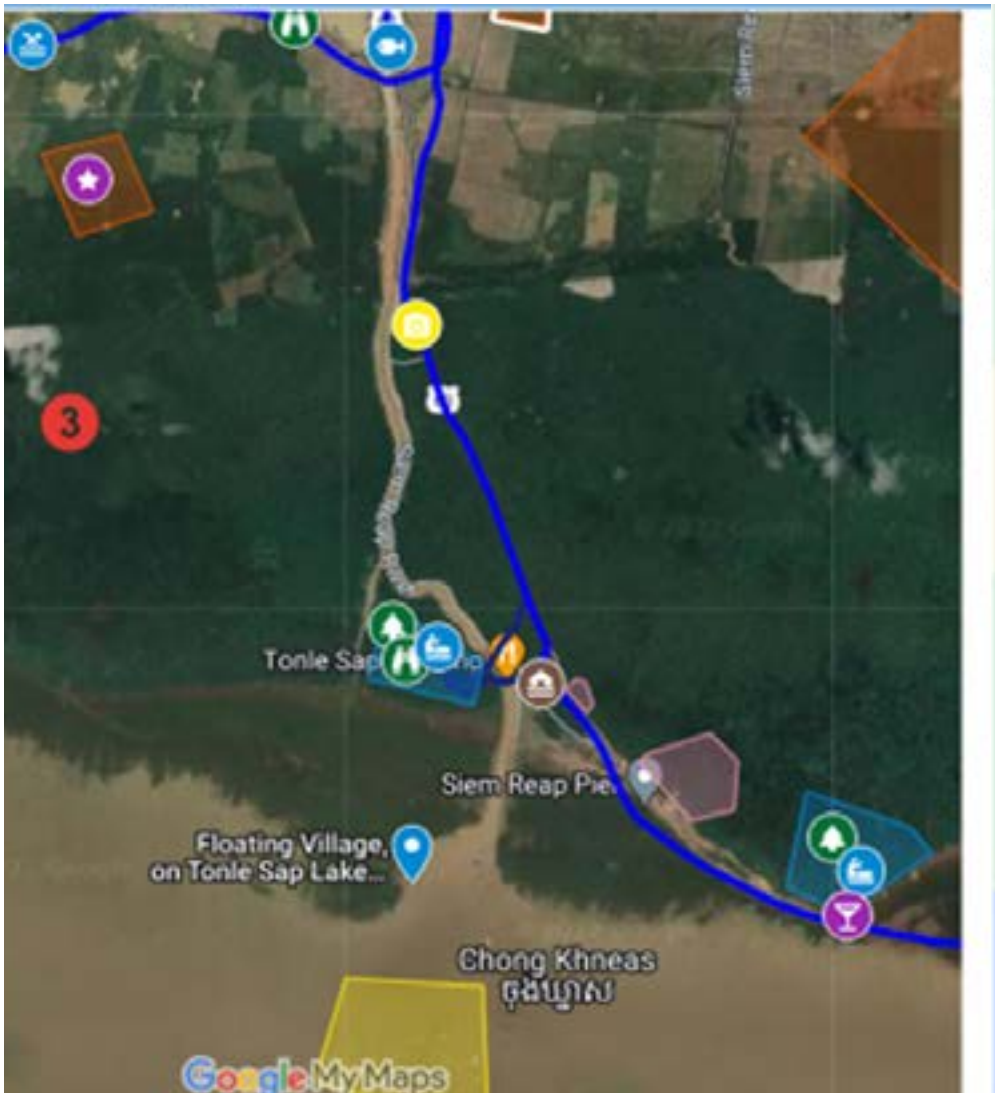
Nature attractions scenery viewpoints and routes	Open water area, small flooded forest
Cultural attractions	Authentic floating and stilt villages life. Crocodile, frogs, snakes farm. Commercial fishing
Biodiversity of plants	Small (2 hectares) flooded forest area
Biodiversity of animals	
Biodiversity of fish and mollusks	Many of small and big fish types at the fishing area. Can get fishing experience daytime 12-16pm
Potential outdoor activity	Fishing, kayaking, boat riding, eco-stay
Existing homestay\lodge\camping	There are two homestay places 9$ per pax, but not equipped after covid.
Existing restaurants	Don't have.
House\land for rent, price, contacts	Have land for rent and for sale and long-time operating. See at the map 087248021, 017519898
Local commune tourist information and support	Have well done local initiative CBET office and security. 4 toilets. No corruption. 2$ per foreigner ticket
Contacts	Sein 017519898 is CBET manager
Any previous tourism development projects	https://www.kompongkhleang.org/tonle-sap Kompong Khleang Floating Village Tours is a not-for-profit community based tour benefiting Bridge of Life School, a NGO providing free educational related programming in Siem Reap and Kompong Thom Provinces.
Any NGO, English speaking development projects	https://www.kompongkhleang.org/tonle-sap Kompong Khleang Floating Village Tours is a not-for-profit community based tour benefiting Bridge of Life School, a NGO providing free educational related programming in Siem Reap and Kompong Thom Provinces.
Transportation	Feb-Aug: Medium transportation boat 10-12 people Aug-Jan: Big transportation boat (30 people)
Road network, traveling distances;	55 km from Siemreap, good asphalt road.
Boat transportation local price	Kampong Kleang area 1-9 22$, 10-17 39$, 18-27 45$, 28-36 50$, 37-46 60$ 3 hours tour Kampong Kleang-Kampong Pluk 1-9 75$, 10-12 100$, 13-16 120$ 2,5 hours Kampong Kleang – Chong Kneas 1-9 110$, 10-16 160$ 3 hours Kampong Kleang – Meat Kla 1-9 90$ 6 hours Kampong Kleang – Kampong Luong 1-9 170$, 10-16 310$ 6 hours
Opportunity for investors	Night eco-stay fishing cruise boat Eco-lodge construction Restaurant with viewpoint construction with kayak rental service Kampong Kleang is good reliable transportation hub to explore Tonlesap area

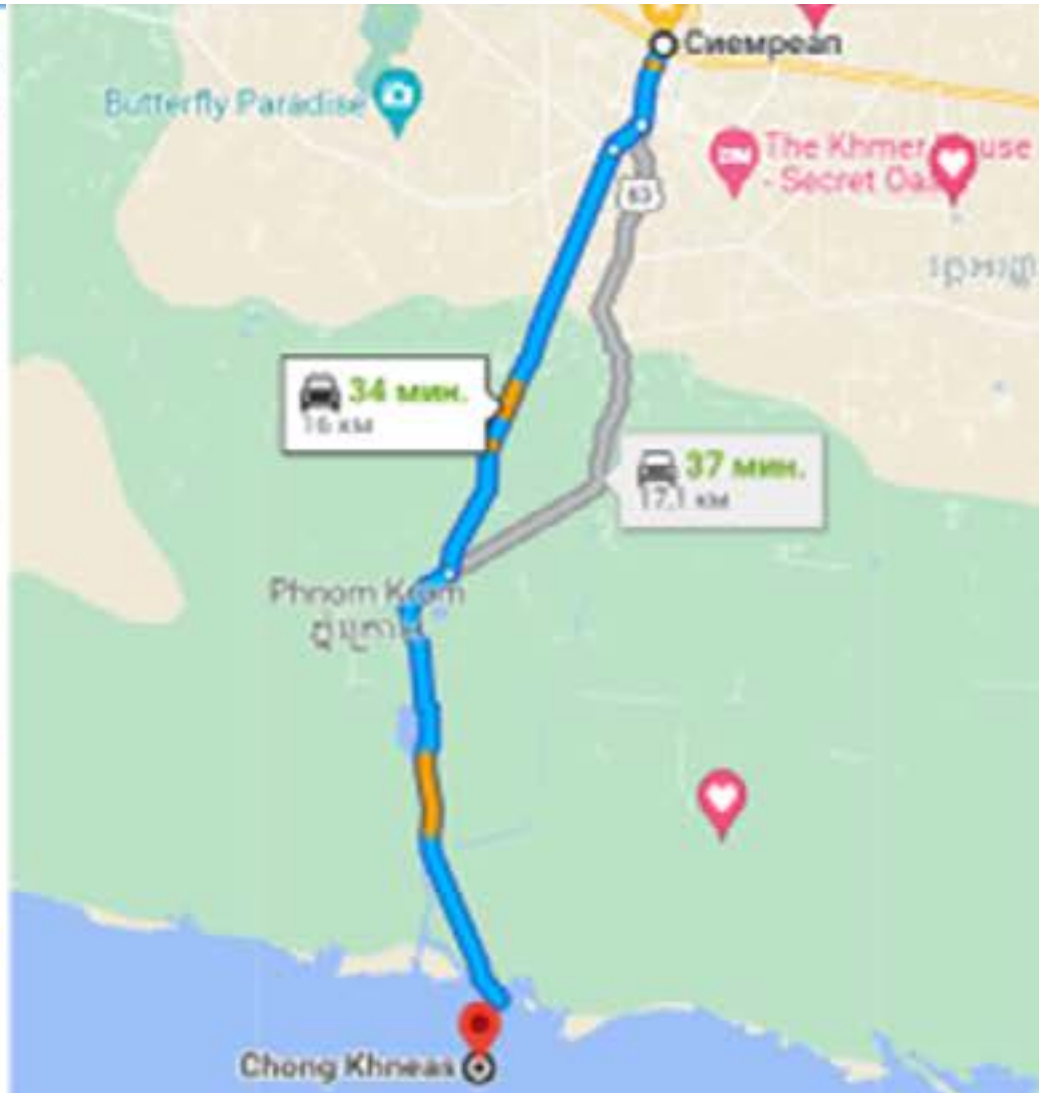
RAPRS6. Kampong Khleang village area. Distance from NR6 - 11,2km. Distance from SR Old Market 43,2km Parking. Permanent boat station.



5.7 Mey Chrey Village | RTPN7

Nature attractions scenery viewpoints and routes	Beautiful flooded bushes area around Mechrey commune
Cultural attractions	Small floating village Mechrey. Crokodile farm, Buddist pagoda, school, Puok Silk farm.
Biodiversity of plants	Freshwater swamps. Flooded small forest.
Biodiversity of animals	https://www.birdguideasso.org/prek-toal-bird-checklist/
Biodiversity of fish and mollusks	https://www.fao.org/3/AB561E/ab561e07.htm
Potential outdoor activity	Birdwatching, eco-stay, boat adventures (kayaking, paddle boarding). Cycling Siemreap-Mechrey (22 km). Period – August – February.
Existing homestay\lodge\camping	No have
Existing restaurants	Don't have. Only Puok Silk farm on the way
House\land for rent, price, contacts	Average price of house rent (50mx30m) 100-150$ for one month. 1000$ per 1 year. Land is free behind the house. There are the opportunity to buy (rent) land at the border of wildlife sanctuary. Many of the owner are ready to provide the houses or land for rent. There is an opportunity to take land outside of Meychrey village. 090832483 the land for sell
Local commune tourist information and support	Mechrey local initiative CBET tourism commune office (4 boat drivers) Foreigner entrance ticket 2$. Overnight 15$
Contacts	Chief Van heng 012521584
Any previous tourism development projects	no
NGO, English speaking development projects	no
Transportation	Feb-Aug: small transportation boat 4-6 people Aug-Jan: medium and big transportation boat (10-30 people)
Road network, traveling distances;	1) Good asphalt road from Siemreap to Ang ta Mechrey pier (22 km)
Boat transportation local price	1. Meychrey village to Prek Toal village 60$ per day (1-8 people). 95$ day (9-19 people) (2 hours) 2. Mechrey village area 20$(1-8), 35$(9-19) 3. Mechrey village – Chong Kneas village 85$(1-8), 115$(9-19) 4. Mechrey village – Prey Chas commune 200$(1-8), 310$(9-19)
Opportunity for investors	1. One-day birdwatching tour 2. 2-days home-stay birdwatching tour (Nov-Jan) 3. 2 days eco-stay birdwatching tour (Nov-Jan) 4. Eco-stay lodge construction (min 40 guests) 5. Kayaking station rental SUP and kayaks 6. Silk viewing factory and shop 7. Restaurant





5.8 Chong Kneas Village, including Prey Ksat flooded forest and Boeng Chhmar area | RTPN8

Zone N3 Chong Kneas.Potenial tourism opportunuty
Orange zone land for rent - potential lodge or capsite
Blue zone - floodedforest, potential kayaking, SUP boarding
Pink zone - floated Cambodian villages
Yellowzone - floated Vietnamese village

Nature attractions scenery viewpoints and routes	Open water area, flooded forest
Cultural attractions	Authentic floating and stilt villages life. Crocodile, frogs, snakes farm.
Biodiversity of plants	8 hectars of flooded forest area
Biodiversity of animals	crab-eating macaques, squirrels, otters, palm civetta
Biodiversity of fish and mollusks	Many of small and big fish types at the fishing area. Can get fishing experience daytime 12-16pm
Potential outdoor activity	Fishing, kayaking, boat riding
Existing homestay\lodge\camping	Have land-based eco-stay bungalow with fishing ponds and lotus fields. Homestay at the floating village is available by demand.
Existing restaurants	There are 2 floating restaurants at the village with crocodile farms.
House\land for rent, price, contacts	Have land for rent and for sale and long-time operating. See at the map 085771032 Borann
Local commune tourist information and support	Have Ministry of tourism office and security. 8 toilets. 2$ per foreigner ticket
Contacts	https://opencorporates.com/companies/kh/00028872 Sou Ching Port investment. Var Chouda The land owner??????
Any previous tourism development projects	Korean company for the kayak rental service (closed)
Transportation	Feb-Aug: Medium transportation boat 10-12 people Aug-Jan: Big transportation boat (30 people)
Road network, traveling distances;	14 km from Siemreap, good asphalt road.
Boat transportation local price	Chong Kneas area 1-9 22$, 10-17 39$, 18-27 45$, 28-36 50$, 37-46 60$ 3 hours tour Chong Kneas -Kampong Pluk 1-9 75$, 10-12 100$, 13-16 120$ 2,5 hours Chong Kneas - Kampong Kleang 1-9 110$, 10-16 160$ 3 hours Chong Kneas – Prek Toal 1-9 120$ 6 hours Chong Kneas – Kampong Luong 1-9 170$, 10-16 310$ 6 hours Chong Kneas – Phnom Penh 1-9 240$ **Tara Boat** offers daily tours at $27 for a half-day trip (or $33 for a sunset trip). This includes food and drink on the Tara Boat, unlimited on the sunset tour hence the higher price. **Beyond Unique Escapes** also offer tours that seem to be well managed and popular with guests for $20.
Opportunity for investors	Night eco-stay fishing cruise boat Eco-lodge construction Restaurant with viewpoint construction with kayak rental service Kayak and SUP boarding rental at the flooded forest area Crocodile farms and floating villages excursion

b) Suggested discovery boat routes – 1st July-15 February period

5.b.1 Battambang – Bakprea - Prey Chas village (1 day or 2 days-1 night)

5.b.2 Siem Reap – Mey Chrey village (1 day)

5.b.3 Siem Reap – Mey Chrey village – Prek Toal village- Prey Toal bird sanctuary (2 days+1 night or more)

5.b.4 Siem Reap – Chong Kneas village - Prek Toal village – Prey Toalbird sanctuary (1 day)

5.b.5 Siem Reap – Chong Kneas village (1 day)

5.b.6 Siem Reap – Chong Kneas village – Kbal Krabay - Prek Toal village- Prey Toal bird sanctuary (1 day or 2 days+1 night)

5.b.7 Siem Reap – Kampong Phluk village (1 day)

5.b.8 Siem Reap – Kampong Kleang village (1 day)

5.b.9 Siem Reap – Kampong Kleang village – មាត់ខ្លា Moat Klah village (2 days+1 night or more)

5.b.10 Siem Reap – Kampong Kleang village – Kampong Phluk village (1 day)

5.9 Particulars of mid-rainy season variations, year 2022

Even if rainy season 2022 has been particularly wet, road access from Siem Reap has substantially improved, part of the provincial road infrastructure improvement, without endangering remote areas. As for the Battambang side, the specifics of wetlands in that area still and will impair road access to areas of interest. Therefore, this region seems more adapted to mobile base camps and boat-based activities.

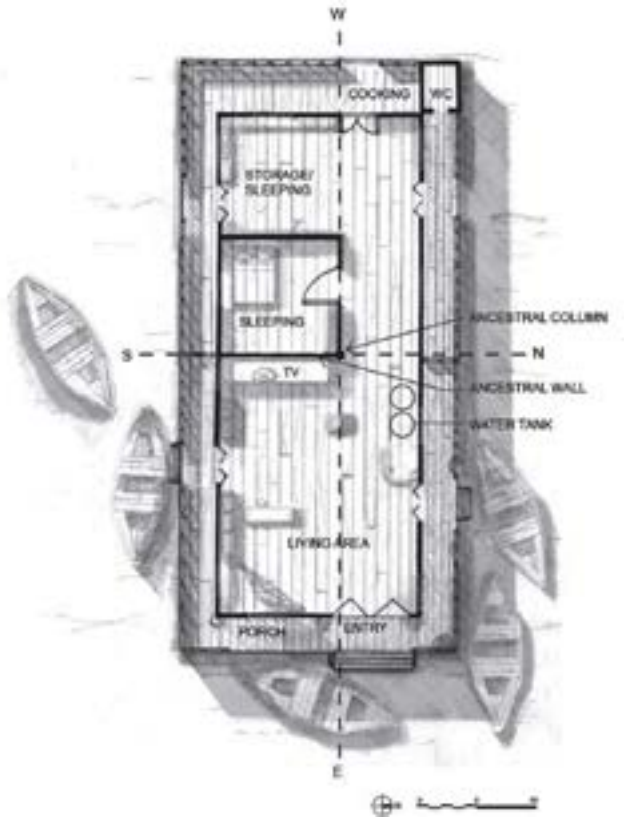
5.10 Documenting housing and daily life, September 2022

We have noticed a significant increase of lake house rentals and homestay offers, particularly in the Siem Reap area. While this particular touristic option does not fall into the scope of our report, this trend seems to be a response by individual villagers to the lack of proper touristic infrastructures that might stimulate local employment and income.

Fact is villagers letting their own houses on short- or long-term lease indicated to us that they would rather get seasonal or stable jobs in resorts or hospitality venues if only outside investors would contribute to their development.

Rentals and homestays are relevant options in this report's context as they could be useful for potential investors prospection, initial survey and infrastructure build-up.

In most of the cases we have witnessed, owners could not afford to significantly beautify the for-rent houses, nor vary from the typical interior design of Tonle Sap lake houses as depicted here:



(source: ROSHKO 2011)

6 Additional Dry Season Explorations, January-May 2023

6.1. Siem Reap Area

See Exploration Closing Report.

6.2. Battambang Area

See Exploration Closing Report.

7 Recommendations

7.1 For a legal framework guaranteeing the integrity of ecotourism resorts and activities

In the course of our discussions with WB, MTC and MEC experts, we made the following observations:

7.1.1 Legal Binding

While the last decades have witnessed numerous – and often bitter – controversies around land property status (or lack-of) in the wetlands[65] , the recently issued Prakas (Executive Order) on micro-concessions in Protected Areas points to recommended size (less than 10 ha.) and duration (less than 15 years) that we think should be fine-tuned to the ever-changing TSBR context[66]. We would rather advocate for substantially smaller concessions (1 ha maximum), provided that the government guarantees reasonable buffer zones around it, where infrastructural, industrial or agro-industrial, high-density residential developments should be prohibited.

7.1.2 For a sustainable road infrastructure

We firmly disagree with the WB development projects that include plans to improve access to eco-sites within the Protected Areas with road construction. In Cambodia, as in many developing countries around the world, every previous road development has always triggered nefarious activities such as deforestation and land-grabbing. We believe donors should carefully evaluate the impact of such developments before implementing what could become disastrous for the environment.

7.1.3 Peer-to-peer validation and monitoring

Concession allocations have often been associated with deforestation, monoculture adverse to biodiversity, and even outright land speculation where concessioners attempt to sell or lease out their concessions to investors for significant profit, instead of undertaking investments themselves. This led to a massive amount of attractive areas being kept unused for decades.

We therefore suggest that on top of the governmental approbation for concessions attribution, a peer-topeer validation scheme would be put in place. The beneficiaries of such eco-tourism concessions would need to present their projects, their track record and the progress of their activities to the other concessioners initially and on an annual basis and obtain their validation. Points to be examined would include the reasonable respect of schedule, impact on environment and actual fit within the eco-tourism concept. This would guarantee that the concessions are rightly used and contribute to the common visibility of the initiative and of ecotourism in the country.

Peer-to-peer evaluation and benchmarking often results more efficient than ad hoc government agencies. On that note, potential investors in Cambodia should inquire about the efficiency of the Thai DASTA (Designated Areas for Sustainable Tourism Administration) operating in the neighboring country.

Established in 2003, DASTA boasts strong results in “encouraging local communities to apply new management knowledge in order to achieve their goals”, yet the feedback we have got from the private sector seems much less positive.

7.2 Ecotourism recognized as strategic regional activity: Strong and

To the day, the hospitality industry (private sector) has still to be recognized as a force behind ecosystem preservation and social development. The Mekong River Commission (MRC), for instance, has the following breakdown for publication and activity reports topics: Agriculture and Irrigation, Climate Change, Fisheries, Flood and Drought, Gender, Hydropower, Navigation. Adding ecotourism as a category to the assessment of NGOs and government bodies active in the TSBR area is highly recommended.

As the situation of larges bodies of freshwater is rapidly deteriorating worldwide, the tourism industry private sector must contribute actively to the monitoring of lakes, supporting global research tools such as HydroLakes or GLEV.

During the three seasonal field surveys around the TSBR, we have been able to identify:

7.2.1 Strong Points

- Unique nature landscapes and boat riding experience;
- Extraordinarily rich and diverse eco-system including forested floodplain;
- Well-connected natural and authentic culture attractions;
- Geographical proximity to Siem Reap City;
- Previous experience of local communities in tourim-related activities, such as homestays,restaurants, boat and kayak rentals, guiding, handicraft shops;
- Potential opportunities for local and private investments in tented camps, lodges, restaurants, viewpoints, leisure and transportation boats, kayak and paddle-boards, crocodile, frog and snake farms.

[65] See MARSTON 2016 (in Spanish).

[66] The 22 August 2022 print publication of the Prakas comes with a list of Criteria to be fulfilled, a Sample Letter of Proposition and a Sample Land Use Contract between the developer(s) and the MoE.

7.2.2 Weak Points

- Tourism-supporting infrastructure remains rather basic: tourists are not properly informed about mud, dirty water, smell and noise pollution from boat engines, sunburns, etc;
- Lack of proper facilities on the way and on site: public toilets, comfortably equipped viewpoints, restaurants and shops, clean water public access points;
- Boating experience remains uncomfortable and unsafe, with noisy and contaminating engines, no canopy on most of small-sized boats;
- Poor waste management practice in practically all settlements;
- Limited local knowledge and understanding of ecotourism development;
- Limited availability of labor force with hospitality skills (especially guiding);
- Public infrastructure investments remain limited, short-lived and substandard.

7.3 Peer-to-peer coordination on land use and other issues

It is imperative that any resort project development take into account the boundaries of the fish sanctuaries recently established by the authorities. In 2022, there were eight fish sanctuaries spanning some 235.4 km2 (91 mi2), known locally as "conservation areas." Our field survey in September 2022 showed that the implementation of said sanctuaries was rather lax.

While the 23/08/2022 SSEDP Prakas (Executive Order) established important rules on land us for ecotourism projects in protected areas (less than 10 ha allotments, no more than 30% of total allotted land dedicated to activities and infrastructure)[67], Monitoring & Evaluation (M&E) is left only to "the MoE working group with participation of subnational administrations, authorities and SSEDP owner"[68]

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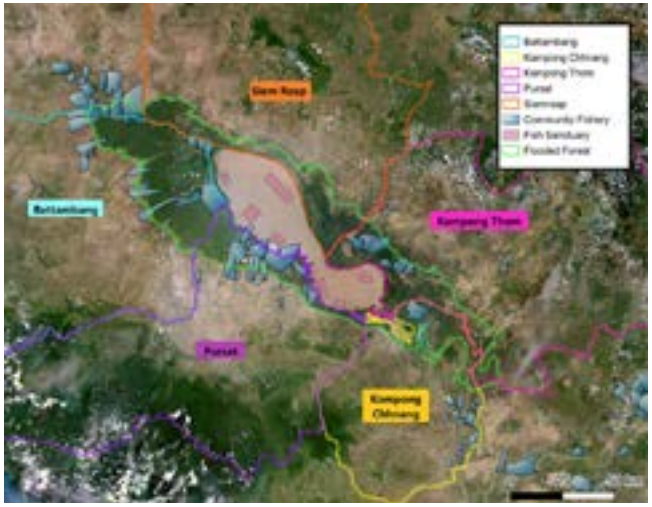
In the case of TSBR, we suggest to form an ad hoc Consultation Group involving stakeholders in tourism and other economic activities.



Source: Open Development Cambodia

Conservation Area signage in September 2022 (photo VMI)

7.4 Financial incitement for ecotourism projects

Early 2022, a public-private financing plan, the $150 million Tourism Recovery Co-Financing Scheme (TRCS), was launched with the aim of restoring the Cambodian tourism industry and promoting growth. Key offerings of the TRCS include a maximum interest rate of 6.5 per cent per annum, a 12- month grace period, loan term of up to seven years, loan amount of up to $400,000 and the option of receiving funds in either riel or US dollars. According to MTC officials, this financial tool will help to

"FGS, will be an important financial tool to quickly align tourism recovery with the ministry's expectations that Cambodia will receive 7 million foreign visitors and see 11 million domestic trips by 2023[69]. However, these expectations did not materialize so far, due in particular to

- lack of direct flights to Cambodia,
- more aggressive promotion from Thailand and Vietnam tourism officials on the international scene,
- unexpected delay in Chinese international travel restart,
- Cambodian international tourism remains challenged in comparison to Thailand and Vietnam, its direct competitors, as tourism taxation, cost of electricity, food and labor are significantly higher here in Cambodia.

The Kingdom of Cambodia has yet to define its policy regarding taxation on tourism, at a time whencountries like New Zealand, Italy, Thailand and Buthan have already implemented -- or have engaged the process to do so, or have finally opted out – an entry tax on tourism (as high as 190 USD per day in the case of Bhutan, while Thailand has been considering fixing a flat entry fee of 9 USD per visitor, starting October 2022).

[67] See our remarks on the Prakas in section 6.1.1.
[68] PRAKAS n 294 2022, p 6.
[69] See Hom Phanet, 'Rules in works for loans from tourism recovery scheme', The Phnom Penh Post,

7.5 Hospitality and Activity Concepts adapted to terrain and climate specificity

Building orientation, natural air flow, insulation by vegetal roof or by double-layered roofing with air buffer, rainwater recycling, non-contaminating use of solar energy (avoiding accumulation batteries with instant use): hotels in Cambodia, and MAADS ones in particular, have been pioneers in sustainability.

In 2020, renowned hotel architect and interior designer Bill Bensley, stated that 'luxury is dead'. To a large extent, the well-being of travelers nowadays lies more in the active knowledge of CSR and community involvement of the resorts they visit than in the piling up of costly and ostentatious amenities. In his White Paper on Sensible-Sustainable Solutions, Bensley gives the example of drinking water in a tropical country such as Cambodia:

> Approximately 4 million people in Cambodia lack access to clean water. Close to 80% of the total population lives in rural areas, meaning that poor access to clean drinking water and proper sanitation is a daily problem. With the help of the good folks at Kohler, we found the Kohler clarity system filters out 99% of bacteria. We also found that Cambodia's intense weather shifts, which have only intensified with global warming, mean that often villages don't have water. • In partnership with Kohler, 1453 water filters have been given out and 1500 wells dug. Most of these go to families in the villages, as well as to schools. • One water filter provides 40 liters of water a day: enough water for a small family. Altogether on costs approximately USD $80 and just needs a yearly filter change - $80 to change the life of a family. • For many, the lack of access to clean water results in children walking miles to the nearest clean water source, instead of going to school - losing an education which could allow them to break the cycle of poverty.• Cambodia's intense weather shifts mean that water in the villages often dries out: the digging of 1500 wells and pumps has been life changing. Each one is marked with the name of the family who donated it.[70]

Pivoting to more sustainable hospitality infrastructure starts at the very stage of building planning and construction. The same author gives an indicative list of construction materials that can drastically reduce water consumption and carbon footprint, for instance:

> Insulation from recycled denim • Straw Bales • Bamboo • Recycled plastic • Ferrock - stronger than concrete but less Co2 & made of recycled materials including steel dust • Timbercrete - concrete + sawdust • Soil or mud - including mud from sewage plants to make bricks • Ecobrick • Ecoblock • Sustainably sourced wood • Rammed earth • Wood and cork remains (pruning, sawmills, sanding dust) or vegetal fibres (bamboo, coconut, etc.) become insulators when mixed with cement. Also see Hempcrete, Grasscrete • Adobe • Cork • Cross laminated timber • Plant-Based Polyurethane Rigid Foam • Sheep's Wool • Recycled Steel • Mycelium • Renovated antique doors • Recycled glass tiles • Hemp rugs • Ground-paper-pulp wallpaper • Scrap metal-turned stools • Newspaper as wallpaper and sketched over...[71]

Applied to TSBR, we recommend organizing sustainable criteria around one central axis: mobility, as in geographical flexibility. We envision floating resorts or base camps that can be moved along the shore depending on climatic and environmental factors. This requires lighter structures and falls in line with ancestral housing traditions around the lake, as described in the context of Chong Kmeas commune as follows:

> During the wet season, the residents of Chong Kneas cluster around the base of a mountain called Phnom Krom, which is a rocky outcrop rising 140 meters above the seasonal flood lines. During the dry season, the movable boathouses are clustered at a boundary zone (or ecotone) between the lake and the plains. Changes in location occur in approximately twelve distinct stages. The mobility of the village collective enables the occupants to move freely between the lake and higher ground. The village composition is therefore less structured than those of the rice farmers' villages of the upper plains.[72]

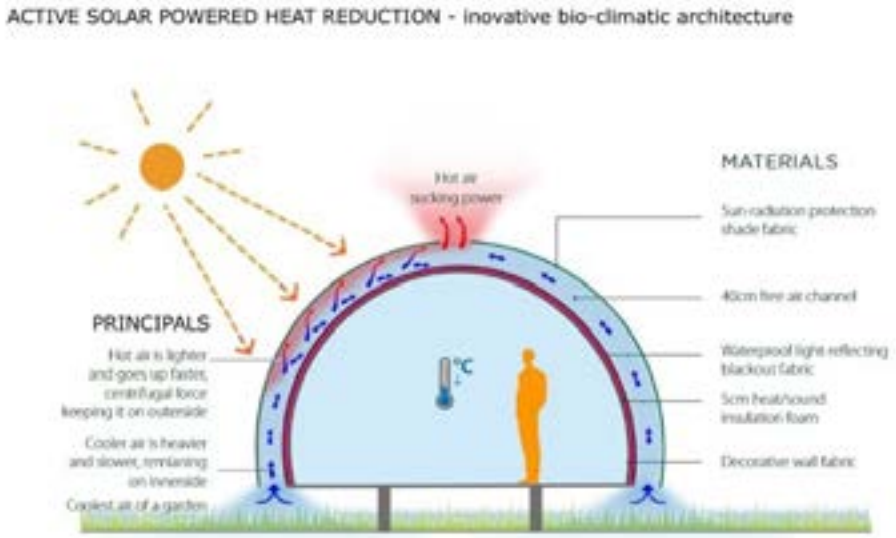
Our recommended concept of mobility is not strictly guided by the seasonal migration between flooded zones and higher ground, but rather organized according to the change of scenery round the year, accessibility factors, unexpected rise of noise pollution due to human activity, and so forth.

[70] BENSLEY 2020, p 6.
[71] Ibid., p 20.
[72] ROSHKO 2011, p 3.

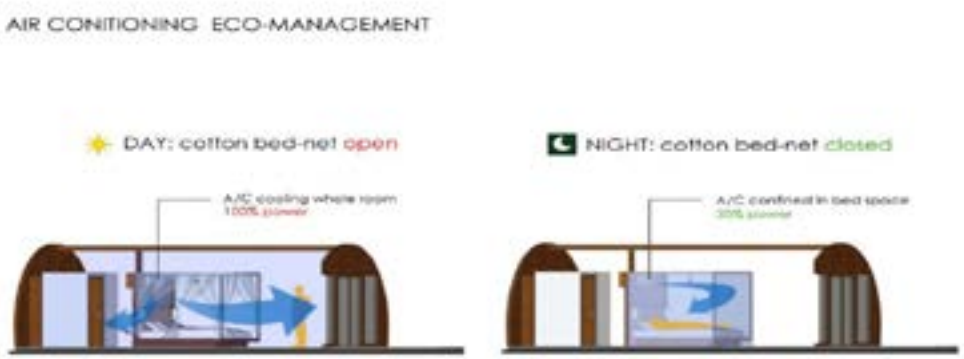
7.6 Ecotourism Floating Structures: our experience with Jungloo V.1and V.2

The Jungloo is a tented bungalow we specifically developed for the hot and humid tropical climate of
Cambodia since 2017. It exists also in a floating version. Being 'light on earth', we believe it is a good
option for floating accommodations on the Tonle Sap Lake. Below are a few details on our Bioclimatic
Tented Bungalow for Tonle Sap Lake (JBTB-TSL). V2 add new eco-friendly features to the previous
version, as well as a 'Khmer feel' in layout and indoor and outdoor decorative patterns.

Jungloo V1, developed years before the current trend of 'tiny houses' and glamping structures.
see more



See more about jungloo.



Preliminary 3D of Jungloo V.2

We are currently testing at Floatation (our floating lounge in Phnom Penh) a floating platform made from decommissioned containers filled with polystyrene waste (damaged thermo-boxes used to carry seafood from Sihanoukville). An experience we (in quite a cheek-in-tongue way) call 'Dine on Trash'.[73]

[73] See 'Recycle, Build, Launch: New Concepts for Floating Platforms', LivingCambodia Blog, 12 Oct.2021.

Jungloo V2 Completed Prototype, Phnom Penh, June 2023

Jungloo V2 floating version, artist view 07 2023

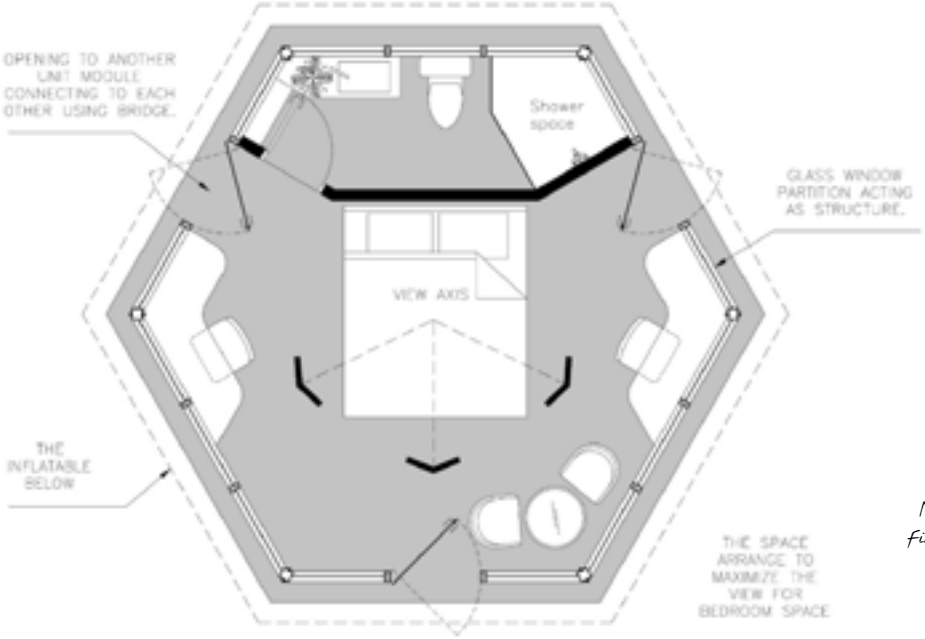
7.7 Additional Recommendations for Resort Projects

MAADS 16-year experience in cooperating with architects, contractors, sustainable material productors, water- and air-management specialists, in promoting novel building solutions adapted to tropical environment, might be an asset for future investors.

7.7.1 Architectural Design: Floating Structures

Climate change and demographic pressure have stimulated public interest and RD investment in floating structures, and even floating cities. This avenue should be explored particularly by developers in hospitality industry. Public discussion and dedicated think-tanks on topics such as urban planning related to water level fluctuation or integration of water in house design is on the rise – see for instance ArchDaily '[Water in Architecture]' forum. MAADS has been working along that line for years – our Mekong Bungalows (later on rebranded Floatation Bungalows) on the river off downtown PhnomPenh, in Areksat area, were the only high-end floating accommodations in Cambodia since 2010.

We are developing our own concept and design for sustainable floating platforms and units that can be easily moved from one point of the lake banks to another, and weather unexpected or seasonal water level surge. We shall share their specifics with interested parties, while keeping on our fruitful dialogue with eco-design researchers and developers. Code-named Reflexion, these modulable, lightweight concrete platforms installed upon inflatable nodes provide the basis of our accommodation and leisure units (standard size 7x7 m, 9-ton payload per unit), currently in development stage in Phnom Penh. [We are sharing here] some artist's views and floorplans.

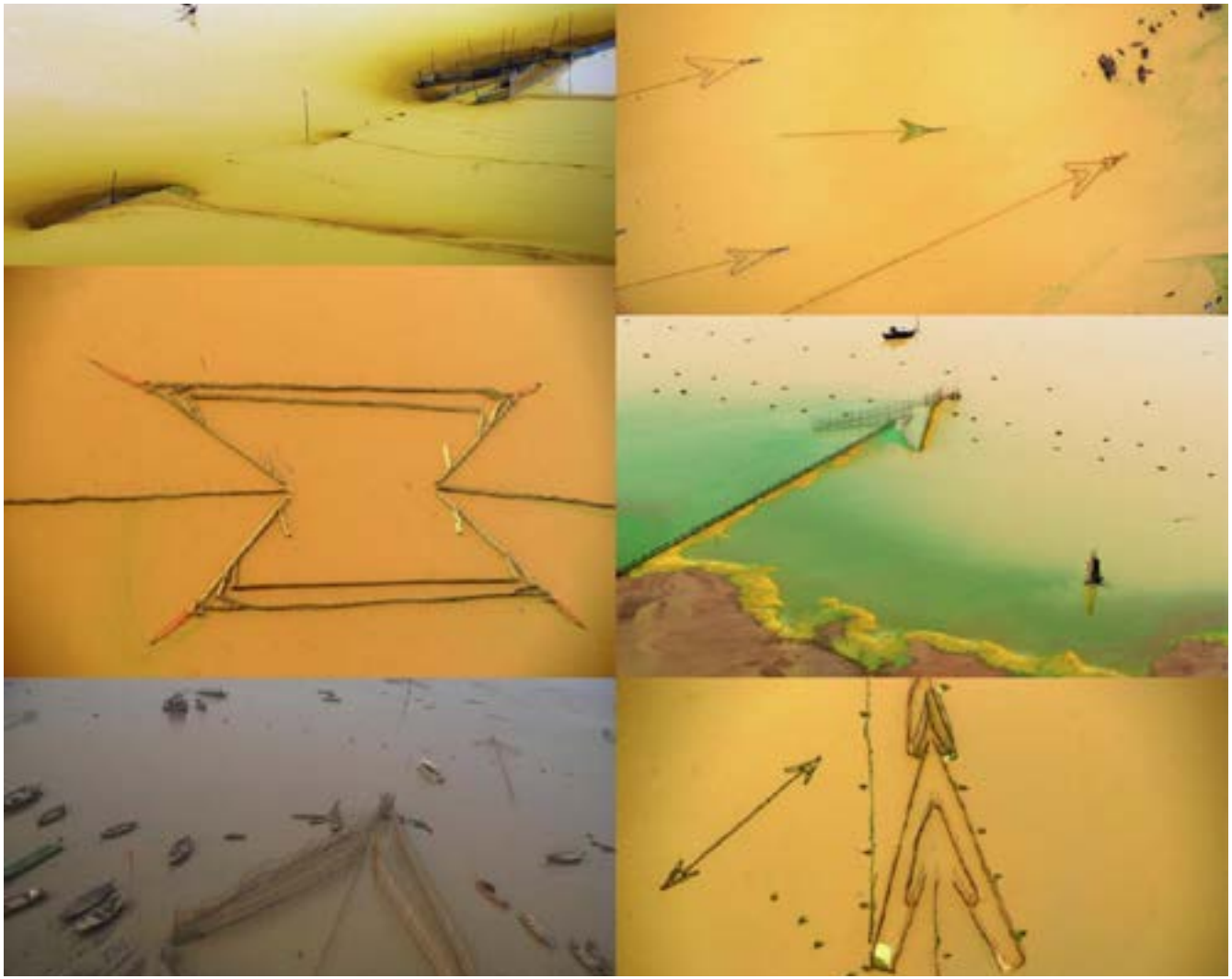


Note: indicative-only floorplans and projections. Final design will be released in September 2023.

[See 'Reflexion' Floating Structure Presentation.]

7.7.2 Materials, Color Palette

From intense blue to subtle ochre variations to uncountable shades of green in submerged forests or rice paddies, the TSBR landscape is a constant invitation to create structures and interiors in harmony with their natural environment.
We have invited Cambodian and international artists and designers to explore new ways of building and decorating sustainable structures by or on the Lake. Ongoing research and achievments will be published on Living Cambodia Blog.
We'll be happy to, and encourage future investors to do so:



Geometry of fishnet settings, ever-changing colors of the water (images from KOSTERIN 2020)

7.8 Ecotourism Sector Visibility in Area Surveys and Publications

a) Contribute with contents to an updated version of MoE/LLEE Tonle Sap Information Guide.
b) Create and moderate Facebook and Telegram Groups on TSL Ecotourism (Hotels & Activities)
c) Work closely with MTC and CHA (Siem Reap Chapter) towards a smooth integration plan of the TSBR to Siem Reap tourism sector.

7.9 Target List Finalization

Following additional Field Explorations in January-May 2023, we are adding here a final list of Recommended Target Points for potential investors, narrowing down our current identification of 18 RTPs to 14. They are located in 5 selected zones:

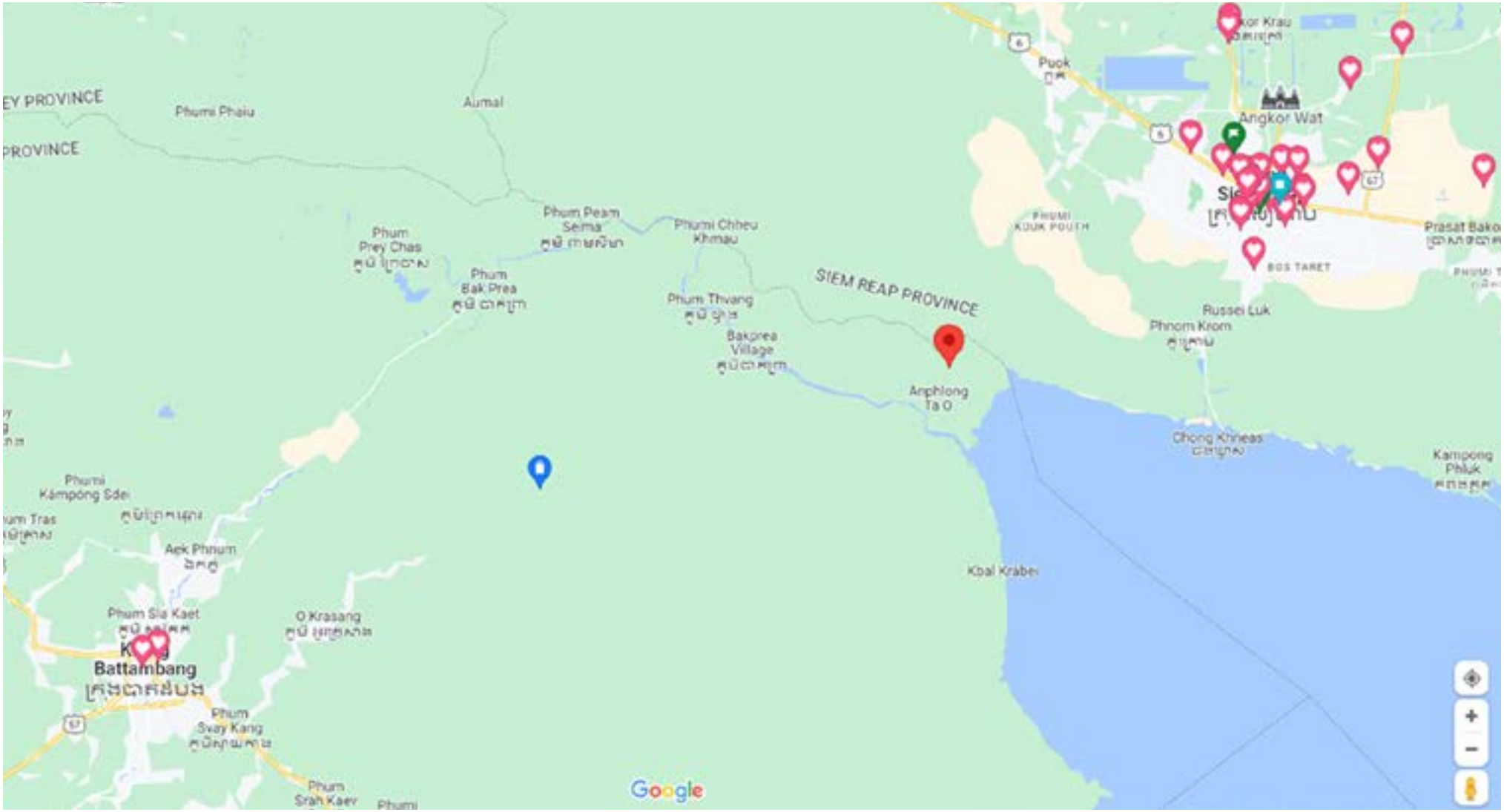
- Zone #1 – Mechrey village, Prek Toal village (Battambang Province)
- Zone #2 – Chong Kneas Village and Phumi Chhma (Siem Reap Province)
- Zone #3 – Kampong Phluk (Siem Reap Province)
- Zone #4 – Kampong Kleang and Moat Kla (Siem Reap Province)
- Zone#5 – Sangker River Area (Battambang Province)

Note for Accessibility Diagram: Row 1 = Road, Row 2 = Boat. October: High Water Level. January: Medium Water Level. April: Low Water Level. Red: not accessible, Yellow: challenging, Green: easy access. ***Full description in*** Closing Exploration Report.

[Land #1.1. Khum Chiveang]

GPS: 13.3206, 103.7003

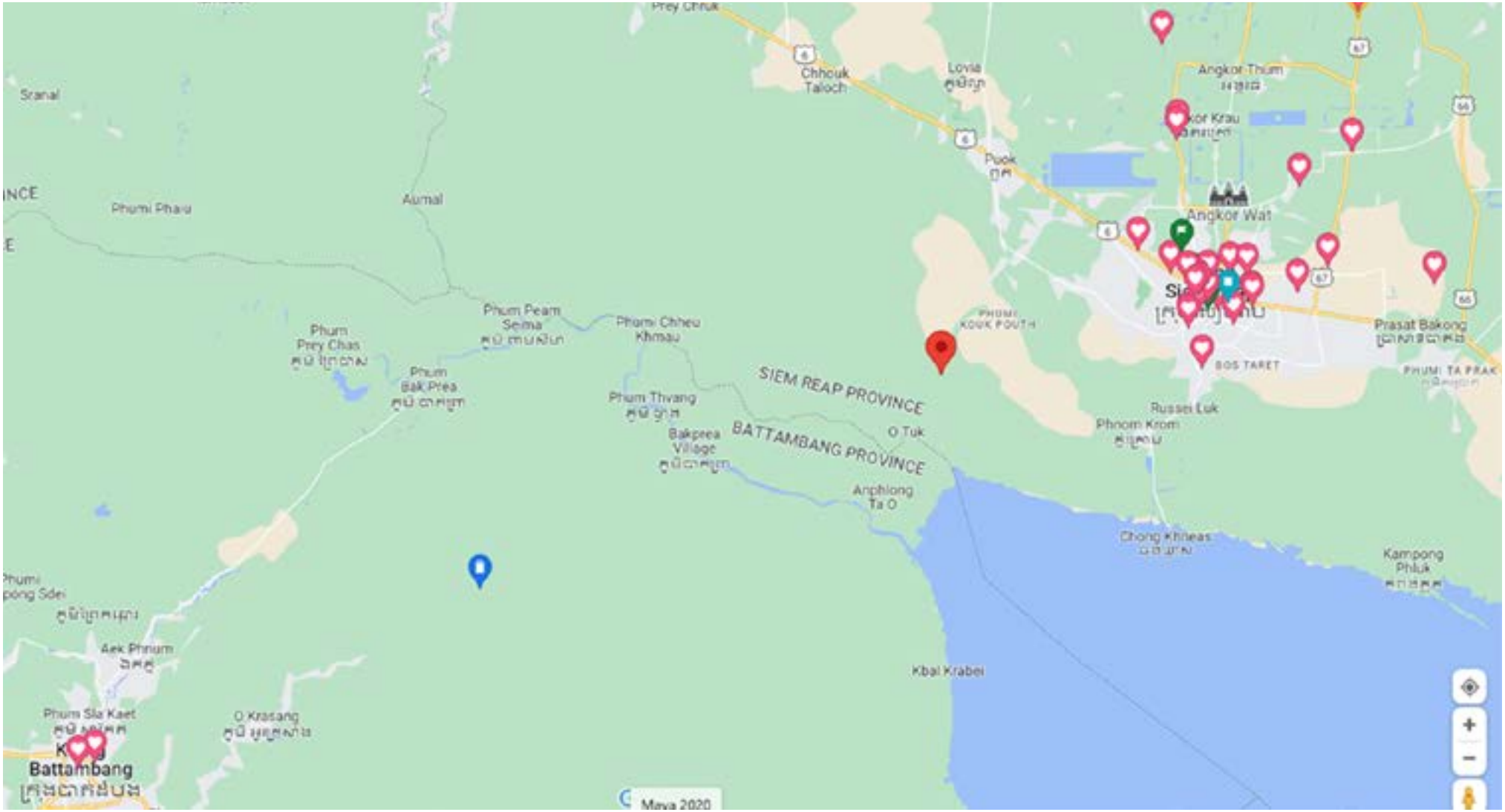
October	January	April



[Land #1.2 Kev Poar]

GPS: 13.3206, 103.7003

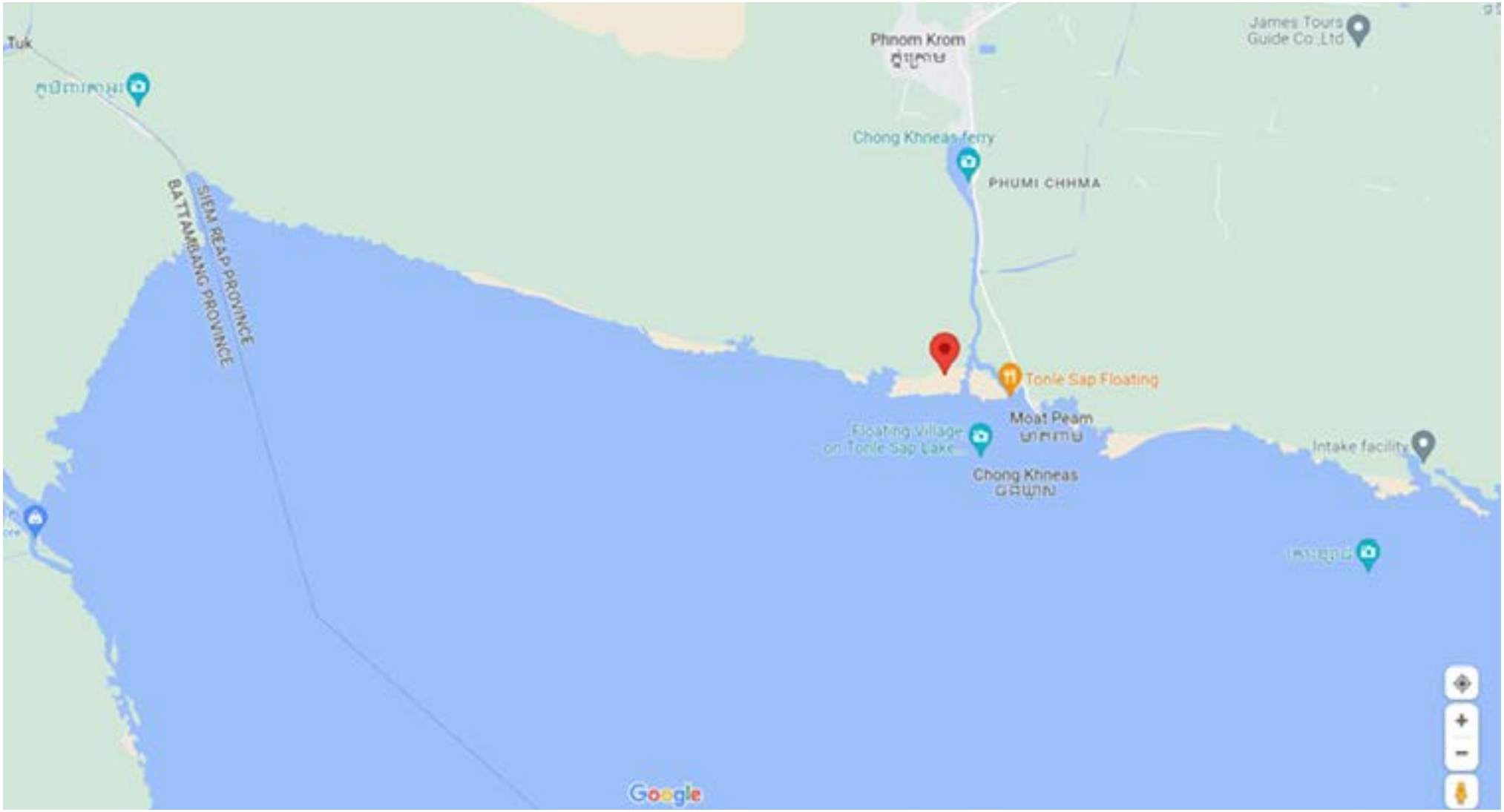
October	January	April



Land #1.3 Srangae

GPS: 13.25912, 103.73503

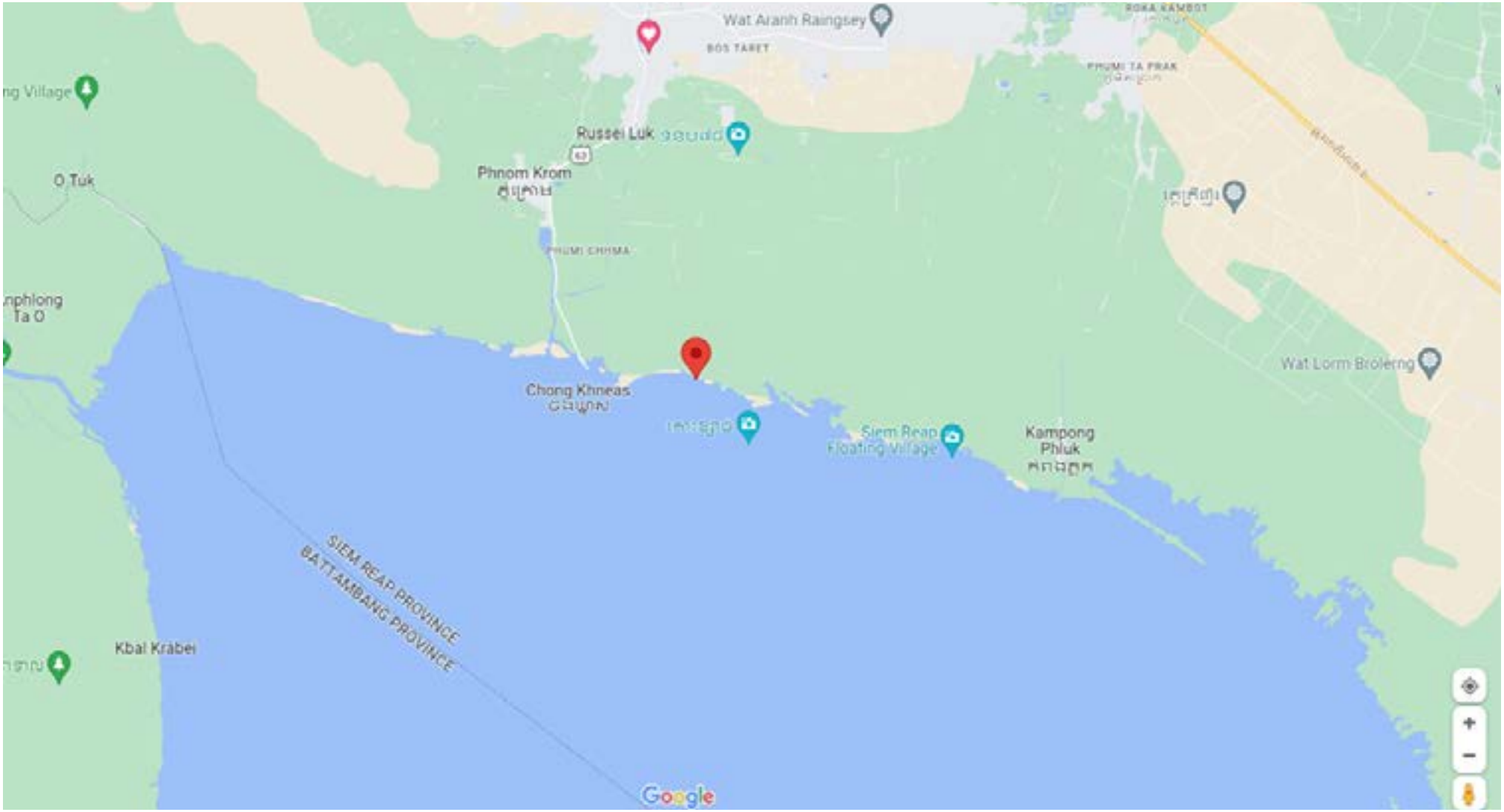
Land 1.3. 13.25912, 103.73503



[Land #2.1 Chong Khneas]

GPS: 13.23978, 103.81837

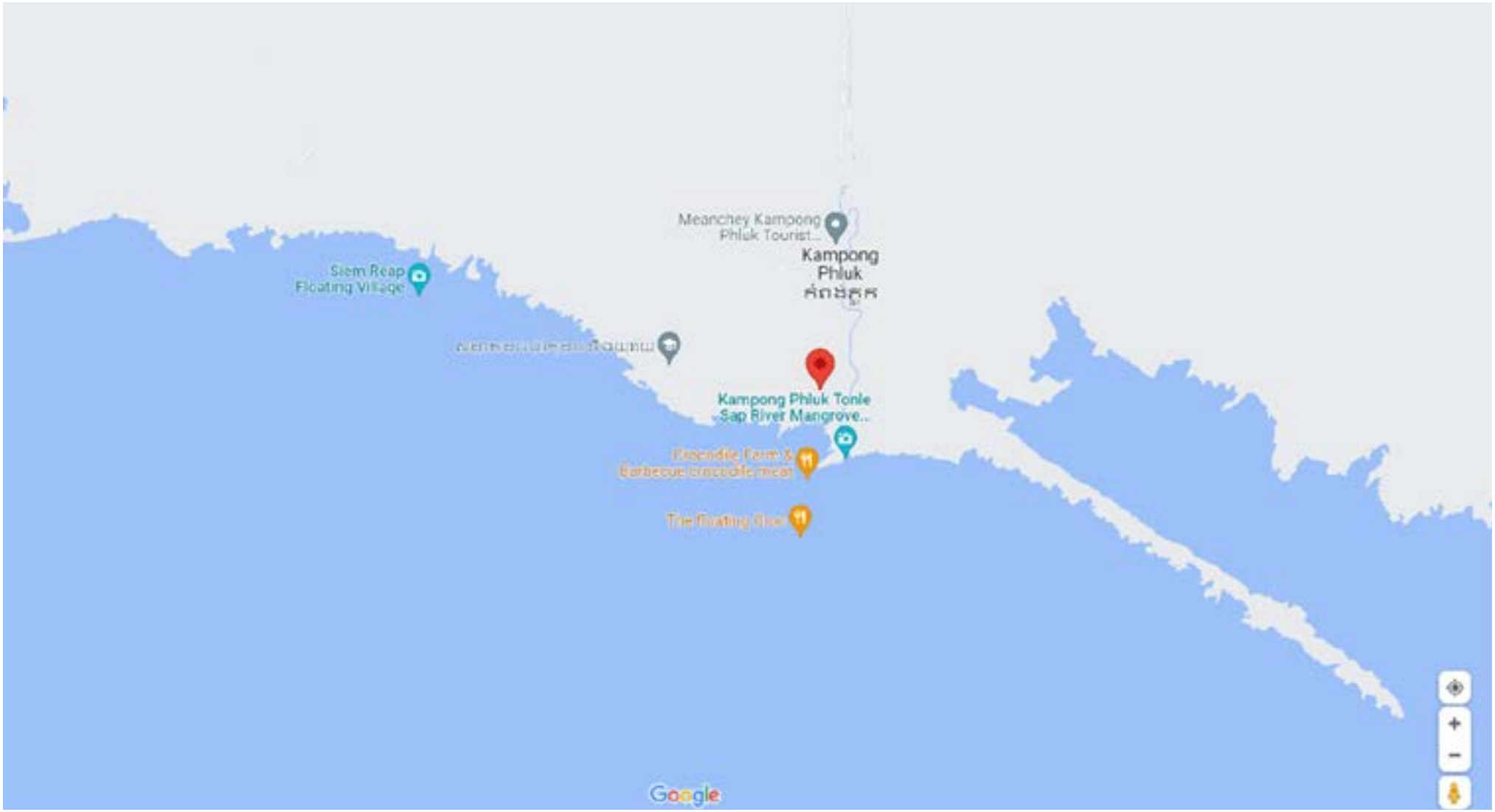
October	January	April



Land #2.2 Lake Bank

GPS: 13.23032, 103.86543

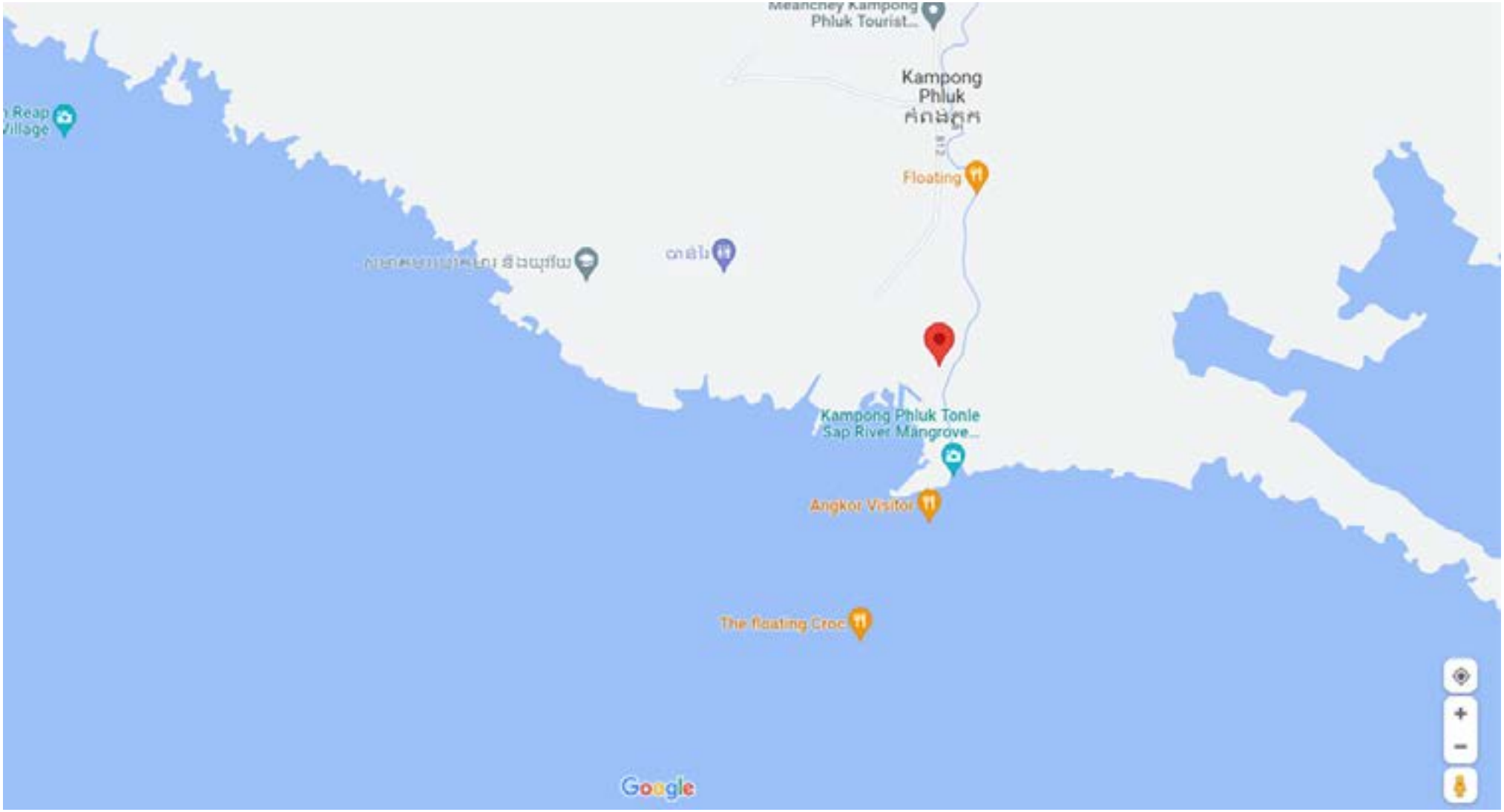
Land 2.2. 13.23032, 103.86543



Land #3.1 Near Kompong Phluk Village

GPS: 13.20508, 103.96906

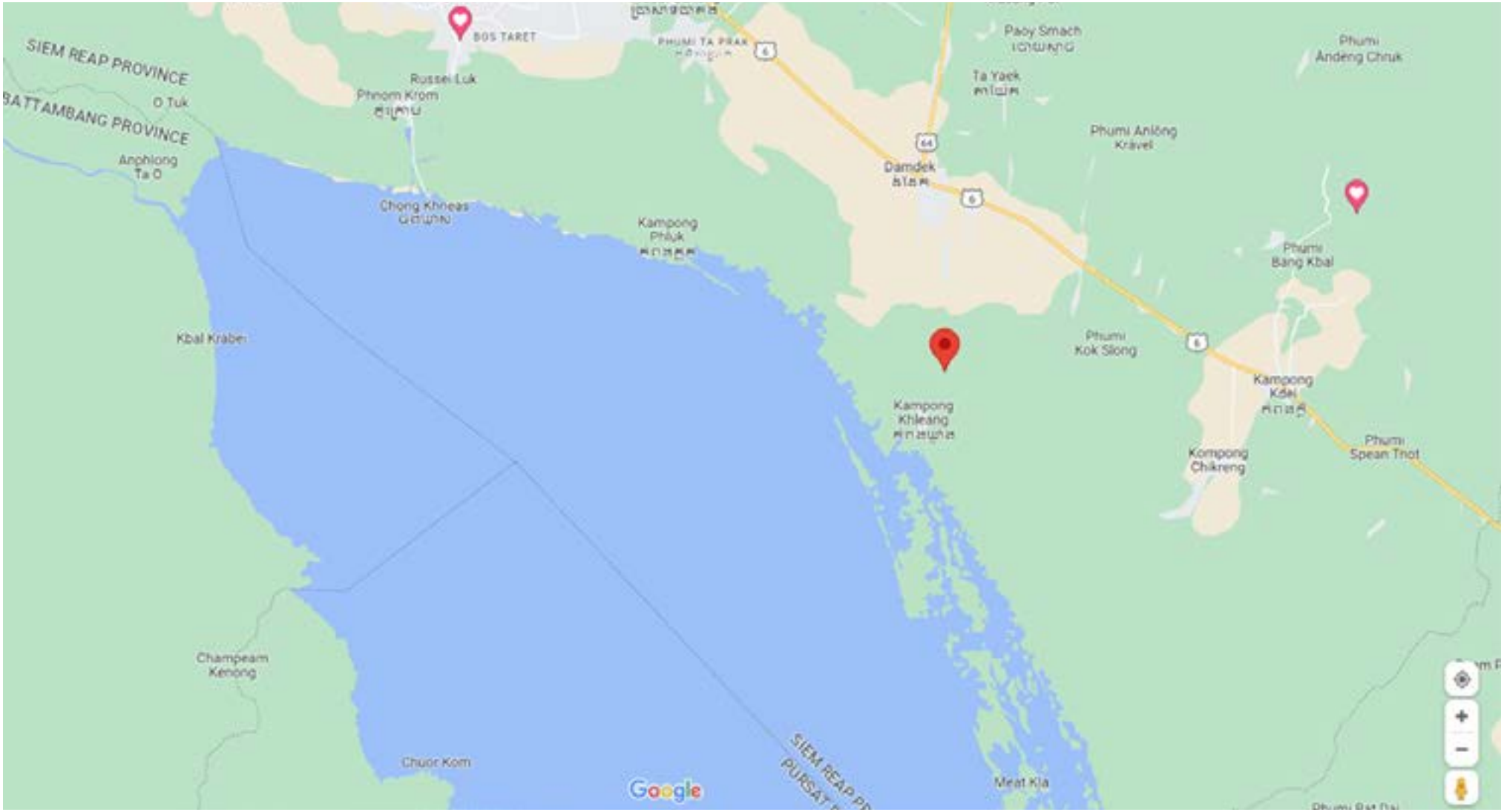
October	January	April



Land #3.2 Near village

GPS: 13.201, 103.97234

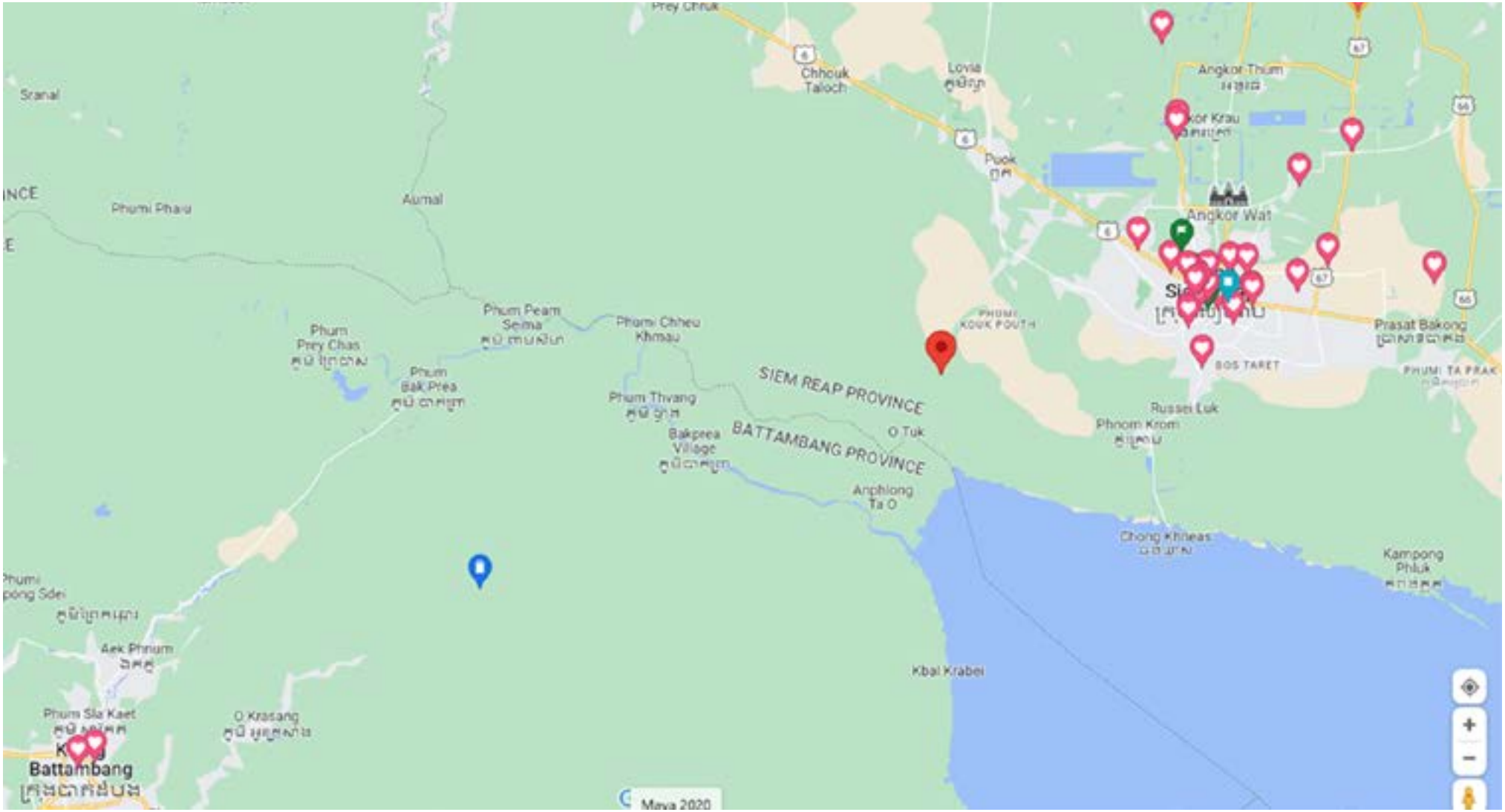
October	January	April



Land #3.3 Near Tahas River

GPS: 13.19985, 103.97375

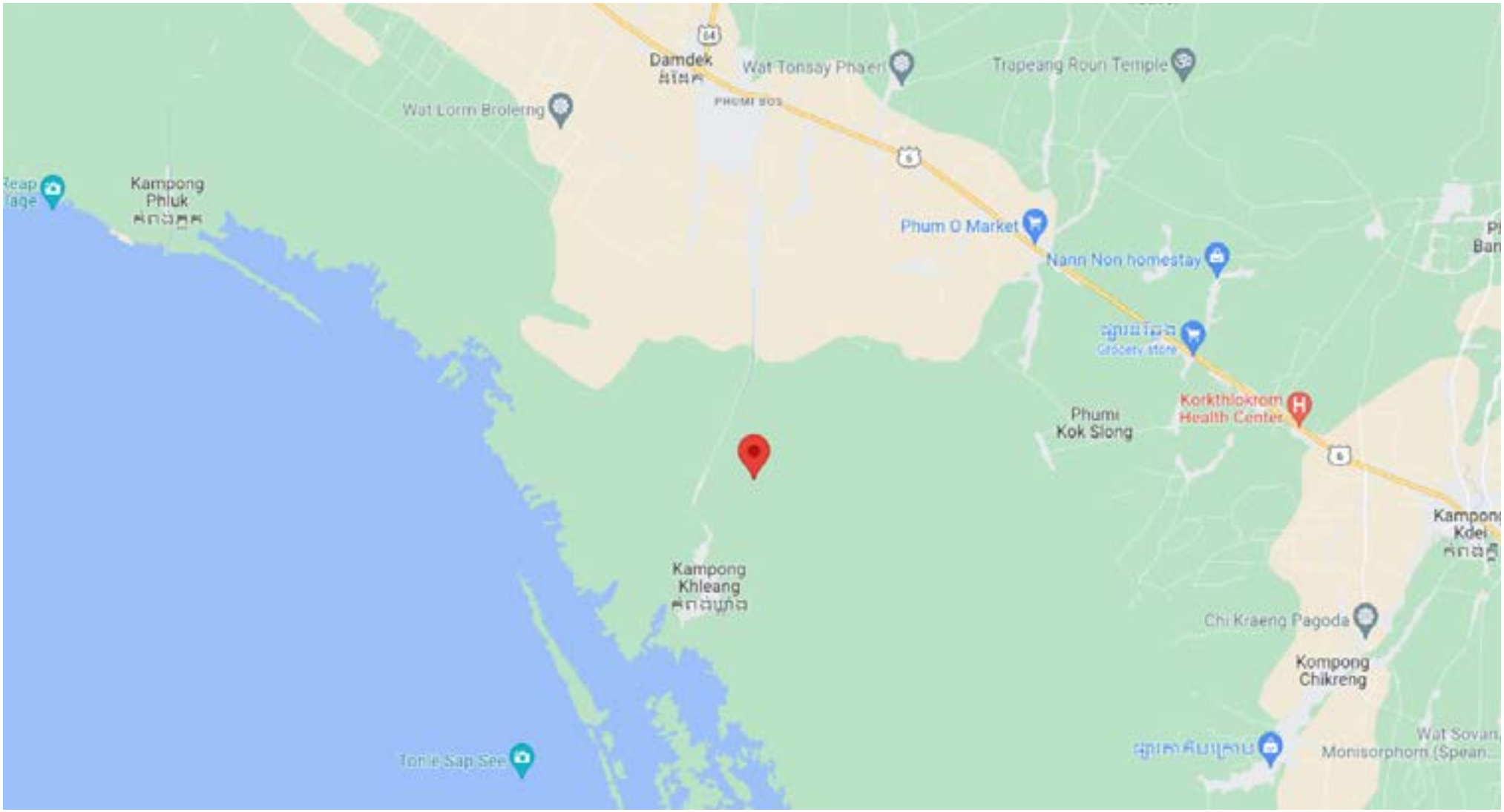
October	January	April



[Land #4.1 Near Kampong Khleang Village]

GPS: 13.13559, 104.13795

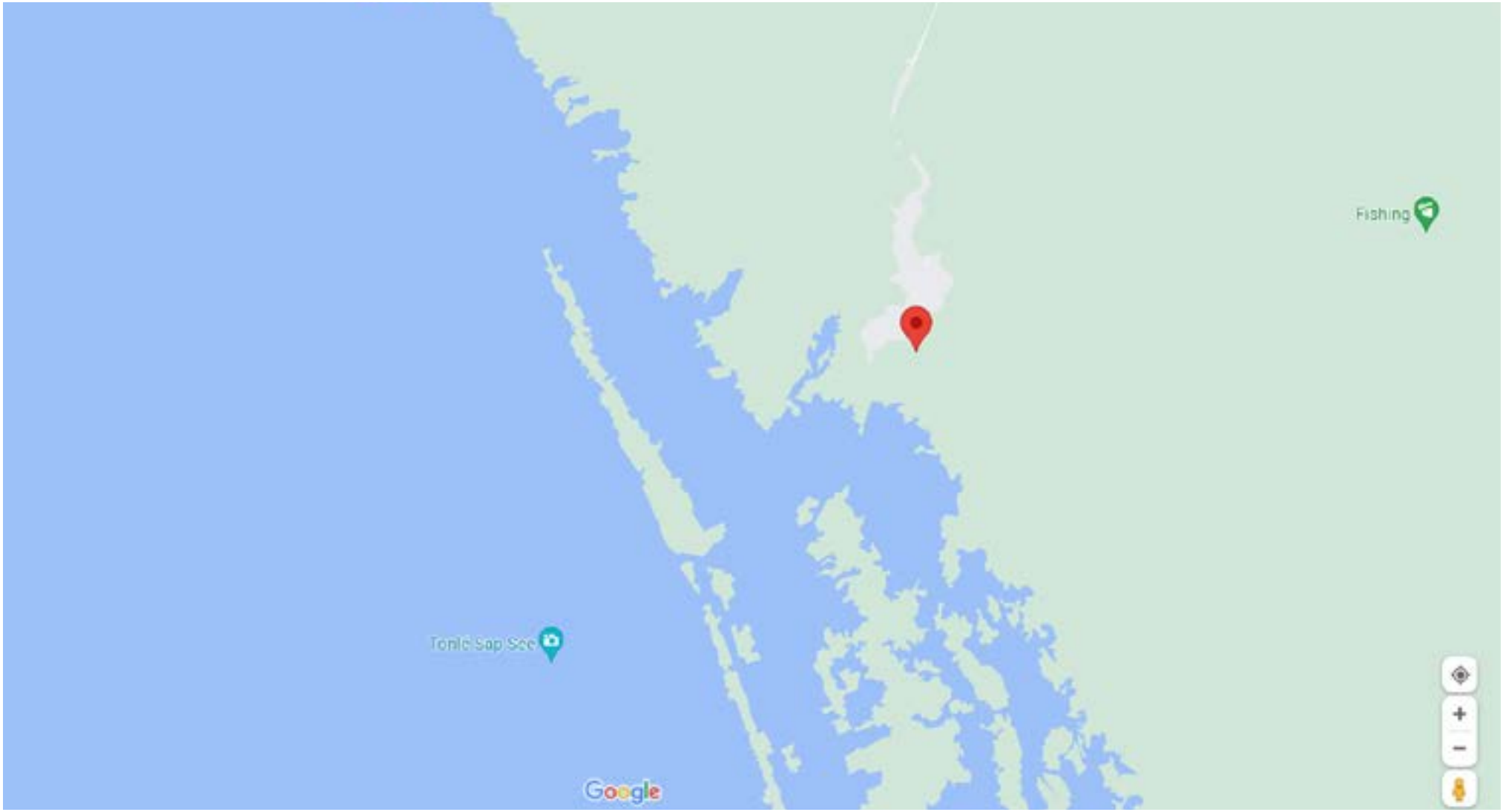
October	January	April



Land #4.2 Near Kampong Khleang Natural Lake

GPS: 13.09691, 104.1244

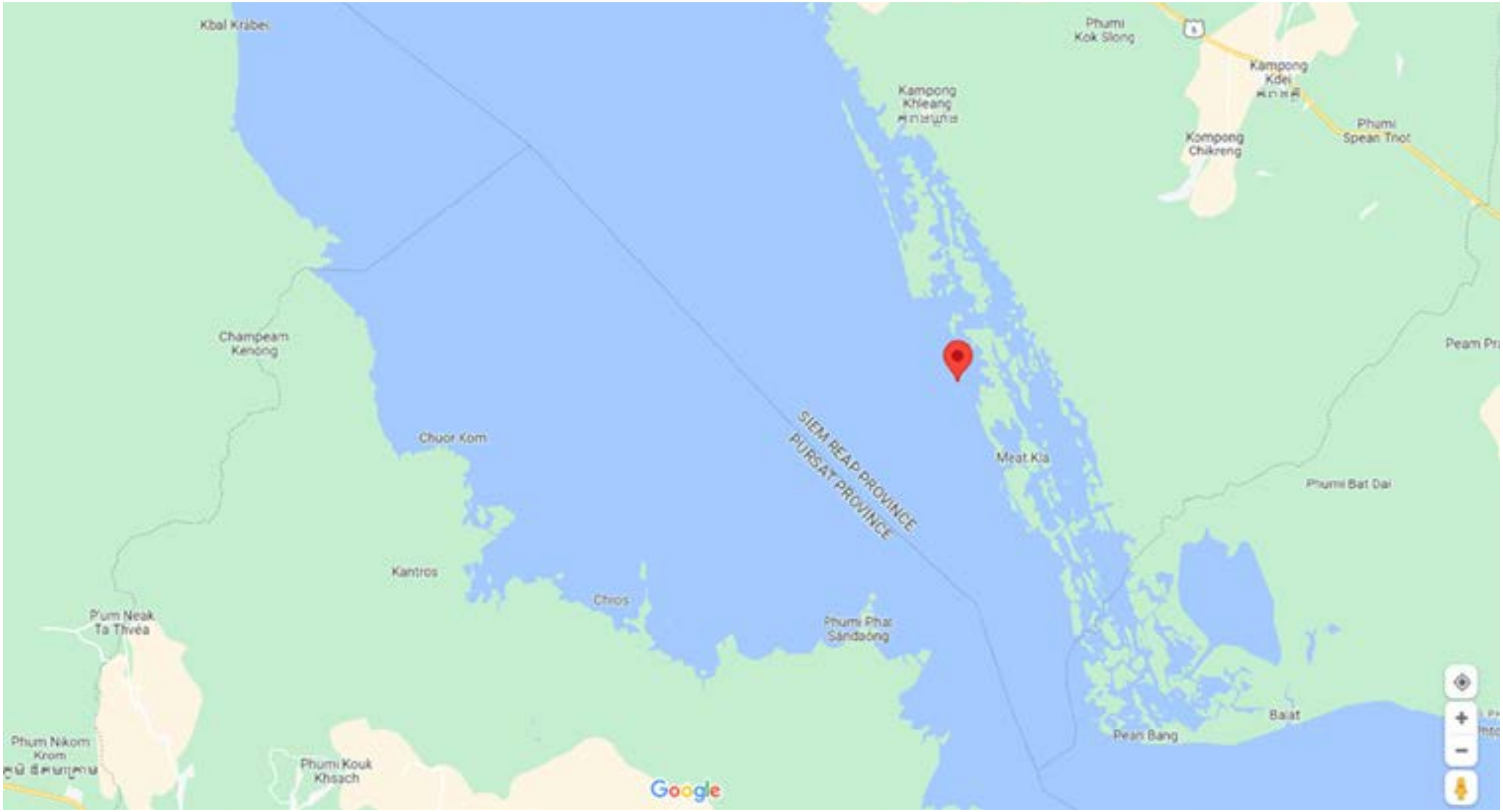
October	January	April



Land #4.3 Moat Kla Islet

GPS: 13.06868, 104.09271

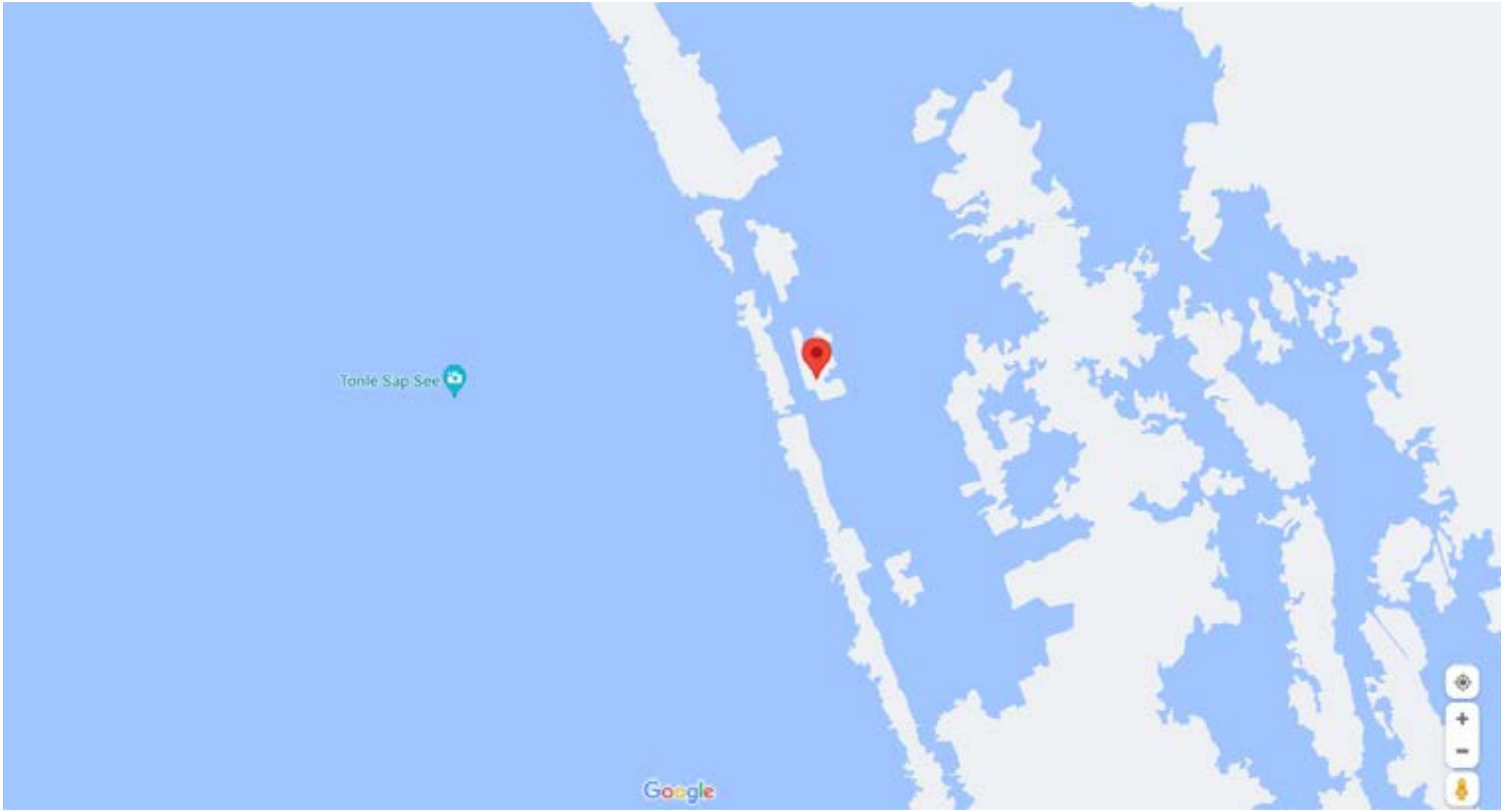
October	January	April



Land #4.4 Moat Kla Island

GPS: 13.05609, 104.10026

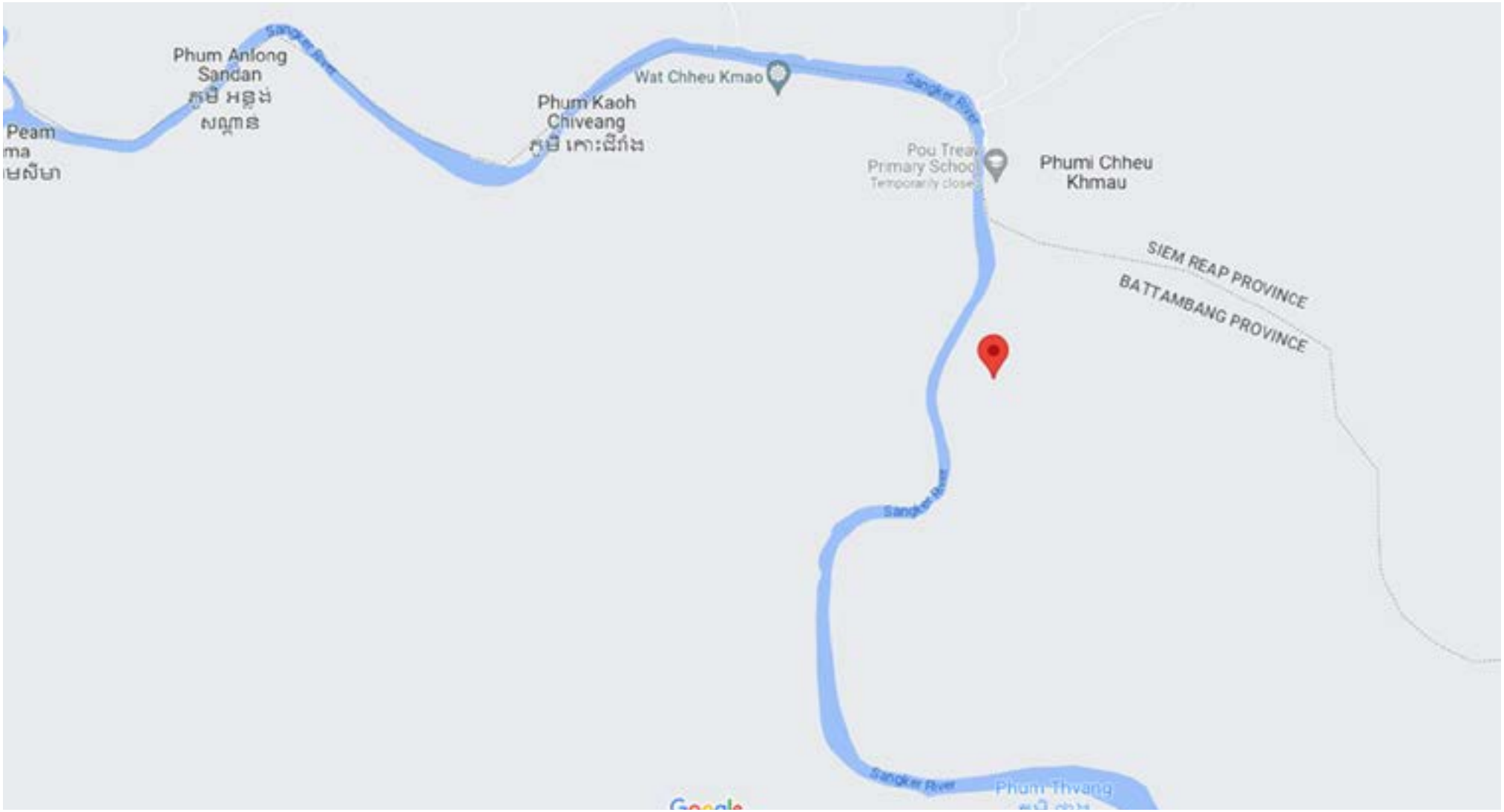
October	January	April



Land #.5.1 Sangker River

GPS: 13.33, 103.52886

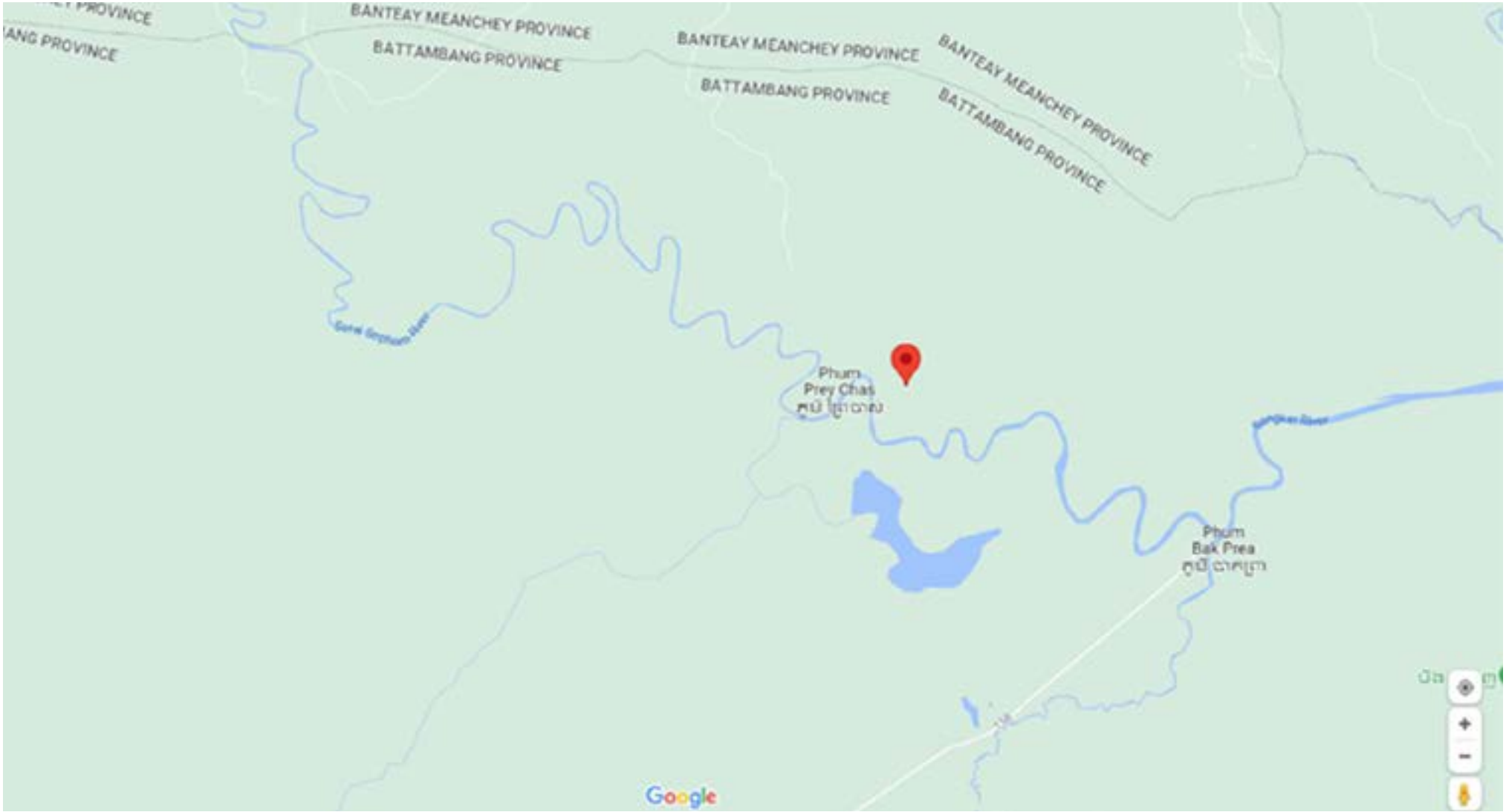
October	January	April



Land # 5.2 Phum Prey Chas Area

GPS: GPS: 13.33493, 103.35573

October	January	April



7.10 Towards TSBR EcoTourism Business Plan

The Business Plan for TSBR Ecotourism Resorts will be released in December 2023. Here is the ranking of 14 Target Points listed above we recommend for potential developers:

Preparatory Draft is available on request at info@maads.asia

Recommended Sites	Attractiveness	Accessibility	Legal Permissibility	Financial Feasibility	Overall Rank
Land #1.1 Khum Chiveang	Great (Natural reserve)	Low	Complex	Complex	7
Land #1.2 Kaev Poar	Great	Road improvement needed	Easy	Easy	3
Land #1.3 Srangae	Great (Open lake)	Road improvement needed	Easy	Easy	8
Land #2.1 Chong Khneas	Great (Open lake)	Boat mainly	Easy	Easy	2
Land #2.2 Lake Bank	Spectacular	Boat mainly	Easy	Easy	13
Land #3.1 Near village	Great	Road improvement needed	Easy	Easy	4
Land #3.2 Near village	Great	Road improvement needed	Easy	Easy	9
Land #3.3 Near Tahas River	Great	Road improvement needed	Easy	Easy	10
Land #4.1 Near Village	Great (countryside)	Easy	Easy	Easy	12
Land #4.2 Near Natural Lake	Spectacular	Boat mainly	Easy	Easy	11
Land #4.3 Islet	Spectacular	Boat mainly	Complex	Complex	14
Land #4.4 Moat Kla Island	Spectacular	Boat mainly	Easy	Easy	1
Land #5.1 Sangker River	Spectacular	Boat mainly	Easy	Complex	5

8 Documentation

To consult this bibliography with related activeURL links and online pdfs, scan

https://angkordatabase.asia/links/tonle-sap-lake-capfish-pavilion-documentation

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8.2 Links

8.2.1 Webpages dedicated to Capfish Lot 1 Report:

- Online Summary of MAADS/Pavilion reports
- Field Report DSI: RTPs, CTDs, CSRTs and POIs cards
- Google Earth Pro Map online (or request updated .kmz file here)
- Online Documentation (hosted by Angkor Database)
- DataWrapper Interactive Map of Ongoing Research

8.2.2 Background and Reference Websites:

- Allen Institute for Artificial Intelligence (AI2) EarthRanger Conservation Technology Program
- Ama by Taj
- Angkor Database (history, anthropology, sociology, biodiversity).
- AviBase Birds of Cambodia Checklist
- Cambodia Images
- Cambodian Ministry of Tourism (MTC)
- City Population Interactive Map
- Compagnie Fluviale du Mekong (CFMekong)
- Connexion (largest sustainable repurposed architecture project in Cambodia)
- CSRD (Center for Social Research and Development, Vietnam)
- Earth Trekkers (3-month stays in SEA)
- Easia Travel Cambodia
- Emerging360 (consulting firm specialized in inclusive tourism)
- Explora Expeditions (ecotourism, Europe only)
- FACT (Fisheries Action Coalition Team)
- FairMoove (ecotourism travel agency)
- G Adventures (ecotourism, USA)
- GLEV Live Evaporation Ratio of Lakes worldwide, launched by researchers Gang Zhao and Huilin Gao.
- Global Heritage Fund (GHF) Asia
- GSTC Criteria & Indicators
- Hello Angkor Travels
- HydroLAKES (data production on lakes, rivers and basins worldwide)
- IndochinaVIP Tours
- Journal of Greater Mekong Studies
- Jungloo (MAADS)
- Khmer Detours (Ecotours on Tonle Sap, founded 2011)
- Kompong Khleang Website
- Lac de Brindos (France) Floating Lodges
- Living Cambodia Blog
- MAADS
- MaterialConneXion
- Mekong Delta Plan
- Mekong Tourism Coordinating Office (MTCO)
- Mekong Wonders (with the support of USAID). Also known as Wonders of the Mekong.
- Mekong Conservation Heroes program.
- MRC Online Drought Monitoring
- Nature.com Scientific Reports
- Open Development Cambodia
- Oxfam Cambodia
- Pavilion Oasis Heritage Hotel Phnom Penh
- Phum Prey Chas Floating Village
- Ramsar Convention Cambodia
- Sam Veasna Conservation Tours
- The International Ecotourism Society
- The Jungloo, A Cambodian Concept
- TOURISMOS (international, multi-disciplinary, peer-reviewed journal, Chios, Greece)
- Travelife (International Accommodation Sustainability Program)
- Triple K Angkor Travels & Tours
- Water in Architecture (Arch Daily Forum)
- WCS (Wildlife Conservation Society) Cambodia
- Wonders of the Mekong

8.3 Films, Photo & Audio Material

- Exploring Tonle Sap Lake, summary of video footage during scouting campaigns 2022-2023 (Valentina Mimeyeva & MAADS Studio)
- Caesars Show 2-day exploration on Tonle Sap, June 2022 (in collaboration with C4 Adventures and Pavilion); & Part 2. (in Romanian).
- 'Le Tonle Sap, grenier aquatique', ARTE, Invitation au Voyage, by Ruxandra ANNONIER, 4 Nov. 2021 (access from Europe only).
- 'Tonlé Sap Lake: An Ecosystem in Delicate Balance', SLICE, Feb. 2021, extract from "The secret life of lakes – Tonlé Sap, the Beating Heart of Cambodia" (dir. Bernard Guerrini & Mathias Schmitt, prod. ZED, ARTE France & Productions Nova Média).
- Toum Tiou: A Pioneer Leisure Navigation Experience on the Tonle Sap River and Lake, 2012.
- 'Once Beating Heart': Singaporean photographer Calvin

Chow on the Lake (WaterAid/1854), April 2022.

- 'The Changing World of Cambodia's Tonle Sap Lake', Wonders of the Mekong, 16 Sept. 2020.
- 'Life on the water: A floating village on Lake Tonle Sap in Cambodia', Globetrottergirls photo essay, updated March 2022.
- 'Fish Port at Tonle Sap Lake I Khmer Rural Life', BORIN Cambo, 9 Oct. 2021
- 'Zalmaï – a Photographer Goes about Putting Communities of the Tonle Sap Lake in the Limelight', Cambodianess, 13 Dec. 2020.
- 'Cambodian fishermen see livelihoods threatened by climate change and dam activity', South China Morning Post, Jan. 2021.
- Suthep Kritsanavarin photo-exhibition on the Tonle Sap Lake at Bopphana Center, Phnom Penh, May 2022.
- Interview with Monterey Bay Aquarium researchers on the Mekong River biodiversity after the discovery of a giant stingray, the biggest freshwater specimen known so far, June 2022.
- 'Inside Africa's Largest Floating Village: Ganvie, Benin', by Tayo Aina, 2022
- Jungloo at Templation Angkor Resort, a video report by Home s-Art, June 2022 (in Khmer).

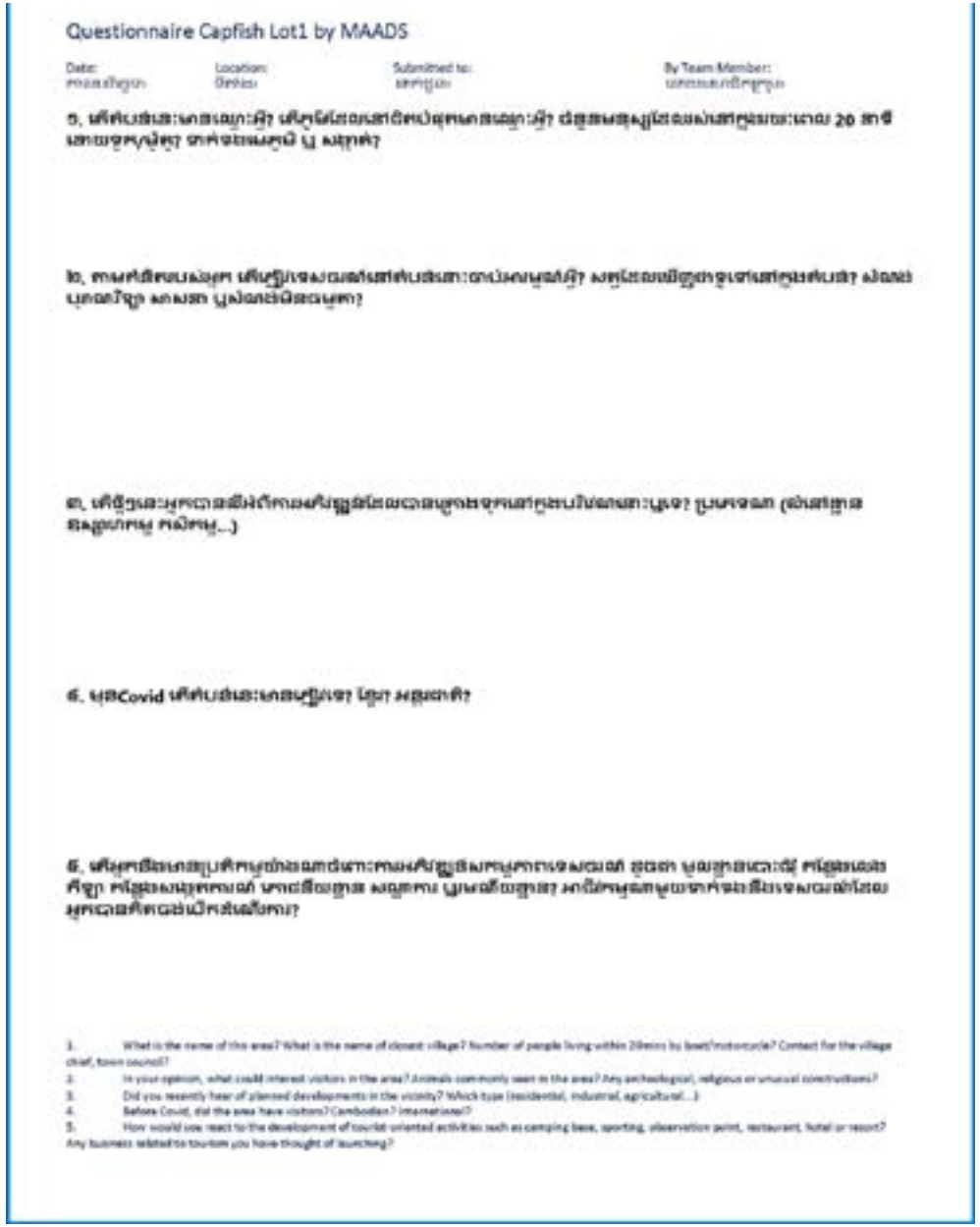
9 Acronyms and Abbreviations

ADB: Asian Development Bank
AFD: Agence Française de Développement
AHP: Analytical Hierarchy Process
APSARA: National Authority for the Protection and Safeguarding of Angkor and the Region of Angkor (also called ANA: Autorité Nationale Apsara)
ASEAN: Association of Southeast Asian Nations
BCC: Biodiversity Conservation Corridor
BMP: Biodiversity Management Plan
CBD: Convention on Biological Diversity
CDRI: Cambodian Development Resource Institute
CC: Climate Change
CFM: Compagnie Fluviale du Mékong
CFP: Common Fisheries Policy
CHA: Cambodian Hotels Association
CICP: Cambodian Institute for Cooperation and Peace
CNMC: Cambodian National Mekong Committee
CPA: Community Protected Area
CSR: Corporate Social Responsibility
CSRT: Corporate Social Responsibility Target
CSRD: Centre for Social Research and Development (Vietnam)
CTD: Cultural Tourism Destination
DASTA: Designated Areas for Sustainable Tourism Administration
DEVE: Development Committee of the European Parliament
DFR: Draft Final Report
DSI: Detailed Site Interest
EC: European Commission
ECDPM: European Centre for Development Policy Management
ECOSOC: United Nations Economic and Social Council
EDF: European Development Fund
EEAS: European External Action Service
EEA: European Environment Agency
EESC: European Economic and Social Committee
EFI: External Financing Instruments
EIB: European Investment Bank
EIF: European Investment Fund
EMP: Environmental Management Plan
EQ: Evaluation Questions
ESMTSL: Ecosystem Management of the Tonle Sap Lake
EU: European Union
EUD: EU Delegation
FAO: Food and Agriculture Organization (United Nations)
FACT: Fisheries Action Coalition Team
FLEGT: Forest Law Enforcement Governance and Trade
FPs: Focal Points
GCCA: Global Climate Change Alliance
GHF: Global Heritage Fund
GIS: Geographic Information System
GLEV: Global Lake Evaporation Volume
GSTC: Global Sustainable Tourism Council
IA: Impact Assessment
ICMPD: International Centre for Migration Policy Development
IEE: Initial Environmental Examination
ILEP: International Lake Environment Committee Foundation (Japan)
ITC: Institute of Technology of Cambodia
JBTB-TSL: Jungloo Bioclimatic Tented Bungalow for Tonle Sap Lake
JGMS: Journal of Greater Mekong Studies
LLEE: Live and Learn Environmental Education
MCDM: Multi-Criteria Decision Making
M&E: Monitoring and Evaluation
MoE: Ministry of Environment of Cambodia
MP: Ministry of Planning, Cambodia
MRC: Mekong River Commission
MRD: Ministry of Rural Development of Cambodia
MTB: Mountain Bike
MTCO: Mekong Tourism Coordinating Office
MTC: Ministry of Tourism of Cambodia
NEEAC: National Environmental Education and Awareness Campaign
NGO: Non-Governmental Organization
NHBSS: Natural History Bulletin of the Siam Society
NIS: National Institute of Statistics, Ministry of Planning of Cambodia
ODA: Official Development Assistance
PA: Protected Area
PCSD: Policy Coherence for Sustainable Development
POI: Point of Interest
PPP: Private-Public Partnership
R&D: Research and Development

RAP: Rapid Assessment of Perceptions
ROS: Recreation Opportunity Spectrum
RTP: Recommended Target Point
SCS: South China Sea
SDG: Sustainable Development Goal
SFPA: Sustainable Fisheries Partnership Agreement
SIMVA: Social Impact Monitoring and Vulnerability Assessment (SIMVA)
SSEDP: Small Scale Ecotourism Development Projects
STCI: Sustainable Tourism Core Indicator
SWD: Staff Working Document
TCBP: Tourism Capacity Building Programme
TIES: The International Ecotourism Society
ToR: Terms of Reference
TSA: Tonle Sap Authority
TRCS: Tourism Recovery Co-Financing Scheme
TSBR: Tonle Sap Basin Reservoir
TSCP: Tonle Sap Conservation Project
TSL: Tonle Sap Lake
UN: United Nations
UNDP: United Nations Development Program
UNEP: United Nations Environmental Program
UNFCCC: United Nations Framework Convention on Climate Change
UNESCO: United Nations Educational, Scientific and Cultural Organization
VAMP: Visitor Activity Management Process
VIM: Visitor Impact Management
WB: World Bank
WCS: Wildlife Conservation Society
WWF: World Wildlife Fund

10 Appendices

10.1 Draft Questionnaire intended for Phases 2 & 3



Questionnaire Capfish Lot1 by MAADS

Date: Location: Submitted to: By Team Member:

1. What is the name of this area? What is the name of closest village? Number of people living within 20mns by boat/motorcycle? Contact for the village chief, town council?
2. In your opinion, what could interest visitors in the area? Animals commonly seen in the area? Any archeological, religious or unusual constructions?
3. Did you recently hear of planned developments in the vicinity? Which type (residential, industrial, agricultural...)
4. Before Covid, did the area have visitors? Cambodian? International?
5. How would you react to the development of tourist oriented activities such as camping base, sporting, observation point, restaurant, hotel or resort? Any business related to tourism you have thought of launching?

10.2 Battambang and Siem Reap 2019 Census, district breakdown

10.2.1 Battambang

Province/District/ Commune		No. Household	Population			Sex Ratio	Household Size
			Total	Male	Female		
02	**Battambang**						
	Total	**227,237**	**980,328**	**479,477**	**500,851**	**95.7**	**4.3**
	Urban	**45,556**	**200,607**	**96,517**	**104,090**	**92.7**	**4.4**
	Rural	**181,681**	**779,721**	**382,960**	**396,761**	**96.5**	**4.3**
201	**Banan**	**21,057**	**86,486**	**42,259**	**44,227**	**95.6**	**4.1**
20101	Kantueu Muoy	1,307	5,244	2,638	2,606	101.2	4.0
20102	Kantueu Pir	1,332	5,320	2,612	2,708	96.5	4.0
20103	Bay Damram	1,263	4,914	2,325	2,589	89.8	3.9
20104	Chheu Teal	3,711	16,017	7,679	8,338	92.1	4.3
20105	Chaeng Mean Chey	1,733	7,199	3,596	3,603	99.8	4.2
20106	Phnum Sampov	3,325	13,503	6,423	7,080	90.7	4.1
20107	Snoeng	3,797	14,746	7,205	7,541	95.5	3.9
20108	Ta Kream	4,589	19,543	9,781	9,762	100.2	4.3
202	**Thma Koul**	**24,228**	**105,982**	**51,781**	**54,201**	**95.5**	**4.4**
20201	Ta Pung	2,763	11,947	5,759	6,188	93.1	4.3
20202	Ta Meun	3,234	14,328	7,019	7,309	96.0	4.4

20203	Ou Ta Ki	3,545	15,120	7,456	7,664	97.3	4.3
20204	Chrey	3,643	14,938	7,339	7,599	96.6	4.1
20205	Anlong Run	932	4,478	2,265	2,213	102.3	4.8
20206	Chrouy Sdau	1,764	7,844	3,782	4,062	93.1	4.4
20207	Boeng Pring	1,921	9,522	4,661	4,861	95.9	5.0
20208	Kouk Khmum	2,413	10,649	5,173	5,476	94.5	4.4
20209	Bansay Traeng	2,077	8,438	4,122	4,316	95.5	4.1
20210	Rung Chrey	1,936	8,718	4,205	4,513	93.2	4.5
203	**Krong Bat Dambang**	**26,890**	**119,251**	**56,723**	**62,528**	**90.7**	**4.4**
20301	Tuol Ta Aek	3,133	14,138	6,649	7,489	88.8	4.5
20302	Preaek Preah Sdach	2,509	11,040	5,310	5,730	92.7	4.4
20303	Rotanak	3,343	14,777	6,994	7,783	89.9	4.4
20304	Chamkar Samraong	3,105	14,242	6,741	7,501	89.9	4.6
20305	Sla Kaet	1,717	7,502	3,483	4,019	86.7	4.4
20306	Kdol Daun Teav	1,954	8,487	4,073	4,414	92.3	4.3
20307	Ou Mal	2,202	9,592	4,568	5,024	90.9	4.4
20308	Voat Kor	3,179	13,896	6,599	7,297	90.4	4.4
20309	Ou Char	3,116	14,182	6,955	7,227	96.2	4.6

20310	Svay Pao	2,632	11,395	5,351	6,044	88.5	4.3
204	**Bavel**	**22,115**	**92,306**	**44,885**	**47,421**	**94.7**	**4.2**
20401	Bavel	5,998	25,163	12,183	12,980	93.9	4.2
20402	Khnach Romeas	2,468	10,508	5,095	5,413	94.1	4.3
20403	Lvea	2,570	10,611	5,118	5,493	93.2	4.1
20404	Prey Khpos	2,362	10,076	4,910	5,166	95.0	4.3
20405	Ampil Pram Daeum	2,871	12,822	6,295	6,527	96.4	4.5
20406	Kdol Ta Haen	2,499	10,007	4,862	5,145	94.5	4.0
20407	Boeng Pram	847	2,923	1,435	1,488	96.4	3.5
20408	Khlang Meas	2,500	10,196	4,987	5,209	95.7	4.1

Province/District/ Commune		No. Household	Population			Sex Ratio	Household Size
			Total	Male	Female		
205	**Aek Phnum**	**15,632**	**71,120**	**34,603**	**36,517**	**94.8**	**4.5**
20501	Preaek Norint	3,194	13,970	6,808	7,162	95.1	4.4
20502	Samraong Knong	2,407	10,991	5,227	5,764	90.7	4.6
20503	Preaek Khpob	1,836	7,973	3,757	4,216	89.1	4.3
20504	Preaek Luong	1,894	9,150	4,405	4,745	92.8	4.8

20505	Peam Aek	3,237	14,390	6,935	7,455	93.0	4.4
20506	Prey Chas	1,068	4,773	2,453	2,320	105.7	4.5
20507	Kaoh Chiveang	1,996	9,873	5,018	4,855	103.4	4.9
206	**Moung Ruessei**	**24,105**	**103,841**	**50,251**	**53,590**	**93.8**	**4.3**
20601	Moung Ruessei	3,186	14,123	6,753	7,370	91.6	4.4
20602	Kear	3,361	14,524	6,976	7,548	92.4	4.3
20603	Prey Svay	2,988	12,278	5,964	6,314	94.5	4.1
20604	Ruessei Krang	2,959	12,357	6,076	6,281	96.7	4.2
20605	Chrey	2,236	10,313	4,998	5,315	94.0	4.6
20606	Ta Loas	1,776	7,935	3,818	4,117	92.7	4.5
20607	Kakaoh	2,666	11,615	5,565	6,050	92.0	4.4
20608	Prey Touch	2,362	10,063	4,930	5,133	96.0	4.3
20609	Robas Mongkol	2,571	10,633	5,171	5,462	94.7	4.1
207	**Rotonak Mondol**	**9,164**	**38,848**	**19,412**	**19,436**	**99.9**	**4.2**
20701	Sdau	2,142	8,739	4,285	4,454	96.2	4.1
20702	Andaeuk Haeb	1,119	4,940	2,463	2,477	99.4	4.4
20703	Phlov Meas	1,375	5,865	2,965	2,900	102.2	4.3

20703	Phlov Meas	1,375	5,865	2,965	2,900	102.2	4.3
20704	Traeng	2,865	12,100	6,020	6,080	99.0	4.2
20705	Reakhsmei Sangha	1,663	7,204	3,679	3,525	104.4	4.3
208	**Sangkae**	**24,294**	**111,118**	**54,011**	**57,107**	**94.6**	**4.6**
20801	Anlong Vil	3,540	16,479	8,012	8,467	94.6	4.7
20802	Norea	1,094	5,106	2,472	2,634	93.8	4.7
20803	Ta Pun	3,187	15,016	7,477	7,539	99.2	4.7
20804	Roka	1,751	8,038	3,941	4,097	96.2	4.6
20805	Kampong Preah	2,003	9,297	4,575	4,722	96.9	4.6
20806	Kampong Prieng	2,194	10,178	5,110	5,068	100.8	4.6
20807	Reang Kesei	1,727	7,733	3,760	3,973	94.6	4.5
20808	Ou Dambang Muoy	2,972	13,011	6,212	6,799	91.4	4.4
20809	Ou Dambang Pir	2,661	12,327	5,814	6,513	89.3	4.6
20810	Vaot Ta Moem	3,165	13,933	6,638	7,295	91.0	4.4
209	**Samlout**	**10,531**	**43,715**	**22,114**	**21,601**	**102.4**	**4.2**
20901	Ta Taok	846	3,634	1,850	1,784	103.7	4.3
20902	Kampong Lpov	1,874	7,421	3,869	3,552	108.9	4.0

20903	Ou Samrel	1,187	5,365	2,711	2,654	102.1	4.5
20904	Sung	1,489	6,329	3,147	3,182	98.9	4.3
20905	Samlout	1,884	7,788	3,944	3,844	102.6	4.1
20906	Mean Chey	1,059	4,450	2,221	2,229	99.6	4.2
20907	Ta Sanh	2,192	8,728	4,372	4,356	100.4	4.0

Province/District/ Commune		No. Household	Population			Sex Ratio	Household Size
			Total	Male	Female		
210	**Sampov Lun**	**8,917**	**37,323**	**18,647**	**18,676**	**99.8**	**4.2**
21001	Sampov Lun	505	1,682	837	845	99.1	3.3
21002	Angkor Ban	502	1,947	985	962	102.4	3.9
21003	Ta Sda	1,180	4,967	2,487	2,480	100.3	4.2
21004	Santepheap	2,956	12,218	6,169	6,049	102.0	4.1
21005	Serei Mean Chey	2,364	10,778	5,301	5,477	96.8	4.6
21006	Chrey Seima	1,410	5,731	2,868	2,863	100.2	4.1
211	**Phnom Proek**	**10,291**	**44,741**	**22,377**	**22,364**	**100.1**	**4.3**
21101	Phnom Proek	1,063	4,291	2,112	2,179	96.9	4.0
21102	Pech Chenda	2,921	12,729	6,434	6,295	102.2	4.4
21103	Buor	3,348	14,677	7,281	7,396	98.4	4.4
21104	Barang Thleak	1,722	7,430	3,643	3,787	96.2	4.3

21104	Barang Thleak	1,722	7,430	3,643	3,787	96.2	4.3
21105	Ou Rumduol	1,237	5,614	2,907	2,707	107.4	4.5
212	**Kamrieng**	**12,733**	**53,076**	**26,583**	**26,493**	**100.3**	**4.2**
21201	Kamrieng	1,589	6,479	3,234	3,245	99.7	4.1
21202	Boeung Reang	3,190	13,651	6,818	6,833	99.8	4.3
21203	Ou Da	1,970	8,292	4,170	4,122	101.2	4.2
21204	Trang	1,871	7,758	3,907	3,851	101.5	4.1
21205	Ta Saen	1,458	6,318	3,141	3,177	98.9	4.3
21206	Ta Krey	2,655	10,578	5,313	5,265	100.9	4.0
213	**Koas Krala**	**7,276**	**30,192**	**15,038**	**15,154**	**99.2**	**4.1**
21301	Thipakdei	2,189	8,661	4,244	4,417	96.1	4.0
21302	Kaos Krala	960	4,064	2,046	2,018	101.4	4.2
21303	Hab	614	2,485	1,227	1,258	97.5	4.0
21304	Preah Phos	884	3,961	1,999	1,962	101.9	4.5
21305	Doun Ba	1,521	6,405	3,210	3,195	100.5	4.2

21306	Chhnal Mean	1,108	4,616	2,312	2,304	100.3	4.2
214	**Rukhak Kiri**	**10,004**	**42,329**	**20,793**	**21,536**	**96.5**	**4.2**
21401	Preaek Chik	1,975	8,328	4,001	4,327	92.5	4.2
21402	Prey Tralach	1,637	7,254	3,674	3,580	102.6	4.4
21403	Mukh Rea	1,778	7,499	3,616	3,883	93.1	4.2
21404	Sdok Pravoek	2,843	11,835	5,816	6,019	96.6	4.2
21405	Basak	1,771	7,413	3,686	3,727	98.9	4.2

10.2.2 Siem Reap

Province/District/ Commune		No. Household	Population			Sex Ratio	Household Size
			Total	Male	Female		
17	**Siem Reap**						
	Total	**224,672**	**994,540**	**484,524**	**510,016**	**95.0**	**4.4**
	Urban	**67,845**	**304,339**	**149,215**	**155,124**	**96.2**	**4.5**
	Rural	**156,827**	**690,201**	**335,309**	**354,892**	**94.5**	**4.4**
1701	**Angkor Chum**	**13,320**	**55,176**	**25,867**	**29,309**	**88.3**	**4.1**
170101	Char Chhuk	2,141	8,944	4,158	4,786	86.9	4.2
170102	Doun Peaeng	1,382	5,457	2,467	2,990	82.5	3.9
170103	Kouk Doung	3,354	13,860	6,594	7,266	90.8	4.1
170104	Koul	765	2,829	1,282	1,547	82.9	3.7
170105	Norkor Pheas	1,746	7,342	3,523	3,819	92.2	4.2
170106	Srae Kvav	1,848	7,965	3,754	4,211	89.1	4.3
170107	Ta Saom	2,084	8,779	4,089	4,690	87.2	4.2
1702		**6,809**	**29,154**	**14,202**	**14,952**	**95.0**	**4.3**

170201	Chob Ta Trav	920	4,236	2,060	2,176	94.7	4.6
170202	Leang Dai	2,767	11,564	5,677	5,887	96.4	4.2
170203	Peak Snaeng	1,462	6,316	3,075	3,241	94.9	4.3
170204	Svay Chek	1,660	7,038	3,390	3,648	92.9	4.2
1703	**Banteay Srei**	**10,130**	**43,738**	**21,503**	**22,235**	**96.7**	**4.3**
170301	Khnar Sanday	1,863	8,262	4,080	4,182	97.6	4.4
170302	Khun Ream	1,655	7,374	3,678	3,696	99.5	4.5
170303	Preah Dak	2,121	8,952	4,330	4,622	93.7	4.2
170304	Rumchek	768	3,238	1,564	1,674	93.4	4.2
170305	Run Ta Aek	1,748	7,497	3,680	3,817	96.4	4.3
170306	Tbaeng	1,975	8,415	4,171	4,244	98.3	4.3
1704	**Chi Kraeng**	**29,698**	**128,931**	**62,766**	**66,165**	**94.9**	**4.3**
170401	Anlong Samnar	2,368	11,591	5,711	5,880	97.1	4.9
170402	Chi Kraeng	1,964	8,418	4,004	4,414	90.7	4.3
170403	Kampong Kdei	2,388	10,017	4,767	5,250	90.8	4.2

170404	Khvav	3,374	15,472	7,918	7,554	104.8	4.6
170405	Kouk Thlok Kraom	2,886	13,042	6,346	6,696	94.8	4.5
170406	Kouk Thlok Leu	2,299	9,815	5,018	4,797	104.6	4.3

170407	Lveaeng Ruessei	2,753	10,722	4,974	5,748	86.5	3.9
170408	Pongro Kraom	2,236	9,091	4,238	4,853	87.3	4.1
170409	Pongro Leu	2,104	8,827	4,322	4,505	95.9	4.2
170410	Ruessei Lok	2,756	12,320	5,943	6,377	93.2	4.5
170411	Sangvaeuy	2,344	9,993	4,798	5,195	92.4	4.3
170412	Spean Thnot	2,226	9,623	4,727	4,896	96.5	4.3

Province/District/ Commune		No. Household	Population			Sex Ratio	Household Size
			Total	Male	Female		
1706	**Kralanh**	**12,454**	**52,447**	**24,498**	**27,949**	**87.7**	**4.2**
170601	Chanleas Dai	1,609	6,425	2,959	3,466	85.4	4.0
170602	Kampong Thkov	1,286	5,766	2,772	2,994	92.6	4.5
170603	Kralanh	1,186	5,339	2,569	2,770	92.7	4.5
170604	Krouch Kor	911	3,753	1,694	2,059	82.3	4.1
170605	Roung Kou	886	3,808	1,756	2,052	85.6	4.3
170606	Sambuor	1,281	6,140	3,019	3,121	96.7	4.8
170607	Saen Sokh	1,599	6,173	2,878	3,295	87.3	3.9
170608	Snuol	1,120	3,926	1,694	2,232	75.9	3.5
170609	Sranal	1,766	7,574	3,546	4,028	88.0	4.3
170610	Ta An	810	3,543	1,611	1,932	83.4	4.4
1707	**Puok**	**28,850**	**128,214**	**62,192**	**66,022**	**94.2**	**4.4**
170701	Sasar Sdam	2,472	11,230	5,422	5,808	93.4	4.5
170702	Doun Kaev	3,544	15,523	7,518	8,005	93.9	4.4

170703	Kdei Run	1,111	4,661	2,251	2,410	93.4	4.2
170704	Kaev Poar	1,615	7,619	3,766	3,853	97.7	4.7
170705	Khnat	2,612	11,891	5,800	6,091	95.2	4.6
170707	Lvea	2,580	11,838	5,847	5,991	97.6	4.6
170708	Mukh Paen	1,078	4,660	2,262	2,398	94.3	4.3
170709	Pou Treay	419	1,822	897	925	97.0	4.3
170710	Puok	3,422	16,132	7,840	8,292	94.5	4.7
170711	Prey Chruk	1,884	8,337	3,966	4,371	90.7	4.4
170712	Reul	3,716	15,629	7,521	8,108	92.8	4.2
170713	Samraong Yea	1,529	6,779	3,302	3,477	95.0	4.4
170715	Trei Nhoar	1,924	8,243	3,941	4,302	91.6	4.3
170716	Yeang	944	3,850	1,859	1,991	93.4	4.1
1709	**Prasat Bakong**	**16,435**	**72,299**	**35,559**	**36,740**	**96.8**	**4.4**
170902	Bakong	1,978	8,390	4,129	4,261	96.9	4.2
170903	Ballangk	1,657	7,050	3,445	3,605	95.6	4.3
170904	Kampong Phluk	787	3,202	1,607	1,595	100.8	4.1

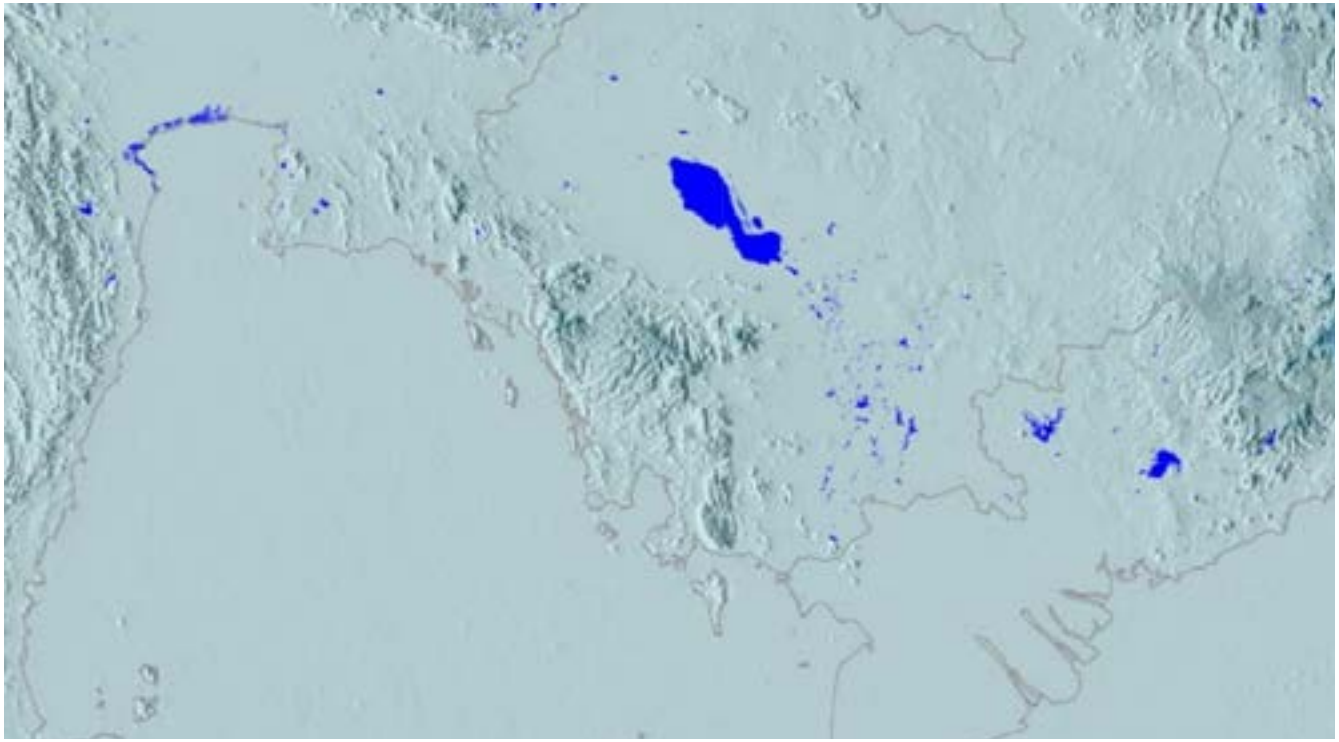
170905	Kantreang	2,092	9,025	4,329	4,696	92.2	4.3
170906	Kandaek	3,950	17,223	8,647	8,576	100.8	4.4
170907	Mean Chey	1,433	6,701	3,273	3,428	95.5	4.7
170908	Roluos	2,213	9,965	4,863	5,102	95.3	4.5
170909	Trapeang Thum	2,325	10,743	5,266	5,477	96.1	4.6

Province/District/ Commune		No. Household	Population			Sex Ratio	Household Size
			Total	Male	Female		
1710	**Krong Siem Reab**	**56,107**	**245,494**	**120,538**	**124,956**	**96.5**	**4.4**
171001	Sla Kram	10,243	44,103	21,509	22,594	95.2	4.3
171002	Svay Dankum	9,773	41,216	19,973	21,243	94.0	4.2
171003	Kouk Chak	7,848	35,054	17,224	17,830	96.6	4.5
171004	Sala Kamraeuk	5,129	22,452	10,796	11,656	92.6	4.4
171005	Nokor Thum	2,540	11,769	5,829	5,940	98.1	4.6
171006	Chreav	4,060	18,690	9,343	9,347	100.0	4.6
171007	Chong Knies	1,200	5,931	2,981	2,950	101.1	4.9
171008	Sambuor	1,567	6,985	3,448	3,537	97.5	4.5

171009	Siem Reab	4,482	22,522	11,230	11,292	99.5	5.0
171010	Srangae	1,662	7,816	3,935	3,881	101.4	4.7
171011	Ampil	2,071	3,973	1,966	2,007	98.0	1.9
171012	Krabei Riel	2,159	9,983	4,935	5,048	97.8	4.6
171013	Tuek Vil	3,373	15,000	7,369	7,631	96.6	4.4
1711	**Soutr Nikom**	**23,552**	**110,491**	**53,998**	**56,493**	**95.6**	**4.7**
171101	Chan Sar	2,248	10,364	5,081	5,283	96.2	4.6
171102	Dam Daek	3,227	15,224	7,412	7,812	94.9	4.7
171103	Dan Run	2,766	12,840	6,237	6,603	94.5	4.6
171104	Kampong Khleang	2,128	10,709	5,359	5,350	100.2	5.0
171105	Kien Sangkae	2,369	10,976	5,292	5,684	93.1	4.6
171106	Khchas	2,069	9,400	4,557	4,843	94.1	4.5
171107	Khnar Pou	1,232	6,205	3,044	3,161	96.3	5.0
171108	Popel	2,408	11,681	5,763	5,918	97.4	4.9
171109	Samraong	2,071	9,286	4,467	4,819	92.7	4.5
171110	Ta Yaek	3,034	13,806	6,786	7,020	96.7	4.6
1712	**Srei Snam**	**7,775**	**34,307**	**16,326**	**17,981**	**90.8**	**4.4**
171201	Chrouy Neang Nguon	1,731	7,713	3,680	4,033	91.2	4.5
171202	Klang Hay	755	3,116	1,454	1,662	87.5	4.1

171203	Tram Sasar	1,310	5,666	2,677	2,989	89.6	4.3
171204	Moung	866	3,574	1,619	1,955	82.8	4.1
171205	Prei	737	3,419	1,624	1,795	90.5	4.6
171206	Slaeng Spean	2,376	10,819	5,272	5,547	95.0	4.6
1713	**Svay Leu**	**9,362**	**42,901**	**21,562**	**21,339**	**101.0**	**4.6**
171301	Boeng Mealea	1,431	6,847	3,443	3,404	101.1	4.8
171302	Kantuot	2,319	10,423	5,362	5,061	105.9	4.5
171303	Khnang Phnum	1,057	4,711	2,331	2,380	97.9	4.5
171304	Svay Leu	2,677	12,280	6,108	6,172	99.0	4.6
171305	Ta Siem	1,878	8,640	4,318	4,322	99.9	4.6
1714	**Varin**	**10,180**	**46,151**	**22,920**	**23,231**	**98.7**	**4.5**
171401	Prasat	1,149	5,384	2,625	2,759	95.1	4.7
171402	Lvea Krang	827	3,724	1,823	1,901	95.9	4.5
171403	Srae Nouy	4,584	20,749	10,369	10,380	99.9	4.5
171404	Svay Sa	1,324	5,616	2,719	2,897	93.9	4.2
171405	Varin	2,296	10,678	5,384	5,294	101.7	4.7

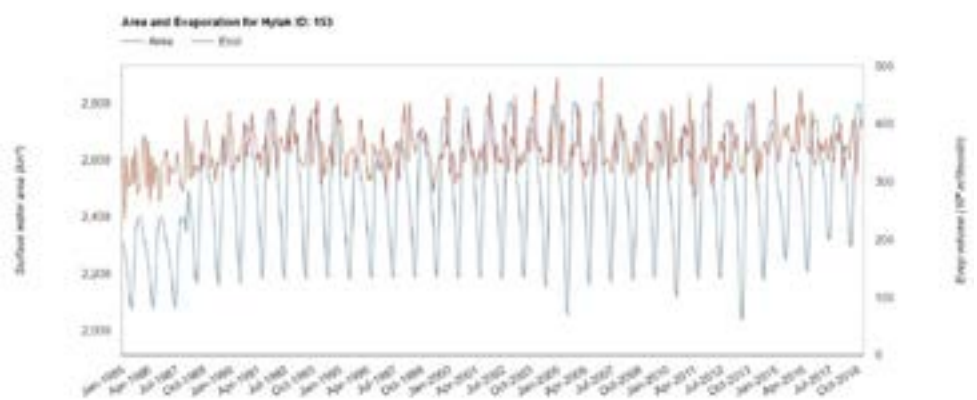
(source: NIS/MP:2020, General Censys of the Kingdom of Cambodia)

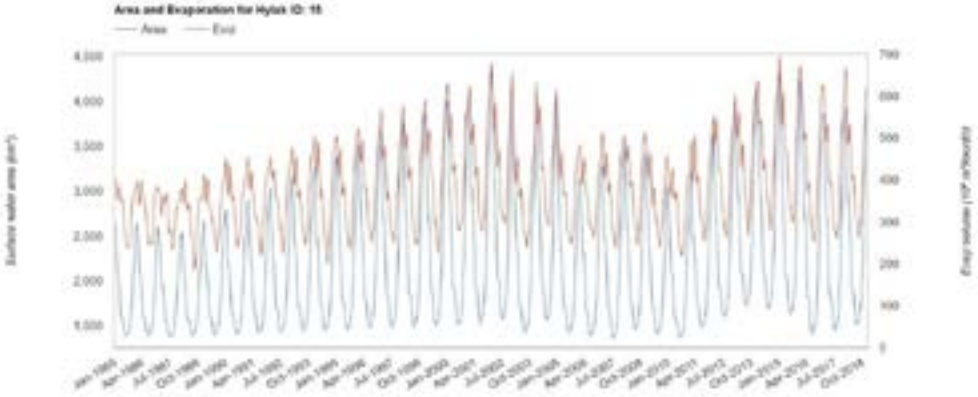


10.2.3 TSL Evaporation ratio, GLEV survey

Comparing evaporation ratio between TSL (Hylak 153) and an African lake on the same latitude (Hylak 15)

Source: GLEV 2022





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