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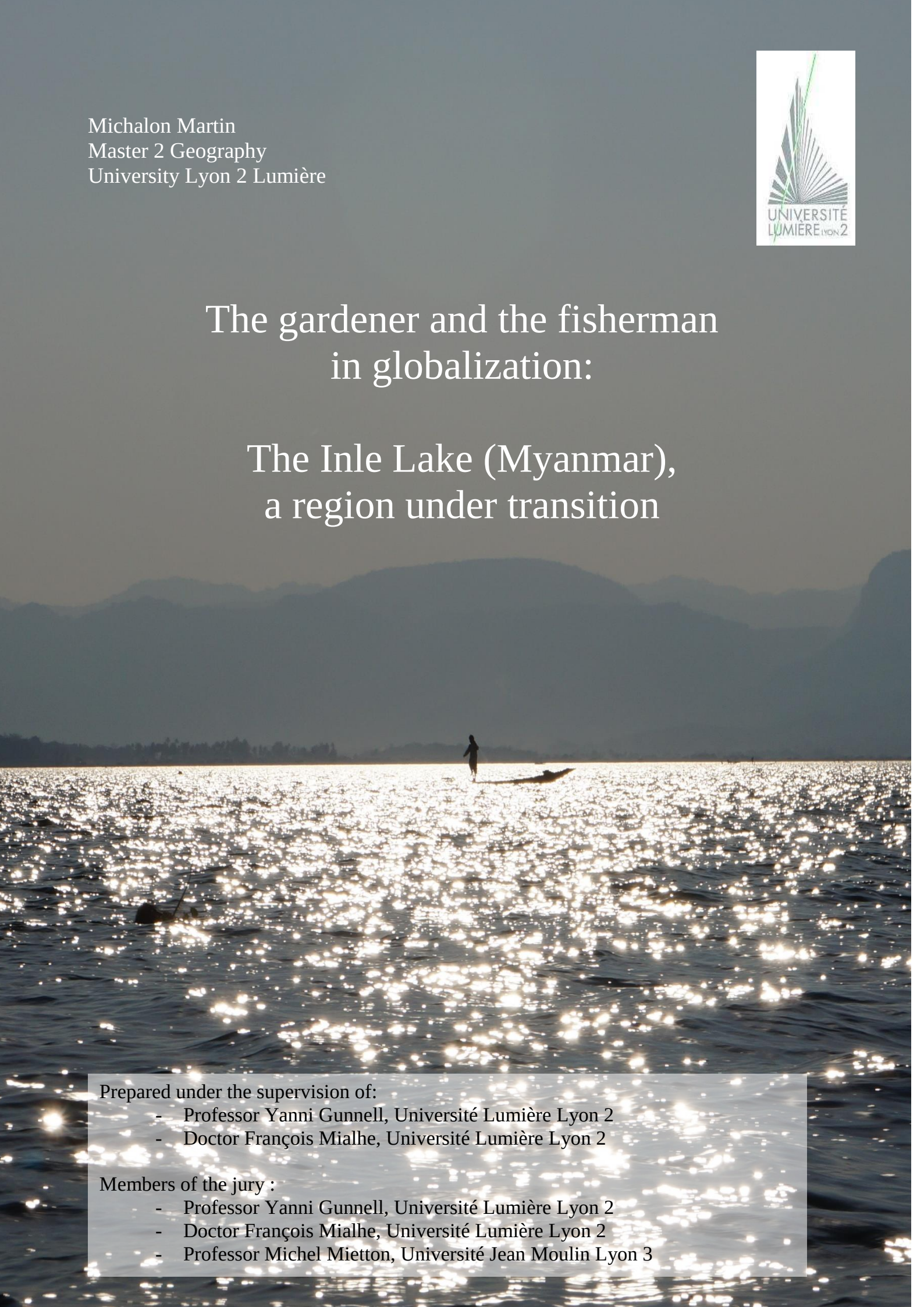
The gardener and the fisherman in globalization:

The Inle Lake (Myanmar), a region under transition



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Acronyms list:

AEC: Asian Economic Community

ASEAN: Association of South-East Asia Nations

FAO: Food and Agriculture Organization

ICIMOD: International Center for Integrated Mountain Development

FDI: Foreign Direct Investments

IID: Institute for International Development

INSPQ: Institut National de Santé Publique du Québec

MHT: Ministry of Hotels and Tourism

MTS: Myanmar Tourism Statistics

NCEA: National Commission for Environmental Affairs

WHO: World Health Organization

UNDP: United Nations Program for Development

SLORC: State Law and Order Restoration Council

Introduction

1) Inle Lake, a globalization laboratory?

"This is Burma, and it will be quite unlike any land you know about...", Rudyard Kipling wrote in his Letters from the East (1898). One of the rare Westerners to visit this little-known territory in the colonial era, he depicts a unique world, an exotic population, an outstanding culture and mysterious sites.
In 2011, the Lonely Planet guidebook of the "Golden Land" quotes this sentence and has its echo in contemporary Myanmar: "more than a century after [Kipling], Myanmar remains a world apart", and the perfect illustration of this assertion, which is displayed on the front page of the book, is the region of Inle Lake, in the East of the country (Figure 1). This territory appears as totally specific: this water body at the core of the Shan Plateau shows at the same time exceptional natural features, and a population whose original culture is totally unique: the culture of the Intha people, organized around floating agriculture and fishing.

Recent history contributed to nurture this image of Myanmar as a « world apart ». Indeed, in the 1950s, the country was one of the most dynamic in South-East Asia: main rice exporter, famous universities, cultivated elites, etc… (Steinberg, 2010). However, in 1962, the coup led by General Ne Win and the implementation of the "Burmese way to socialism" triggered the closure of the country: "the political parties were forbidden in 1964. The country was effectively cut off from the outside world" (Steinberg, 2010). Official, legal trade with foreign countries was most tenuous, and foreigners were carefully kept at bay[1]. The SLORC coup in 1989 marked a rupture with socialism, and the government progressively liberalized the economy, though it did not mean significant progress towards democracy. The international community, led by the USA, ramped up the harsh sanctions against Myanmar, which increased its isolation (Steinberg, 2010).

However, recent years have seen a deep metamorphosis of the country. In 1996, the government launched the "Visit Myanmar Year", aimed at promoting tourism in the "Golden Land". In 1997, it joined ASEAN[2] and started, with a long delay, its "Asian inclusion" (Tournier, 2007). Lastly, the 2010 elections, the self-dissolution of the military junta and the nominally civilian regime which took office in 2011, as well as significant shifts towards democracy have showed the opening of the country, its come-back on the international stage, which allowed a massive increase of foreign investments and increased volumes of tourists.

Though Myanmar obviously remains very atypical, and shows features that have broadly disappeared in contemporary South-East Asia, it is not a "world apart" anymore: the bubble in which the country had barricaded itself exploded, and Myanmar now finds itself at the core of an extremely dynamic and globalized South-East Asia, crisscrossed by dense material and immaterial flows. As a consequence, Myanmar can be considered as a laboratory of globalization, which is quite unique in Asia, and probably in the world. Though the concept of globalization was initially defined in economic dimensions, which is "the historical process of progressive extension of the capitalistic system in the global geographic space" (Carroué, 2004), generating flows of goods and capital, it has now added a cultural dimension (the world thus becoming a "global village", for McLuhan, 1967). Lastly, globalization sets in motion people, through migratory or tourism networks. The sum of those processes is globalization lato sensu, considered as the evolution of human activities towards a single, integrated and interdependent "System-World"[3].

So as to better understand globalization dynamics, as well as the result of that process, something "already there", it was important to us in this study to focus on a region which features a juxtaposition between the globalization under progress and its already-visible result. The region of Inle Lake stood out as especially

[1] From 1964 to the 1990s, journalists were only allowed 24-hour visas (Ko Ko Thett, 2012). Not until the 1996 Visit Myanmar Year were tourists granted a 4-week visa.
[2] Association of South-East Asian Nations
[3] This concept was built by Fernand Braudel, developed by Immanuel Wallerstein (1974), and applied to the French geography by Olivier Dollfus in La Géographie Universelle (1990).

interesting: this territory, which used to be quite isolated, and in which majority of connections did not exceed the national boundaries, has been undergoing quick integration into the System-World. It is then a great field site to question the differentiated effects of that trend in space, time, and inside local communities.

Figure 1: Location of the Inle Lake.
Background is courtesy of Marion Sabrié, modified by the author

2) Inle Lake in the scientific literature: a region out of the world?

The study of the Inle Lake area seems all the more interesting as the recent scientific literature has considered Inle Lake as isolated, as if it were in insular position with regard to the larger spatial scales, which are often vaguely defined and described, whereas scale-nesting and scale-connection is one of the major aspects of globalization.

A partial reason for such a gap in the scientific literature is that the disciplines which have studied the Inle Lake, colonial explorers, sociologists, pollution specialists or economists, have come to the lake shore, but very researchers have tackled it from a human-geography point of view, as a quick browse of the existing literature can show. The latter can be broken down in three main stages.

First, the early explorations of the region produced quite monographic and descriptive surveys. In 1897, the Briton Woodthorpe described in quite folklorist a way the lake's "tribes". In 1918, his compatriot Annandale extended the monographic trend of that time by describing the Inle region, its physical and geomorphological features, and by giving a glimpse on the floating agriculture. More than fifty years later, Bruneau and Bernot described thoroughly, and for the first time, the floating agriculture techniques, the ethnic composition of the region, and the handicraft activities in the villages (Bruneau and Bernot, 1972). In those three cases, apart from a national-scale location map, the region of the Inle Lake was not integrated in any regional, let alone national context.

After the 1980s and 1990s, which were not favorable to research because of the regime's restrictions, scientists came to Inle at the turn of the 21st century, and initiated a more operational stage, often led by Japanese or Americans more specialized in "exact sciences" and ecological stakes than in humanities. One may understand such an operational and physical focus in link with the financial means that such surveys can mobilize. In 2000, a reference article about the lake was written by Myint Su and A.D. Jassby, but it did not claim to be a research work, producing new knowledge: "Our goal is to gather together existing information to provide a reference point for future researchers". This article was therefore the synthesis of the scarce and scattered works, dealing with physical, wildlife and demographic features of the lake and its environmental issues. In 2001, S. Butkus and Myint Su released an article about the excess of chemical products used on and around the lake compared to the carrying capacity of its environment. In 2006, F. Akaishi et al. wrote about the water pollution, while the National Commission for Environmental Affairs produced a portrait of the area which discussed the evolution of the lake and the floating gardens and of the local demography as well (NCEA, 2006). In the same domain, R. Sidle et al. concluded in 2007 about the reduction in the open-water area in favor of floating gardens. This survey was extended in 2009 by T. Furuichi, who analyzed the land-use changes in the lake's watershed by remote sensing, which was the first stage towards scale-broadening.

However, though those articles shed a much-welcome light on the environmental issues of the lake, they all focus on the local scale and physical geography, which do not consider the dynamics in the broader spatial, economic and social framework. Besides a "scalar deadlock", some issues are not even mentioned in those works: tourism, migrations, and stakeholder relationships are missing in those segments of literature, whereas they may help to understand local physical phenomena. For instance, rarely are deforestation issues thoroughly linked with the livelihoods of hill populations, nor with their demographic growth, and the responsibilities of tourism or urban growth are seldom linked with the pollution of the lake.

At this time, the study by the ethnologist François Robinne appears as an exception, as the only work of human sciences in this "exact sciences" period. His book, Sons and masters of the lake; Interethnic rela*tionships in Burma's Shan State* (2000), which is a reference about the region, deciphers for the first time, and very accurately, the mental and spiritual world of the population, and the economic and symbolic assertion of the Intha ethnic group at the expenses of the others. However, because of this local focus, the connection of the territory with the rest of the country stays more or less in the background. As the anthropologist Yves Goudineau observed: "we may wonder whether [François Robinne] is somehow prisoner of the structural model of "the lake" that he built, a framework which […] makes him delimit a kind of regional isolate, with a quite short history, and which geographical outlines are barely mentioned. […] Inle Lake, far from being isolated from the rest of the world, is at the core of the Burmese geography, one of

the main destinations now sold to tourists, and we may be surprised that the author takes no time to try to assess its significance in the national space" (Goudineau, 2001).
After 2010, the latest period of the western research opens, during which humanities step more firmly in the debate. In 2010, Oo et al. studied the link between floating agriculture and pollution, not only with a focus on lake's surface evolution or concentrations of nitrates, but under the angle of the environment education and the spread of good agricultural practices. On the same year, Kyaw Zin Aung Soe analysed the adaptation strategies of the Intha facing the uncertainty of floating agriculture and market fluctuations. In the same state of mind, in 2012, I. Okamoto studied for the first time the challenges of the fishing sector and the strategies of the fishermen to cope with them. Though those three articles do not really insert the lake in broader scales and dynamics, they have the merit to mark a new interest for stakeholders and governance around the Inle Lake.

Throughout the time, we can therefore spot a shift from the "exact sciences" towards human sciences, the broadening of the focus to new issues, more stakeholders, etc… We might interpret that change under the light of the political opening of the country. For long years, doing research in humanities in Myanmar, meeting and interviewing stakeholders, collecting opinions was a real challenge, and the authorities were extremely wary about researchers (Lubeigt, oral information). Therefore, the latter had to be content with remote sensing, objective chemical analyses and stay away from any social or political considerations. The relative opening of the regime since 2010 has allowed a welcome scientific renewal, and the broadening of the spectrum of possibilities.

Though Western literature is a major and accessible source of good-quality information, Burmese researchers have also produced interesting, though hard-to-access studies on topics they are often the first to tackle.
A key reference work about the region is the Masters degree thesis by Ma Thi Dar Win about the floating agriculture of the Inle Lake, written in 1996. It gives descriptions of the agricultural techniques, surprisingly accurate data about the gardens' area, the crop volumes, and the inputs. The author is still the only one to have studied thoroughly the trade circuits of the agricultural products, from the fields to the Yangon or Mandalay markets.

In 2007, Aye Myint wrote a pioneer PhD about the tourism development around the Inle Lake, which provided precious statistics about the visitors' profiles and the local players of the tourism industry. This survey was extended in 2009 by Nang Nwe Nwe Win, whose PhD dealt with the spatial aspects of the economic activities in the Nyaungshwe district, which include tourism, but also traditional activities, such as agriculture, fishing, or handicraft. Lastly, we shall mention Saw Yu May's PhD (2007), which is closer to the Western ecological concerns: it deals with the quality of the water on the lake and the evolution of the latter's size.

Those studies were quite innovative and informative for the researcher, but the data should be used with care. Indeed, those theses are often more statistics collections than genuine geographical analyses, aiming at putting a spotlight on dynamics and spatializing phenomena. Moreover, numerous statistics that appear in those books were provided by the government, and their objectivity and reliability are often questionable. In addition, though those works do have a bibliography at the end, the origin of the information is never mentioned in the core of the text: it is therefore impossible to know the origin of specific data.

Lastly, we were able to highlight some significant discrepancies and contradictions in a few of those works. Considering that the latter often deal with little-studied issues, it was most difficult to cross-check the information. As a consequence, we will use some data from those PhDs, but with all the necessary precautions.

3) Research hypotheses

As this literature portrait shows, Inle Lake has been a research object for many years, but it has never been studied in conjunction with the structural dynamics that have been taking place in Myanmar, South-East Asia, and in the whole world, while it is one of those very territories which anchor the country into globalization, one of those "gateways" of global flows into the country, its population and its culture. In other words, this extraordinary laboratory of globalization has never been put in the scale-nesting that link it to the world and its dynamics.

To achieve such a task, the researcher in human sciences may wonder a few questions:

To what extent is Inle Lake integrating more and more in a set of scales that connect it to the rest of the country, of Asia and of the world? What are the vectors of this integration: what are the pathways and nature of flows between the lake and those scales, and what are the networks and the stakeholders that build and organize them?

How does the globalization process impact the local scale through a reshuffle of the territory and its balance, a mutation of its economic system, a transformation of its landscapes and the ways of life of its inhabitants?

To what extent can Inle Lake be defined as a region under transition, where tourism, often built by exogenous players and under transition itself, is considered as an alternative to the "traditional activities" that have been through hard times?

4) Methodology

To answer those questions, the literature processing work was supplemented by intense fieldwork, from 2014 February 6th to March 30th: two weeks in Yangon to check bibliographic sources and meet scholars, and approximately one month in Nyaungshwe, the main town in the region of the Inle Lake. From there, with the help of a local interpreter[4], I had a series of semi-direct interviews with more than 70 people[5], covering a wide range of profiles, from the agricultural labourer to the local UNDP head of office, from the tomato broker to the souvenir seller and the international expert.

Those encounters were planned according to a precise schedule, with periods devoted to each of the main topics (agriculture, fishing, tourism, environment), while being careful not to partition them too much. With the exception of a few important people (local researcher, famous hotel manager or tourist guide), we did not plan the identity of our interlocutors beforehand. However, we tried our best to lead our interviews on a broad and as-representative-as-possible sample, including men and women from all social backgrounds, across the whole extent of the lake (Figure 2). Most of the time, the encounters took place at our informers' places, which created better conditions for a long chat. Moreover, the event often attracted neighboring families, which allowed us to gather more interlocutors and to cross-check information on the spot.

[4] The quality of the interpreter is often a key issue in fieldwork abroad. Though the person I worked with was not born in the region, and was not an expert on all the topics we went through, this often turned out to be an advantage. Very quickly, my interpreter appeared to be reliable, objective, and to understand the logic of my scientific approach.

[5] The complete list of our interlocutors can be found in the appendix

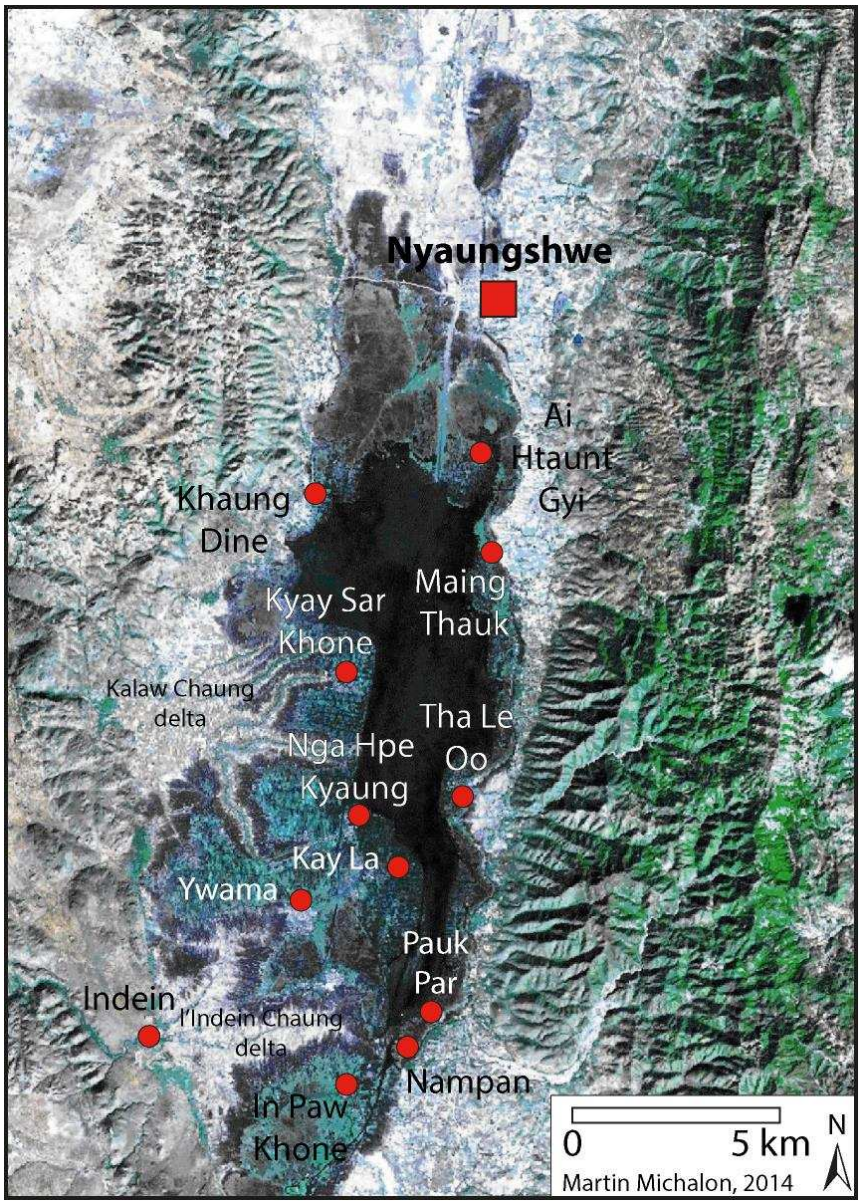


Figure 2: Location map of the main villages on and around Inle Lake, which were our main interview spots.
Source: Landsat, via USGS

In spite of those precautions, gathering reliable and accurate data, especially figures, was a permanent challenge and, quite often, we had to be content with knowing the existence of a phenomenon, as it was not possible to quantify it. This was often due to the lack of written sources, which is not really surprising in the Burmese socio-economic context: in New Tha Le Oo village, Ko Aung Win is noted for being the only one to keep written information about the tomato quantities he gets. Lastly, it has to be noted that, due to lack of time, I was not able to widen the geographic field of my research as much as I planned: though I could embrace grosso modo the whole area of the lake, I could not collect all the information I wanted about the hills that surround the lake.

5) Organization of our thesis

The processing of those interviews, the comparison between them and the literature allow us to answer our research hypotheses in the four steps that follow.

First of all, we will draw the outline of the region of Inle Lake, which stands out at a broad-scale study. We will emphasize the unique characteristics of that water body, which has become almost more artificial than natural. We will also deal with the region's human and ethnic features, which are exceptional for their diversity, but also their coherence.

Then, we will have a closer look at the field to study the floating agriculture that made that area so famous, by considering the concrete agricultural practices, but also by analyzing the integration of the sector in all the scales. As a result, Inle Lake appears as the core of a sector genuinely integrated into globalization, the hub of intense flows and stakeholder networks, and animated by deep dynamics.

The other stage of our analysis of the territorial mutations will deal with the fishing activity, a traditional industry which is now put under threat by regional socio-economics dynamics. Indeed, fishermen are at the junction of the impacts produced by the agriculture on the lake, on its shores and in the hills, as well as those

caused by the demographic growth and by the tourism boom. Those people's lives are therefore a premium indicator that reflects the transformations of the territory and the challenges they raise.

Lastly, we will analyse the mass tourism that is being built on the lake, as well as the underlying stakeholder games, networks and narrative. We will show how the Inle tourism model has been evolving towards globalized tourism, in particular in terms of relationship to the territory and the local population and in terms of touristic practices. We will however show that this tourism is facing genuine challenges, and we will question whether it can succeed as a driving force towards sustainable local development.

I) Inle Lake: a highly specific physical and social environment

1) The Inle Lake: still natural?

The Inle Lake, the second biggest one in Myanmar (Myint Su and Jassby, 2000), is located on the western edge of the Shan Plateau, which covers much of Eastern Myanmar. This limestone structure dates back to the Himalayan orogeny, and features a typically folded structure (Bertrand and Rangin, 2003), which explains the North-South direction of the lake (Figures 3 and 4). Framed by Letmaunggwe and Thandaung Ranges on the West, and by Sindaung Range on the East, which peaks at 2 043 meters (Furuichi, 2009), the latter is 890 meters high (Myint Su and Jassby, 2000).

The lake is fed by 30 tributaries: 17 from the East, 12 from the West (among them Kalaw Chaung and Indein (or Balu) Chaung, which form two remarkable birdfoot-like deltas), and one from the North, the Namlit Chaung. The only outlet, the Nam Pilu, winds down South to the Sankar Lake and Mobye Reservoir, which feed Lawpita power plant (figure 4). The latter produces 15 % of the national electricity, and plays a major role in Yangon supply (Sidle et al., 2007). Those 30 tributaries bring around 110 billion m³ of water a year to the lake, which had a capacity of around 35 billion m³ in the 2000s (Myint Su and Jassby, 2000).

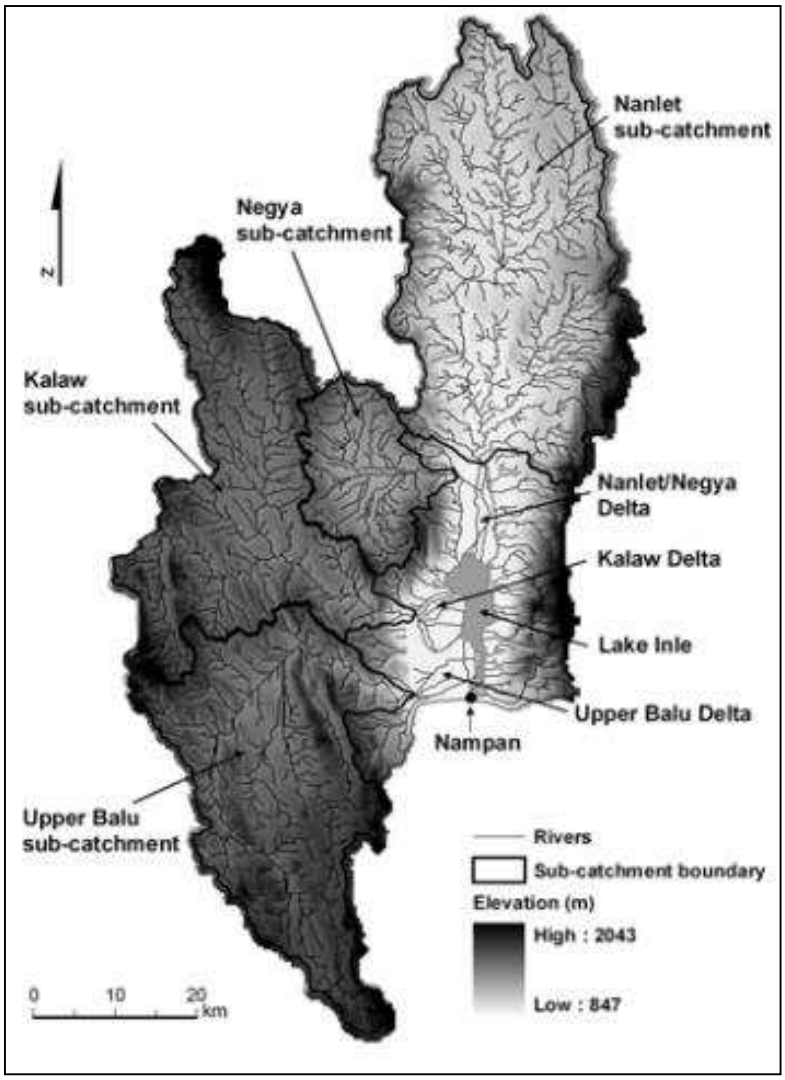


Figure 3: Inle lake watershed (Source: Furuichi, 2009)

Those tributaries describe the Inle lake watershed, which area is still discussed. However, the most reliable survey about it concludes to 3800 km² (Furuichi, 2009). The lakebed has a dissymmetric profile: the East shore of the lake sticks to the foot of the steep Sindaung Range, whereas the West part is further from the hills, which slope is also smoother (figure 3). Inle Lake dates back to 1,5 million years. Back then, it was part of a series of North-South lakes, and reached the altitude of 990 meters. Therefore, it was much bigger than it is nowadays, and was reportedly more than 100 meters deep (Movius, in Ma Thi Dar Win, 1996).

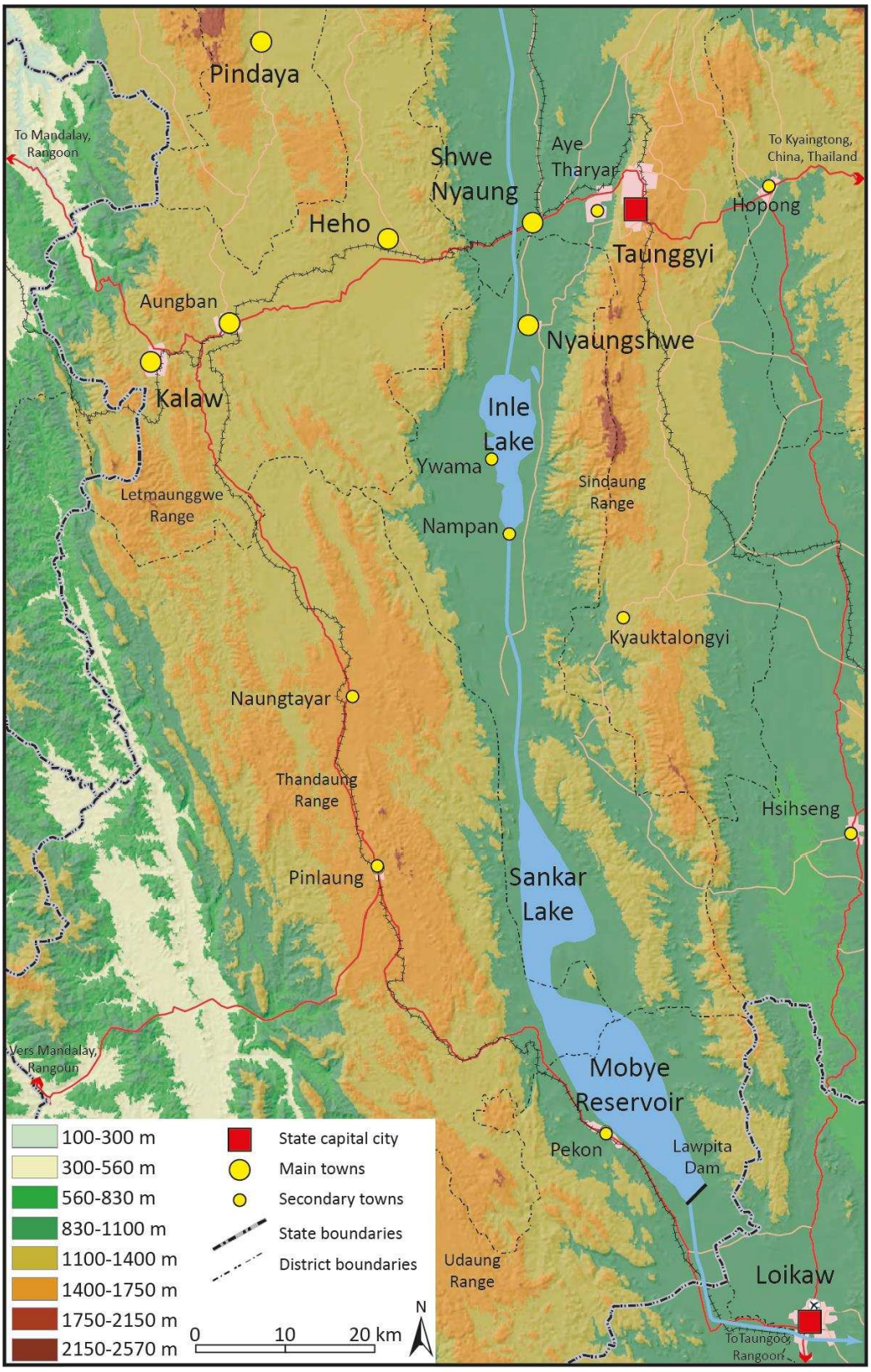


Figure 4: Inle Lake in its regional physical context.
Source: MIMU (Myanmar Information and Management Unit), March 2014, modified by the author.

The length and width of the lake are still discussed, with a few highly unreliable statistics[6]. Therefore, the main thing is to focus on trustworthy and first-hand statistics (figure 3):

- In 1918, the British explorer N. Annandale testifies that the lake was 22,5 km long, and had a maximum width of 6,4 km (Annandale, 1918).
- In 1938, the Britons release a topographic map of the region: the lake was 22,8 km long (including marsh land), among which 16,9 km in open water, for a maximum width of 6,4 km[7]. That corresponds to Annandale's figures.
- In 2014, satellite images gave a total length[8], of 25,4 km among which 16,7 km in open water, and a maximum width[9] of 5,1 km.

Therefore, the length of the lake has remained stable since 1918, though width has decreased, because of the floating gardens expansion.

Though length and width are quite easy to calculate, area is much more confusing. Indeed, the marshy outlines of the lake are difficult to draw precisely. Moreover, the area of the lake slightly fluctuates depending on the season. However, it is noticeable that seasonal variation is quite low on Inle Lake, as seen on satellite images taken in July and November 2013 and April 2014 (figure 5). This relative intra-annual stability may be due to the quite steep landscape: when the level of water increases, the area of the lake does not significantly change. Moreover, we can assume that the Lawpita Dam, built in 1965, regulates the flow and the area of the lake. As a conclusion, intra-annual evolutions are quite minor.

Actually, the main source of confusion is the expansion of floating gardens since the 1960s, as they generate a frequent confusion between « total area of the lake » and « open-water area ». In spite of statistical inaccuracies, we can estimate that the current area of the whole lake is 150 square km, among which roughly one third of open water, one third of marshes, and one third of floating gardens and stilt villages. This last figure shows that the lake has been highly anthropized.
If we try to clarify whether the authors refer to total area or open-water area, our calculations match with other sources: UNDP estimates the total area at 160 km² (UNDP, 2012), and NCEA at 145 km² (NCEA, 2006).

If one goes beyond this assessment of the current situation to understand the evolution on the long run, Sidle et al. (2007) concluded that the open-water area has significantly decreased between 1938 and 2000: 70 km² on the 1938 British map, 45 km² on their 2000 satellite image[10]. According to them, 93 % of this shrinkage is due to floating garden expansion. However, it is very important not to consider this evolution as a shrinkage of the whole lake. Sidle et al. were seemingly aware of that issue: they insist on the decrease of the open-water area, but do not raise the point of the Inle Lake total area... which has remained roughly constant since 1938.
Indeed, on the 1938 map, the total area of the lake is roughly 160 km². On 1976 satellite image, it is 156 km², and on 2013 satellite image, 168 km² (figure 5) Therefore, the total area of the lake has been around 160 km² since the 1930s[11].

[6] In 1996, Ma Thi Dar Win wrote that the lake was 11 km long. This figure is at least 50 % inferior to the most pessimistic calculations. Some researchers consider it unreliable and do not mention it (Jensen, oral information), but others used it to testify the shrinking of the lake (Myint Su and Jassby, 2000).

[7] We measured those distances directly on the map, thanks to the scale.

[8] It is not easy to compare this figure with Annandale's one, because some artificial lakes have been dug since then, and they visually extend the lake's length.

[9] Those measurements were made by the Remote-Sensing Software ENVI 4.3.

[10] We made the same measurements on the 1938 map and on a 2013 satellite image, and got respectively 66,9 km², and 44,7 km². Our figures match with Sidle et al.'s, and, though we cannot prove the role of floating garden expansion, we share the author's opinion.

[11] Those latter measurements were made by the remote-sensing Software ENVI 4.3.

This conclusion can be backed up by the study of human settlement around the lake: if we compare the 1938 map and current situation, we notice that no village that was on the lake in the 1930s is nowadays on the shore. In 1938, for instance, there was already a distinction between Maing Thauk village (on the shore) and Maing Thauk Inn (on the lake, 200 meters further). Therefore, current Maing Thauk hamlet on the shore is everything but the remnants of a lakeside village.

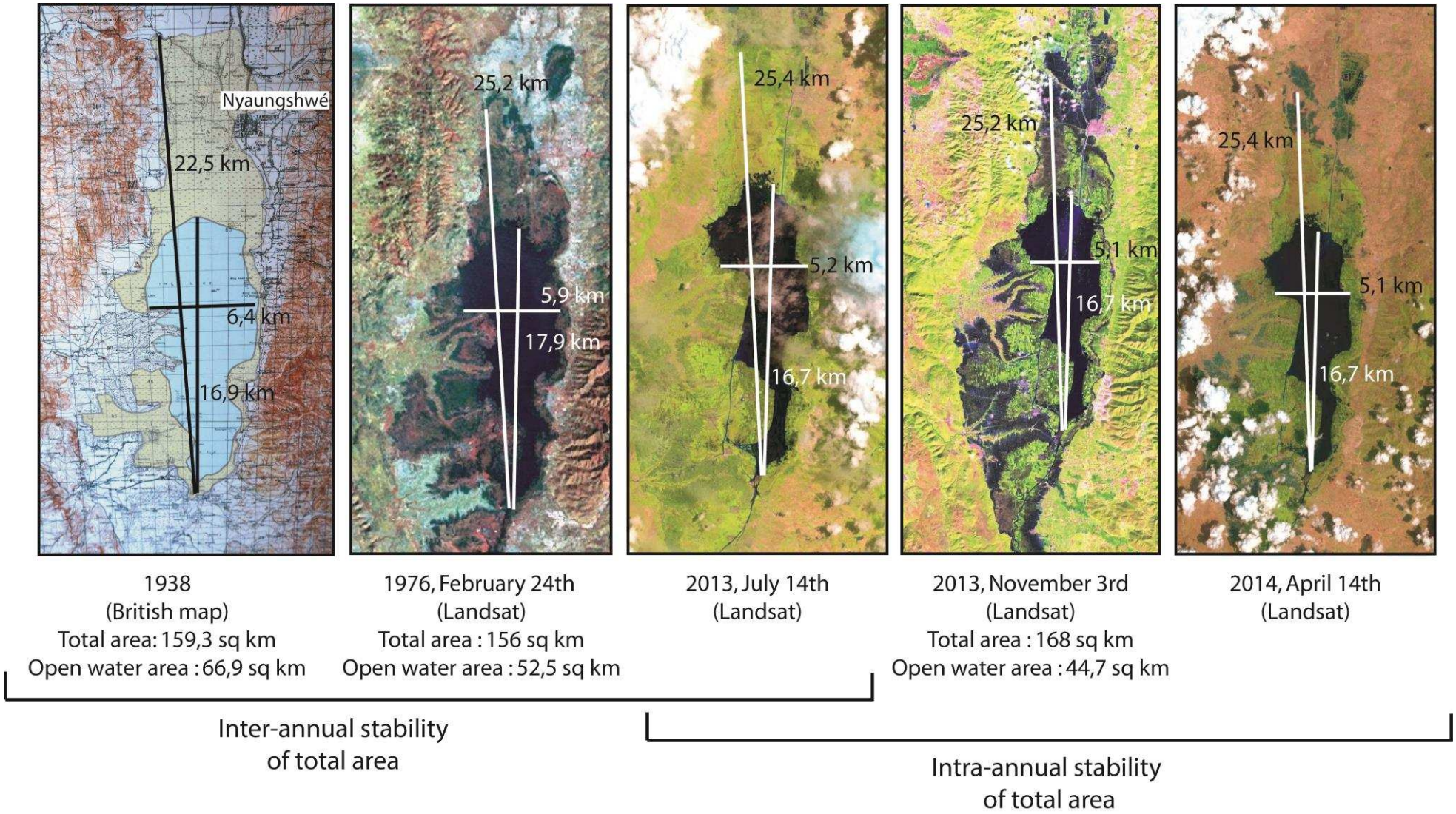


Figure 5 The size and area evolution of Inle Lake since the 1930s.
Source: Map by Lewis 1938, modified by the author; Landsat images, downloaded from usgs.earthexplorer.gov, modified by the author.

Though Sidle et al. carefully avoided any reference to the total area of the lake, their article was seemingly misunderstood by Burmese and foreign media, which hastily quoted it as an evidence of the shrinkage of the lake, and its future disappearance. In the Burmese newspaper The Irrawaddy, Kyi Wai mentioned this study: « Inle Lake […] has shrunk by more than one third during the last 65 years » (The Irrawaddy, September 2007), without clarifying the ambiguity between « open-water area » and « total area ». He even added that, according to the authors, the lake's length had decreased from 58 to 18 km during the last 100 or 200 years... without specifying that Sidle et al. themselves have strong doubts about this figure[12]. The Wall Street Journal[13] made the same confusion in 2010.
Therefore, Inle Lake is compared to the Aral Sea and described as disappearing: on the 30th September 2010, The Irrawaddy stated that « according to 2010 official sources, Inle Lake is only 70 km², less than half of the 163 km² it spanned three years before »... without taking into account that 2010 was marked by a terrible drought, and that the lake level was exceptionally low during a few months. In 2010, 890 mm of rain fell on Nyaungshwe township (Okamoto, 2102, cf. figure 6), which is very close to the yearly average of 920 mm (Sidle et al., 2007). Actually, the real problem was the rainfall distribution during the year 2000: the monsoon outburst came exceptionally late.

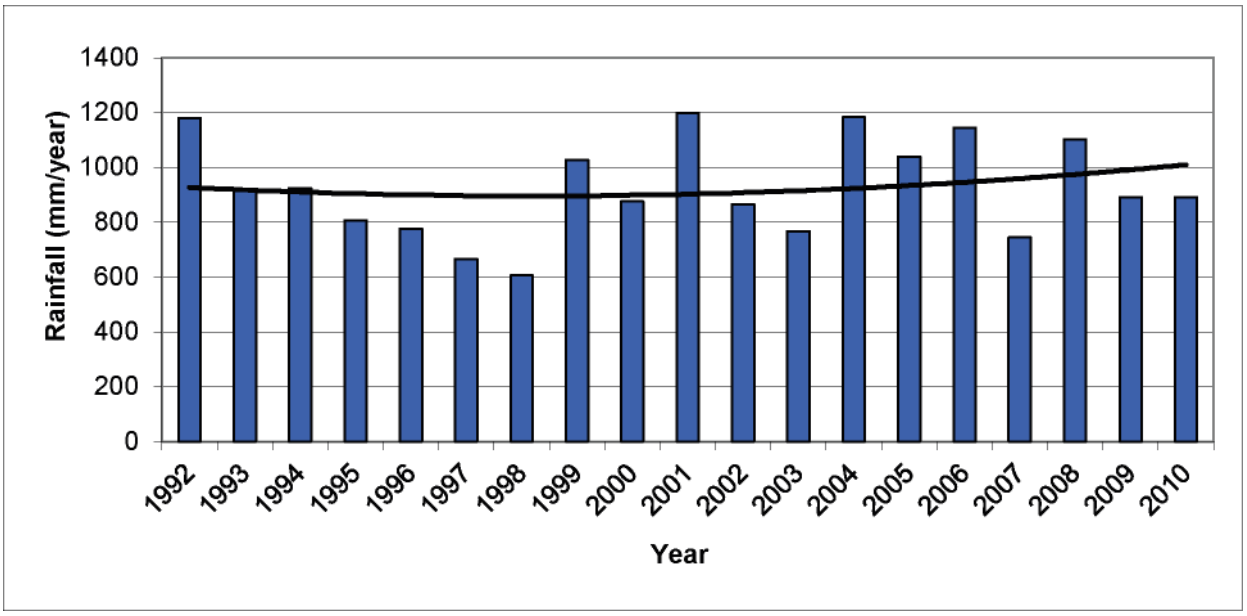


Figure 6: Average rainfall in Nyaungshwe Township.

[12] Sidle et al. wrote that they found this figure (58 km) in another article (Ngwe Sint and Catalan, 2000), and it seemed overestimated to them.
[13] In Courrier International, 2010

Usually, the monsoon occurs at the beginning of June and ends in October. Therefore, the water level follows this rhythm: it is 2 m higher at the end of October than at the end of May (Saw Yu May, 2007, figure 7).

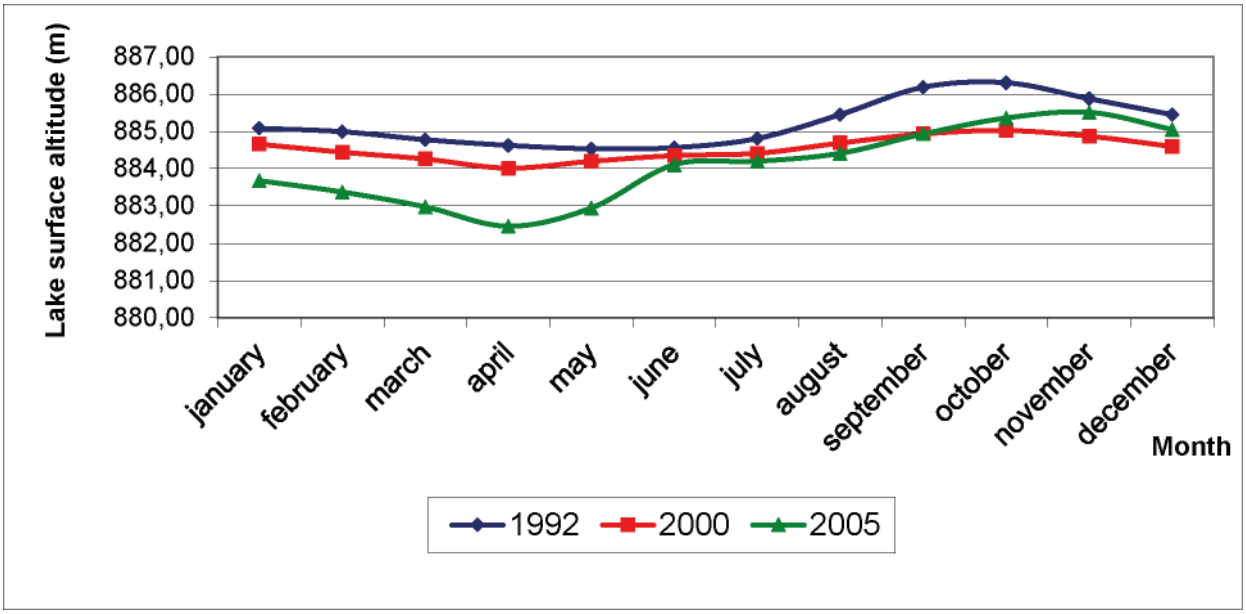


Figure 7: Intra-annual evolution of water level. Source: Saw Yu May, 2007

However, this pattern could be altered by global change in the future: according to the UNDP (2012), rainfall has decreased by 5 % during the last 30 years in Myanmar, as well as in Inle area. Moreover, from 2005 to 2009, the monsoon allegedly decreased from 144 to 139 days. If data is reliable[14], the region may be at risk.

To conclude, we can assess that the lake is highly anthropized: the total lake area remains stable, but the open-water area has shrunk, under the action of floating gardens, a unique activity, which is closely linked with Intha ethnic group.

2) Inle lake population: the significant evolution of an exceptional and complementary ethnic mosaic

In Myanmar, two thirds of the population are Bamars, and in Shan State, 50 % of people are Shans (Seekins, 2006).However, Inle Lake area is populated with its specific ethnic minority: the Intha, who represent 70 % of Nyaungshwe Township (Figure 8).
« Intha » means « sons of the lake »: this population and even its mythology, is closely related to the lake. Legend has it that those gifted fishermen and craftsmen, those hard-working farmers are the descendants of two brothers and their 36 friends, who arrived in the 14th century from the coastal city of Dawei, in the south of the country, and who were hired by the

[14] Standardized and reliable data are recent: Nyaungshwe only got its meteorological station in the 2000s (Saw Yu May, oral information). Before that, the only data in the surroundings came from the Taunggyi station, which is situated 500 meters higher than Nyaungswhe: the climate is therefore very different.

local lord (Robinne, 2000). Those people allegedly settled down in stilt villages[15] on the north side of the lake, before spreading down to the south. However, they have rarely spread out of the lake: south of Nampan, the southernmost end of the lake, Shans are the majority (Nang Nwe Win, 2007).

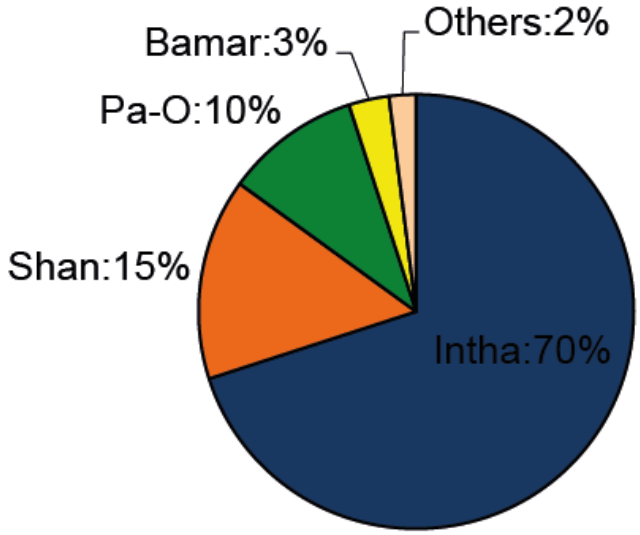


Figure 8: The different ethnic groups in Inle Lake Township. Source: UNDP, 2008, in Okamoto, 2012

They have progressively become the main ethnic group on the lake, from a demographic, but also economic point of view (Robinne, 2000). Intha fish by the means of a big conical net, the saung (Okamoto, 2012), while moving in a unique way: they stand at the stern of their canoe, and row with their leg wrapped around the oar. The Intha fisherman became the symbol of the

Figure 9: An Intha fisherman with his saung. Notice his way of rowing with his leg. Picture by the author, February 2014

[15] There's a lack of reliable sources to understand why they chose to live on the lake. We can assume that living on the water was safer in a period of frequent wars; that there was a competition for land between ethnic groups ; or that those coastal populations needed to live very close to the water. However, no element can back up any of those hypotheses.

area and even of the whole country. However, this ethnic group has been renowned for its polyvalence: on top of being skilled fishermen, they are famous for their skills in floating agriculture and handicraft (weaving, jewelry, cigar and boat-making, etc…).

Since touristic boom, Intha have made themselves known while other ethnic groups have been shadowed, even though those communities still have a strong and complex relationship. Indeed, lake-dwellers have close links with hill tribes: those relationships have been structured by a five-day market cycle around the lake[16], which organizes regional territory and social time (Robinne, 2000). Those five main markets (figure 10), are important exchange poles, where different ethnic groups can meet and trade.
The most famous hill tribe is Pa-O group. They live in the Sindaung Range (east of the lake) and Letmaunggwe Range (south-west), while the north-west part is populated with Danu, Taungyo and Danaw. Pa-O, famed for their black dress, grow corn and curcuma on slash-and-burn areas, locally called taungya (Ma Thi Dar Win, 1996). They are also famed for growing Cordia dichotoma, locally called thanapet (Robinne, 2000), which big round leaves are used to make cheroot (local cigars). On the markets, Pa-O sell corn and Cordia leaves, and buy fresh vegetables from the Intha. Danu and Taungyo also grow corn and Cordia, but they are stock breeders as well: they rent their buffalos to the Intha, so as to plow paddy fields on the rim of the lake. In exchange, they buy vegetables from the lake. Therefore, this vertical network has worked for centuries, structuring space, time and societies (Robinne, 2000).

[16] Another, larger-scale market cycle also takes place in the region, in the main towns of Southern Shan State: Heho, Taunggyi, Shwenyaung, Nyaungshwe and Pindaya.

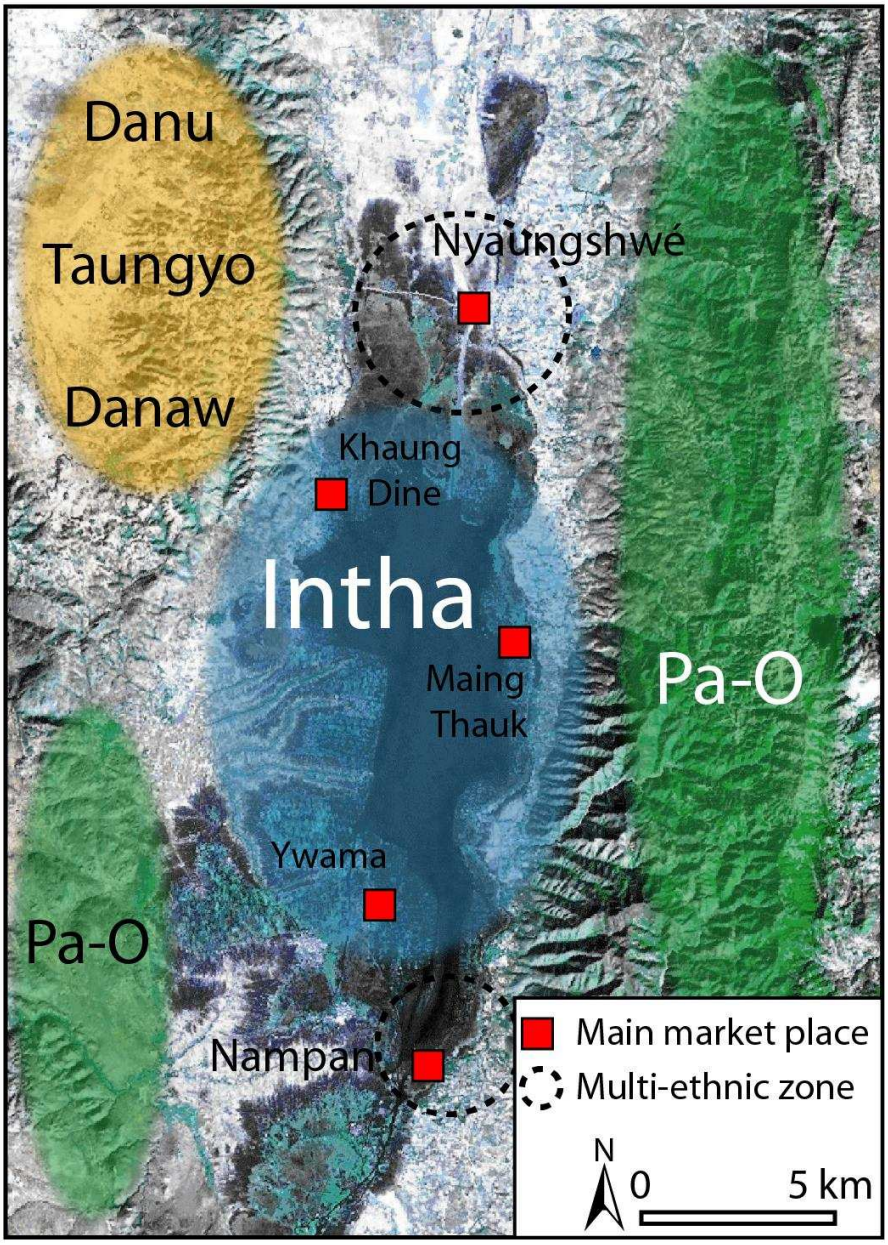


Figure 10: Spatial location of the main ethnic groups in Inle Area. Source of the image: Landsat, modified by the author

Those vertical networks have been completed by a strong horizontal coherence: all the ethnic groups share the same form of Theravada Buddhism, locally organized by the Phaung Daw Oo Pagoda Festival, now famous in the whole country. It lasts approximately one month, and takes place in October close to Nampan. Five holy Buddha images are loaded on two sacred barges, and circumnavigate around the lake, crossing more than 20 villages. This procession, involving all the villages, lake and hills population, and all the ethnic groups, is a key-factor in the regional unity and coherence, and rules the interethnic relationship (Robinne, 2000).

However, local societies have come through significant changes during the last 50 years. First of all, the population of Nyaungswhe township has significantly increased: around 86 000

inhabitants in 1969 (Bruneau and Bernot, 1972), around 150 000 in 2005[17] (Nang Nwe Win, 2007), that is to say +75 % in 36 years. Some hamlets have high densities now, especially on the lake: according to Nang Nwe Win (2007), Ywama village had more than 780 inhabitants/km² in 2005. We can assume that such human load affects the fragile lake environment.

NCEA produced a zoning of this demographic growth, which shows a center-periphery gradient (table 1): the lake, which already shows a high density (435 inhabitants/km²), grows slower than its margins, while hills have the highest gross rate. Though densities in the latter area remain modest, agricultural practices, such as slash-and-burn, have strong impact on those steep and fragile soils.

Table 1: Demographic trends in the Nyaungshwe Township

Year	Lake villages		Lowland villages		Highland villages		Nyaungshwe Township	
	Population	Density (inhab /km²)	Population	Density (inhab /km²)	Population	Density (inhab /km²)	Population	Density (inhab /km²)
1983	21 170	362	56 900	83	27 450	39	105 533	73
2005	25 450	435	75 500	110	42 830	61	143 800	99
Growth rate	+20%		+ 33%		+56%		+36%	

Source: NCEA, 2006

Besides the demographic growth, the tourism soar modifies socio-economical profile in many areas, and especially in the villages of the lake. Moreover, we can assume that tourism changes local lifestyle, life rhythm, and, in the end, local culture. In Nyaungshwe, hundreds of temporary workers come from the whole country to work in building or hotel sectors and we suppose that such flows modify traditional interethnic relationship.

[17] Demographic data are sometimes unclear: for 2005, NCEA (2005) indicates a population of 143 000, while Nang Nwe Nwe Win writes 162 000. This 20 000 inhabitants gap is all the more surprising as those two sources quote official statistics. Some other sources are highly unreliable, such as Ma Thi Dar Win, who wrote that the township population in 1931 was... 126 500, which is far too much. It is to be noticed that the latest complete Myanmar census dates back to 1983. The under progress 2014 census is therefore a key-event.

II) The floating agriculture: factor of the integration of Inle area-into globalization

1) A unique agriculture practice in the world?

The floating agriculture on Inle Lake[18], locally called ye-chan[19] (Ma Thi Dar Win, 1996), is an exceptional cultivation method, which is made possible by water hyacinth (Eichhornia crassipes) proliferation. Probably introduced as an ornament in the first years of 20th century by British colonizers (Mollard and Walter, 2008), this invasive plant could seriously obstruct human traffic on the lake (Bruneau and Bernot, 1972). Winds and currents have it drift and accumulate in a few parts of the lake, especially in North and South-West swampy areas. Then, floating roots intermingle, forming a dense and coherent mass (figure 11), locally called kwyan myo[20] (Robinne, 2000), on which a soil can build up, while underwater roots trap silt. Approximately thirty years are needed to reach sufficient thickness and compactness to carry a standing man on the floating mass: it is then ready for farming, after a specific cultivation cycle (figure 12).

Considering that kwyan myo are a common resource that belongs to the whole community (Bruneau and Bernot, 1972), the farmers who are willing to own a portion of it just have to delimit the area with bamboo poles for a few days. Then, they burn the abundant vegetation that covers those islands (in particular herbaceous plants such as Saccharum spontaeum, i.e Elephant grass, locally called kaing) and saw them in 1,5-meter wide stripes, with variable lengths: while Bruneau and Bernot (1972) report 10 to 15 meter-long islands, we could notice 40 to 100 meter-long ones. Then, the stripes are towed to the farmers' villages and spaced by 2 meter-wide circulation channels. They are staked to the lakebed by bamboo poles[21] on which they can freely slide up and down with the water-level fluctuation (figure 15). Then, the floating islands are covered with mud scooped out from the lakebed, a layer of lake-weeds (figure 14) and one more silt layer (Ma Thi Dar Win, 1996). Raw material quantities are massive : according to Bruneau and Bernot (1972), a 10 meter-long, 1,5 meter-wide floating island requires no less than 8 mud boatloads and 8 lake-weeds boatloads on the first cultivation year, and 3 to 4 boatloads annually afterwards. This meticulous and labor-intensive preparation guarantees an optimal fertility to grow a demanding crop: tomatoes.

According to Ma Thi Dar Win (1996), tomato stands for 90 % of ye-chan production. That proportion roughly matches our field observations. Other crops are beans, cucumbers, gourds as well as flowers sold to ornate domestic altars. Farmers sow vegetable seeds bought in Nyaungshwe (Figure 14) in nurseries set up on artificial fixed islands near the family house. Three weeks later, the seedlings are transplanted on ye-chan. Picking takes place in June-July-August, i.e four months later. Most of the time, farmers then start a new cycle, which finishes in October-November. Those two cycles, that entail successive weeding and the massive use of phytosanitary products (cf. infra) significantly reduces the ye-chan's « life span »: while Ma Thi Dar Win (1996) reports that floating

[18] We here made the choice to focus on the floating agriculture, at the expense of land-farming on the shores of the lake, which are not as symbolic, as unique, as economically structuring, and not as coherent. However, we still mention them in this chapter.

[19] In Burmese, ye means « water », and chan refers to a closed field, a patch of land that has clear bounds, belongs to someone, and can be bequeathed, given or sold (Brac de la Perrière, oral information).

[20] The word kwyan myo refers to wild, untapped floating islands, which are not used by farmers yet, while ye-chan refers to farmed ones

[21] Those bamboo poles come from the Pa-O mountain villages: on market days, one may notice piles of long sticks, with various diameters. This trade is one more evidence of the complementarity between the lake and the hills, between Intha and Pa-O. Ye-chan spread has been responsible for a skyrocketing of bamboo price, which has increased by 125 % in the last ten years (Thandar Laing, oral information)

gardens could be used 8 years in a row, most of our interlocutors use them for 3 to 4 years only[22]. Beyond this time span, soil stripes split up, in particular because of the decay of the roots that made it coherent. Moreover, the successive additions of mud and lake-weeds make floating islands heavier and heavier, and affects their buoyancy. As a comparison, we met a few farmers who harvest just once a year, and leave ye-chan fallow for the rest of the year: they keep their floating islands much longer, up to 30 years in some cases (Daw Hla Kyi, oral information). In the absence of such welcome fallow, islands are an oft-renewed asset.

Traditionally, islands were sawed and prepared by the farmers, but all our interlocutors find this work strenuous. Nowadays, they buy already-prepared islands (stripe-shaped sawed, weeded and nutrient-enriched), even though it is complicated to clearly find out whether some people are specialized in such task, and earn their livings from it. Such a trend emphasizes the fact that ye-chan is a genuine asset which can be sold: according to our interlocutors, a good-quality, thick and dense floating island that may be farmed for 3 to 4 years is worth 500 000 Kyats[23] (around 380 €) per 200 linear meters. Such an amount represents a massive investment for families that reportedly earn 1 to 5 million K/year benefit from their agricultural activities (770 to 3850 €)[24]. Families who cannot afford such an expanse buy inferior-quality ye-chan, that cost 200 000 K (155 €) per 200 linear meters, but which cannot be farmed for more than 2 years (Ma Thi Dar, oral information). For the same price, they can also buy islands from families in financial difficulty, who have to sell their assets (Man Ngwe Mar, oral information).

Therefore, Inle is the core of a highly specific and seemingly homogeneous agricultural practice that exists in very few other places in the world. Such systems used to exist in China a few centuries ago (Mollard and Walter, 2008) and in Mexican Chinampas (Clauzel, 2008). Nowadays, Indian Kashmir (Mollard and Walter, 2008) and Bangladesh deltas (Islam and Atkins, 2007) are the only other regions where water hyacinth-made floating gardens are still in use. However, Inle lake remains unique for the cultivated area (around 50 km²), the spatial and economical coherence of a whole agriculture sector, and for the dissemination pace of this technique all along the 20th century. From a quite marginal practice, it has become the structuring activity of a whole territory and its economy.

Figure 11: ye-chan zone around Maing Thauk village. On the right: thick kwyan myo mats, not exploited yet; on the left: ye-chan in fallow. In between, elephant grass thickets.

[22] That discrepancy with Ma Thi Dar Win's figures might be the result of an agriculture intensification since 1996 that would place more severe a strain on ye-chan.

[23] The Burmese currency is the Kyat (abbreviation: K). At the time of our survey, 1 $ was worth 900 K, 1 € was worth 1300 K.

[24] However, all households have supplementary incomes (cf. infra).

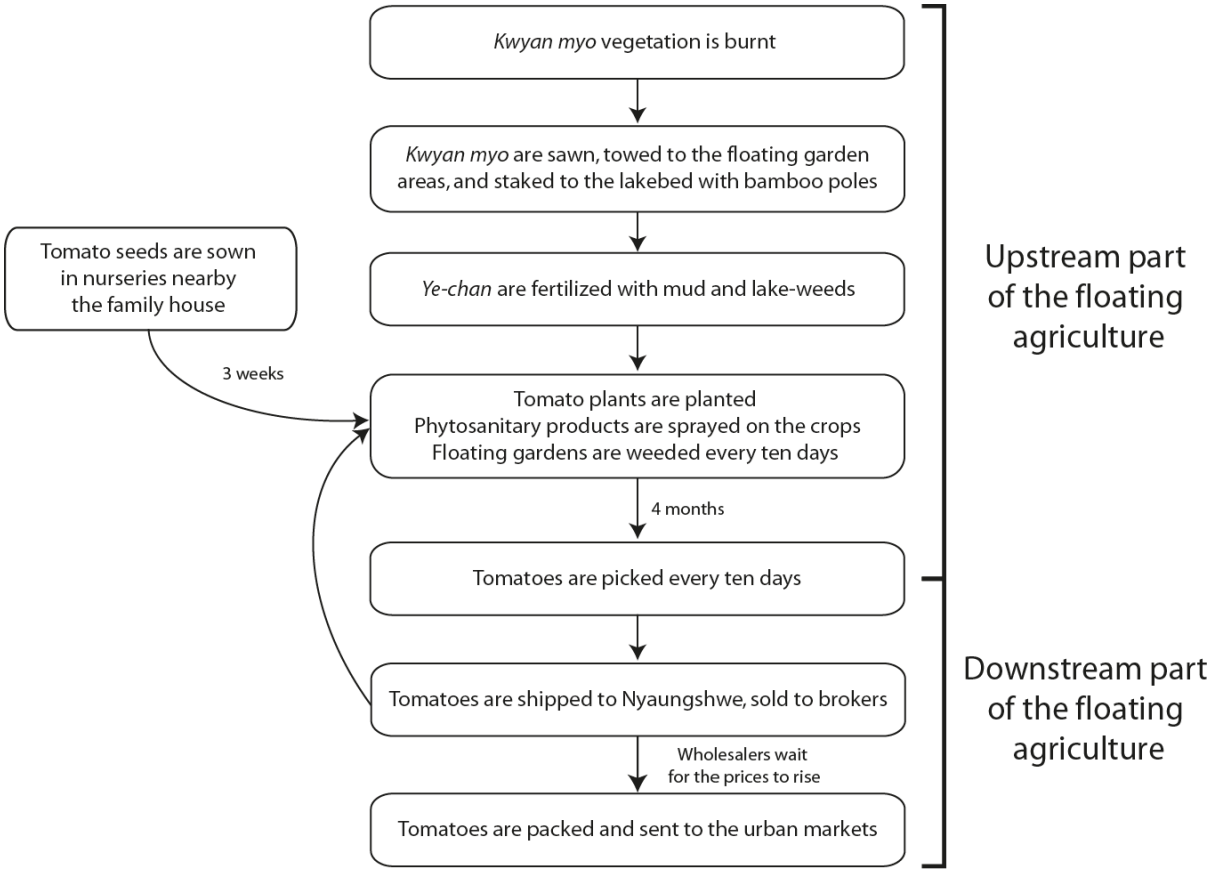


Figure 12: Tomato farming cycle on the Inle Lake

Figure 13: Tomato nursery on a fix island in Nga Hpe Kyaung village

Figure 14: The main stages of floating garden preparation.
On the top picture: a ye-chan stripe is moved through Maing Thauk Inn village.
Middle picture: laborers scoop mud out of the lakebed.
Lower picture: Two boatloads of lake-weeds are heading to floating islands around Ywama village.

Figure 15: A floating garden nearby Ywama.
One may notice that tomatoes plants are planted on both sides of the floating island.
Bamboo poles are used to hold islands on their spots.

2) A dramatic dissemination

When a researcher tries to understand the reasons why Intha initiated floating agriculture on the lake, he faces a deep lack of reliable information. As Céline Clauzel does, we may suppose that such a practice was an adaptation to high land pressure, maybe with inter-ethnic conflicts to get access to the land[25], but with no certitude to back this hypothesis. Difficulties are the same when we try to date such practice: though touristic literature and tourist guides are keen on presenting them as age-old, an accurate field-survey allows us to shade such assertions.

Ko Aung Win, a farmer in New Tha Le Oo, dates back the start of ye-chan on Inle Lake to 180 years approximately (i.e. the 1830s) in Kay La, Kyay Sar Kone villages on the West shore and Tha Le Oo, on the East side (Ko Aung Win, oral information). However, we couldn't find any information to back this assumption. The oldest written sources we could have were accounts by English explorers, during the colonial era[26]. As far as we know, R.G. Woodthorpe was, in 1896, the first to describe "floating gardens on which tomatoes, watermelons and gourds were grown" (Woodthorpe, 1897). At this time, water hyacinth had not appeared on the lake yet, and floating islands were probably made with Ceratophyllum-like lake-weeds, in which duckweed got entangled. Year after year, those floating masses became dense and coherent enough to stand farming activities (Annandale, 1918).

In 1897, Woodthorpe only gives a short description of floating gardens, which might suggest that such practice was quite anecdotal. This assumption seems coherent: Scott and Hardiman visited the area in 1901 without mentioning ye-chan (Bruneau and Bernot, 1972). In 1918, Annandale specifies that they have "a great importance in agriculture", suggesting that their use may have spread

[25] However, Céline Clauzel dates back the origins of floating agriculture to the arrival of Intha people in Inle region, i.e. 14th century, which seems a bit too early.
[26] In order to have older information, it may be interesting to resort to manuscripts kept in the monasteries.

since the beginning of the 20th century. However, it probably remained quite marginal: out of the 12 farmers we interviewed on this very topic, only 3 inherited their floating gardens from their grandparents. For the others, this practice was much more recent[27].

Even if water hyacinth broadly disseminated on the lake in the first years of the 20th century (Bruneau and Bernot, 1972), a major step took place in the 1960s (Robinne, 2000; IID, 2012), in particular because of the improvement of the national road network, which broadened the market for fruit and vegetables. Then, the floating gardens area soared, to reach around 25 km² in the 1990s (Figure 16). Therefore, we may deduce that floating agriculture, which had remained quite marginal for decades, is broadly the result of the transportation improvement, of the networking with the rest of the country. This kind of domestic globalization, which has been observed in many other countries, is often a prelude to an international integration.

The other major step takes place in 1995, when the military junta turned the page of the « Burmese way to socialism » by putting an end to the agriculture cooperative system which used to be the rule, which released and boosted personal initiative (Sai Win, oral information). At the same time, the government also terminated textile cooperative system, which used to give a living to many families through cottage industry. Therefore, the latter chose to switch to agriculture. As a consequence, ye-chan extension, which was supposed to be forbidden since 1991 (Sai Win and Ko Aung Win, oral information), showed an unprecedented rise[28] (Figure 16).

Between the 1980s and the 2000s, numerous households started such an activity (table 2): our interlocutors unanimously reported that floating agriculture generated the most regular and stable incomes, by far. Fishermen families were especially sensitive to such an argument. This economic liberalization process, this liberty of initiative given to the population closely remind us of the definition of globalization as "the historical process of progressive extension of capitalistic system in the global space" (Carroué, 2004). Therefore, and quite surprisingly, the military junta, though "tainted with paranoiac xenophobia" (Egreteau, 2009), initiated the early stages of globalization.

Table 2: Floating agriculture: since when?

Name	Village	Ye-chan activity starting date	Previous activities
U Aye	Ywama	1980	Fishing
U Soe Win	Ywama	1985	Fishing
Daw Myay	Ywama	1985	Fishing
Ma Thir Dar	Kayla	1995	Fishing
Well-off farmer in Nga Hpe Kyaung	Nga Hpe Kyaung	Took over his parents' ye-chan	-

[27] Out of the 12 farmers we interviewed, 3 took over their grandparents' fields, 2 their parents', and 7 started floating agriculture themselves, which clearly shows it is a recent trend.

[28] According to the IID, cultivated area increased by 500% between 1992 and 2009, but such information does not really match with other sources (Figure 16). The temporal evolution of farmed surface has always been a debated issue. On this topic, one may notice the contradictory and perplexing statistics given by Ma Thi Dar (1996). For the year 1994-1995, she successively indicates :

- « Total floating island surface: 8006 acres », i.e. 32,4 km² in the table p.91, and states that 90% *ye-chan* grow tomatoes. Logically, 29,2 km² were reportdely producing tomatoes.
- « the total cultivating area of tomato in the Inle region is about 533 acres », i.e. 2,2 km²
- « cultivated acre in tomato in Nyaungshwe township: 4238 acres », i.e. 17,2 km², in the table p.102.

Though the author is responsible for statistics gathering and checking, one may however notice that all those contradictory statistics came from official sources (*Land Record and Survey Department* and *Agriculture Departement*): once more, that raises the debate about their values and their reliability.

Name	Village	Ye-chan activity starting date	Previous activities
Man Ngwe Mar	Maing Thauk Inn	Took over his parents' and grandparents' ye-chan	-
Ko Aung Thein	Maing Thauk	Took over his parents' and grandparents' ye-chan	-
U Thein Win	New Tha Le Oo	1980	-
Ko Aung Win	New Tha Le Oo	Took over his parents' and grandparents' ye-chan	-
Daw Hla Kyi	Kyay Sar Kone	1985	Cheroot industry
Aung Zaw Tun' mother	Pauk Par	1995	Betelnut trade

In spite of the cultivated surface growth, the official boundary of ye-chan extension (which is indicated by massive wooden posts) seems not to have been transgressed: farmers rather chose to densify their fields (Ko Aung Win, oral information), and to develop swampy areas inside the allowed perimeter. According to a few interlocutors, corruption and the authorities' lack of means of control may also be responsible for such sprawl.

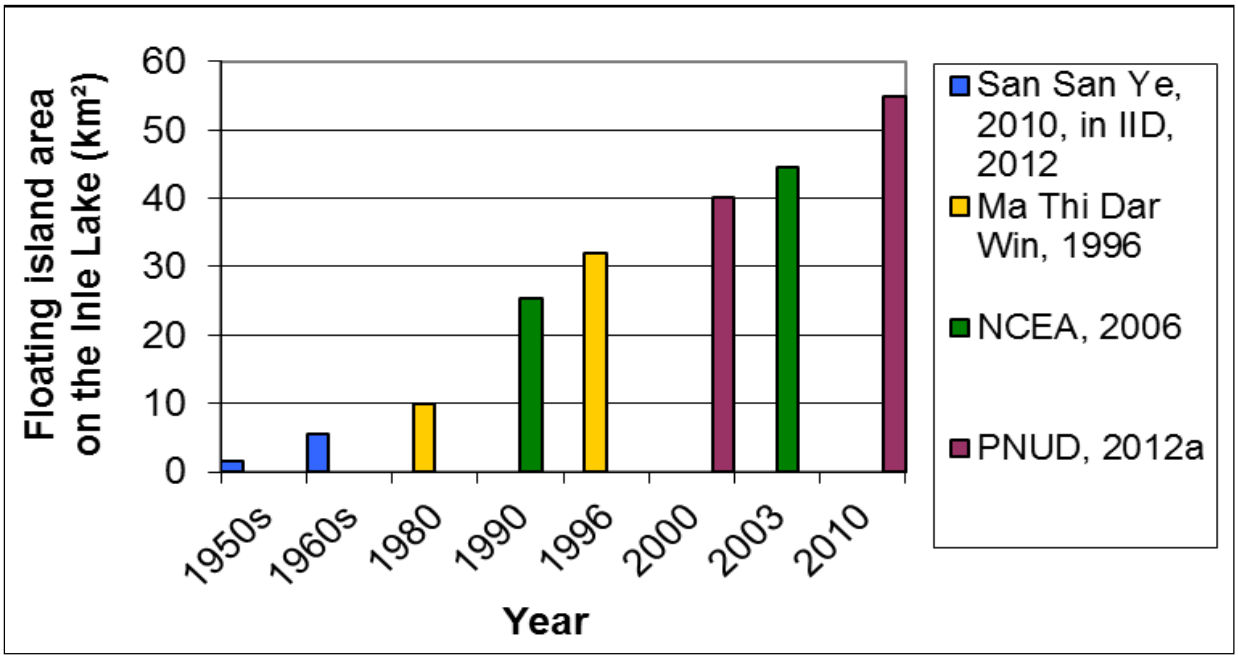


Figure 16: Evolution of floating island area since the 1950s

Throughout those decades, floating agriculture has become the main activity in many stilt villages (table 3).

Table 3: Past and present main activities in a few lake villages in the 1950s[29]

Village	Ai Thaunt Gyi	Zayat Gyi	Kay La	Kyar Taw	Min Chaung	Lal Thit	Kyay Sar Kone
Activities 50 years ago (% of families)	Fishing	Tomato : 20% Handicraft 80%	Fishing	Tomato : 10% Fishing : 90%	Tomato	Fishing : 60% textile : 40%	Tomato : 25% Fishing 75%
Current activities[30] (% of families)	Tomato : 50% Fishing : 50%	Tomato : 80% Handicraft 20%	Tomato	Tomato : 50% Fishing : 35% Rice farming : 15%	Tomato	Tomato	Tomato : 75% Fishing : 25%

Source: Oo et al., 2010. Any activity without percentage indication is the whole population's main occupation.

Our interlocutors on the field could testify to such trend: according to Daw Myay, 1000 families nowadays farm ye-chan in Ywama, for 300 around 15 years ago. In Tha Le Oo, only 40 households indulged in floating agriculture 35 years ago, and 67 nowadays. If we take into account the natural demographic growth, such an increase wouldn't be so surprising. What is more noticeable is that a dozen of farmers chose to give up paddy fields on the shore to switch to floating agriculture.
In this dissemination context, it would be interesting to study this group closely to know more about knowledge transmission, understand how fishermen or paddy-farmers got initiated to this demanding method, whether they have specific practices, and how the latter have changed throughout the time.

Tomato has always been the most popular crop, because it is the most lucrative: Inle Lake is the only region in Myanmar where it can be grown throughout the year. Indeed, floating agriculture allows to get free from the seasons cycle, thus to sell the products during the high-price period. Therefore, farmers used to make massive profits, and to re-invest them in new floating gardens[31] (table 4). Year after year, massive ye-chan parks have been built on the Inle Lake, and especially on the Western shore, which indentations by the Kalaw Chaung and Indein (or Balu) Chaung birdfoot deltas provide calm waters for ye-chan

[29] Around 170 villages are scattered on the lake, and no accurate map of them has ever been drawn. Therefore, we are not able to locate all the mentioned village on a map.

30 As we have already mentioned, all families have several activities. However, they can very easily indicate the occupation they consider as dominant.

[31] An accurate socio-economic survey would be necessary to better understand how farming profits are re-invested. In our interviews, households mainly intended to slightly improve their housing conditions. One of the best-off families was planning to buy a new boat, while the most modest ones couldn't afford any single investment. Nowadays, investment capacity has probably shrunk because of agricultural prices drop.

Table 4: Past and present ye-chan areas cultivated by our interlocutors

Farmer's name	Ye-chan length in the past[32]	Ye-chan length nowadays	Evolution
U Aye	1000 m 35 years ago	Idem	-
U Soe Win	600 m 30 years ago	Idem	-
Daw Myay	2240 m 10 years ago	Idem	-
Ma Thi Dar	1120 m 20 years ago	2800 m	+150%
Man Ngwe Mar	1000 m 5 years ago	2000 m	+100%
Ko Aung Thein	1100 m 50 years ago	3600 m	+230%
U Thein Win	160 m 35 years ago	1400 m	+775%
Ko Aung Win	1120 m 60 years ago	2480 m for 35 years	+120%
Daw Hla Kyi	1000 m 30 years ago	1600 m	+60%
Aung Zaw Tun's mother	100 m 20 years ago	Idem	-

One may also report that floating agriculture, which is a symbol of Intha ethnic group, remained confined on the Inle Lake itself for decades. However, it has recently spread to Sankar Lake as well (a Shan territory, 35 km down South), on which a few loose ye-chan stripes can be spotted nowadays (Figure 17).

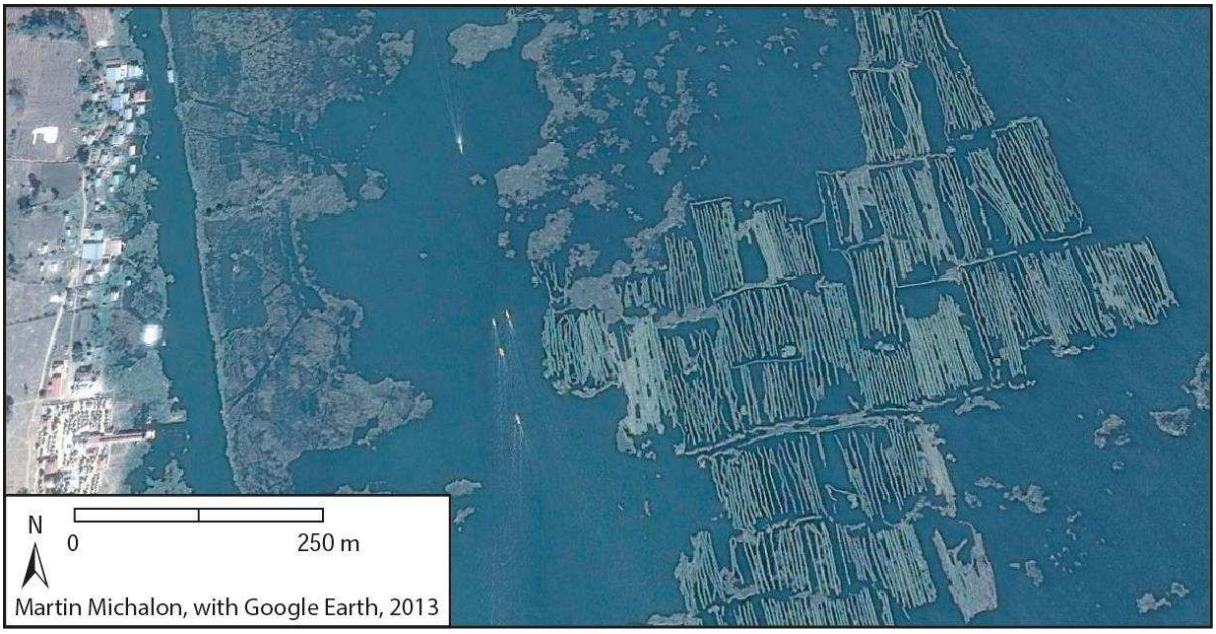


Figure 17 : First ye-chan stripes on Sankar Lake (Source: Google Earth)

[32] The significance of a farm is never described in terms of area, but in terms of length.

As we could show, family farms have become genuine agricultural enterprises that hire numerous labourers. However, it would be interesting to compare the trajectories of a few farms. Indeed, we could notice that all the households cannot (or do not want to) extend their properties. Therefore, we may assume that the current system tends to broaden the gap between a rich farmer, such as Ko Aung Thein, who owns 3600 meters of ye-chan, and a smaller-scale one, such as U Soe Win, who has 600 meters, and who cannot repay his last year's loans (cf. infra).

The boom in floating gardens area has been both the consequence and the condition for a massification of agriculture on the Inle Lake: local-scale farming have become intensive cash crop, produced for faraway urban markets, thus integrating the region in national, and even international flows and networks.

3) Floating agriculture: a globalized sector

a) The upstream part of production chain

It is interesting to follow a group of tourists on the lake, and to listen to their guides describing ye-chan as an ancestral agricultural practice, which has remained unchanged throughout time. Indeed, the cutting, the enriching by the means of mud and lake-weeds is carefully explained… but nothing is said about the current massive use of phytosanitary products. Such an omission allows to prolong the illusion of a place "where time stopped", "out of the modern world", which is the main touristic asset of the area. However, if one carefully focuses on ye-chan, one discovers a widely globalized sector.

On the upstream part of the agricultural production (i.e. before the harvest), one may notice that floating agriculture demands a lot of inputs: the time when ye-chan's fertility only depended on mud and lake-weed layers is definitely over. Though those traditional methods are still in use, they are nowadays systematically completed with chemical fertilizer, and we did not meet any single farmer who does not use it.

The use of chemical fertilizers is nothing new: a rich farmer from Nga Hpe Kyaung[33] told us that his family has used them for more than sixty years. Out of the 8 farmers who gave their opinions on this topic, three started using them 35 years ago, three others 15 to 20 years ago, and only one started four years ago (Ko Aung Thein, oral information). However, most farmers do not use chemical fertilizers only, because tomatoes would deteriorate too quickly: out of the 10 farmers interviewed on this topic, 6 combine chemical and "natural[34]" products in variable proportions: the well-off farmer from Nga Hpe Kyaung uses 10 bags of chemical fertilizer for 30 bags of natural one, while a Maing Thauk farmer resorts to 15 bags of chemical product for 5 natural, i.e. opposite proportions.

Chemical products allow dramatic quantitative benefits. Four years ago, Ko Aung Thein switched from a low-input farming method to an intensive one. As a result, he was able to pick tomatoes 10 times in a row on each tomato plant, instead of three times[35] (Ko Aung Thein, oral information). As for U Soe Win, he can pick up 5600 kg of tomatoes[36] each season with the help of chemical products. If he only used natural ones, he would estimate his crop at 4000 kg (U Soe Win, oral information).

[33] This farmer asked for anonymity.
[34] This « natural fertilizer » is bat guano coming from Myanmar or from abroad (cf. infra)/
[35] Tomatoes are picked every 10 days on a same plant.
[36] The amount of tomatoes that are picked are expressed in 30-viss baskets (one viss amounts to 1,6 kg).

The dissemination of chemical products is closely linked with the growing number of specialized shops in Nyaungshwe, the main town in the area. According to our informers, the first shop of chemical agricultural products opened in 2000 (Myo Min Tun, oral information). Before then, we may assume that farmers had to purchase them in Taunggyi, one-hour drive away. The current number of shops is more uncertain, but, according to Myo Min Tun and our field observations, there seems to be 6 of them in town.

Those shops are really indicative of the insertion of the region in the globalization flows. Indeed, though most of "natural fertilizer" (guano) comes from the karstic caves of Shan State, no Burmese company produces good-quality chemical fertilizer[37] (Myo Min Tun, oral information). Therefore, all the fertilizers used in floating gardens are imported (cf. synthetic map, figure 20), even though they are often packaged and distributed by Burmese company Awba: at the time of our field survey, the most popular product was the Comet, made in Germany, but distributed by Awba.

However, Asian countries are not left behind: they have a very abundant offer, in spite of its lack of clarity and doubts on its quality. Chinese fertilizers are massively represented in the retailers' shops, with the Sino-American brand Three Circles-Sinochem-Cargill. Numerous products are also made in China by Western companies, such as Tatu from New-Zealand or Green Lion from Great-Britain, while Yara from Norway produces fertilizers in Thailand. In addition to the Chinese and Thai brands, other Asian multinational companies (MNC) have a great role, such as Pupuk from Indonesia or Farm Link from Singapore.

Chemical products retailers buy their products from Rangoon, the main harbour in Myanmar; from Muse, the major check-post with China; from Tachileik, border town with Thailand. They sell massive quantities: one of our interlocutor sells 2000 50-kilo bags annually, i.e. 100 tons a year[38] (Myo Min Tun, oral information), while another used to deal 5000 bags, i.e. 250 tons two years ago, before harsh concurrence hit his business, thus reducing the sales to 800 bags a year, i.e. 40 tons (Kung Si Thu, oral information). If there is eventually 6 chemical products retailers in Nyaungshwe, and if each of them sells around 100 tons a year, no less than 600 tons of chemical fertilizers would be used on the lake, or at least in its watershed. Undoubtedly, such quantities have an environmental impact. On an individual scale, farmers also use massive amounts of chemical input, between 0,2 and 1,5 kg/linear meter of ye-chan (table 5).

Fertilizer dealers also sell numerous kinds of pesticides (insecticides, fungicides, herbicides), most of them imported from China or Thailand. Comet from Germany is also present on this market. The two shops we visited sell around 500 bottles a year[39]. Out of the 10 farmers we interviewed, 5 explicitly stated that they use pesticides, some of them quite massively: Ma Thi Dar treats her 2800-meter long ye-chan with 50 kilos of pesticides for each farming cycle. Therefore, Inle Lake floating agriculture can be described as intensive, and resorts to massive doses of inputs, which may raise concerns about environmental issues (cf. infra).

[37] Only one Burmese company makes chemical fertilizer, but its quality is so unsatisfactory that farmers never use it.
[38] … and only 12 tons of guano, which emphasizes the strong primacy of chemistry.
[39] The bottle capacity can vary, between around 0,3 to 2 liters… Therefore, it is difficult to calculate the amount of pesticides sold annually.

Table 5: Amount of inputs used by the farmers we interviewed
The quantities are expressed for one farming cycle (most farmers grow two cycles a year).

Name	Amount of chemical fertilizers	Amount of natural fertilizers	Amount of pesticides	ye-chan length	Amount of fertilizer per linear meter of ye-chan
U Aye	10 bags = 500 kg		N/A	1000 m	0,5 kg
U Soe Win	15 bags = 750 kg	30 bags = 150 kg	10 bottles of pesticides	600 m	1,5 kg
Daw Myay	10 bags = 500 kg	18 bags = 90 kg	Gave up pesticides 30 years ago	2240 m	0,25 kg
Ma Thir Dar	20 bags = 1000 kg		50 kg pesticides	2800 m	0,36 kg
Well-of Nga Hpe Kyaung farmer	10 bags = 500 kg	30 bags = 150 kg	pesticides	1000 m	0,65 kg
Man Ngwe Mar	15 bags = 750 kg	5 bags = 25 kg	-	2000 m	0,39 kg
Ko Aung Thein	50 bags = 2500 kg		4 bottles of pesticide	3600 m	0,7 kg
U Thein Win	15 bags = 750 kg		1 bottle of pesticide	1400 m	0,54 kg
Ko Aung Win	20 bags = 1000 kg	30 bags = 150 kg	N/A	2480 m	0,46 kg
Daw Hla Kyi	5 bags = 250 kg	15 bags = 75 kg	N/A	1600 m	0,2 kg

Phytosanitary companies are not confined in retailers' shops: they have been integrated in the landscape. Numerous farmers or fishermen wear clothes offered by Awba, while each tree in the region is covered with colorful posters advertising many kinds of fertilizers. One of the most striking example is the massive advertising for Awba and Comet that stands at the junction between the lake itself and the channel leading to Nyaungshwe. Just besides this sign stands another one, depicting the traditional boat races on the lake, as if both of them were describing the Inle Lake, yesterday and today.

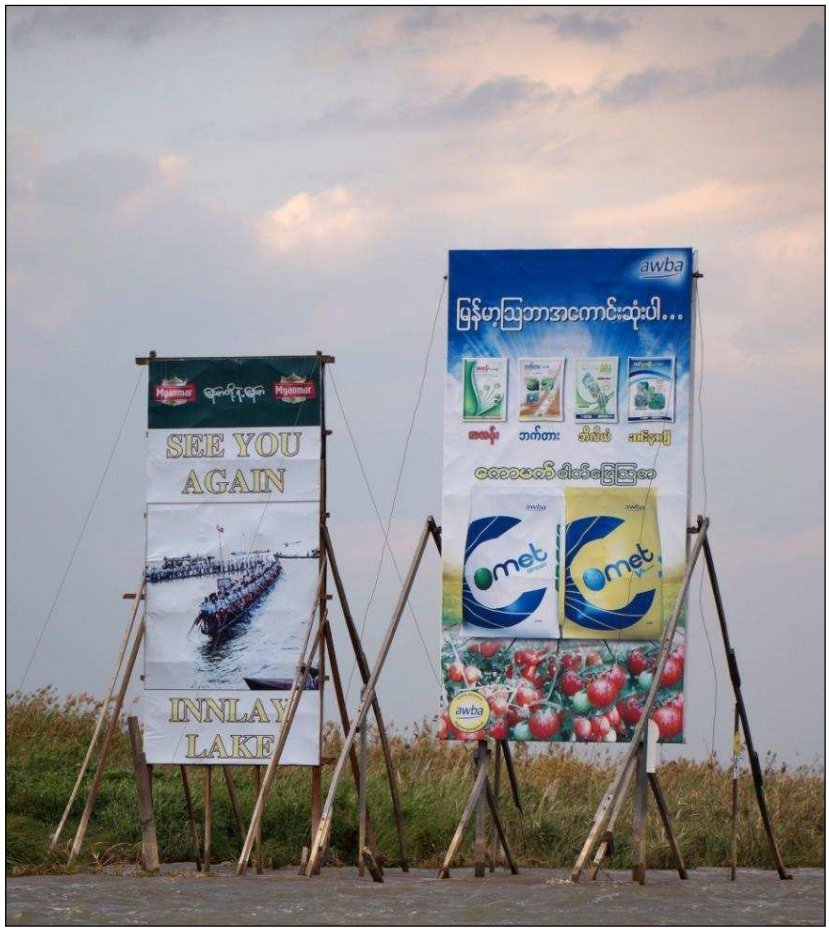


Figure 18: The ubiquity of fertilizer brands: Advertisement on the channel to Inle Lake.

Fertilizers and pesticides are not the only upstream components of the agriculture sector. Indeed, famed Inle tomatoes are grown from imported seeds. The latter are hybrid; that is why farmers have to buy new seeds for every farming cycle: Ko Aung Win uses 31 seed bags for his 2480 meter-long ye-chan (for a total cost of 83 €), while Ko Aung Thein buys 60 ones for his 3600 meter-long garden[40].

Farmers often switch to more efficient seeds: 13 years ago, Ko Aung Win used Typhoon 387 seeds (marketed by Chia Tai from Thailand), that allowed to get 10 successive pickings on a same plant, before adopting Red Gem (produced by Monsanto), that gave him 12 successive pickings. Three years ago, he finally chose to grow Inlay 019 (sold by East-West seeds from Thailand) which gives him no less than 16 cycles. Those seeds give a glimpse of the extent of agriculture globalization, and of the international division of labor (Figure 20), that we can now specify. For instance, Sahara 711, one of the most appreciated tomato species, is sold by Seminis. The seeds are made in India by the Thai branch of Monsanto, then imported to Rangoon by the Burmese company Seeds Energy. This model of seeds, though quite recent, is already about to be superseded by another one, the VL-642, made by the same group after the same manufacturing process[41].
Japanese seeds are also popular, with the Sakata brand, which sells the Red Jewel, but Thai products are not left behind: Chia Tai and East-West seeds are well positioned in the retailers' shops. As well as

[40] i.e. one bag for 80 linear meters in the first case, one for 60 in the second case. This gap may be due to different agricultural practices or different tomato species with their own constraints.
[41] In spite of our questions, we were not able to determine whether seeds in use on the Inle Lake are genetically modified. According to Oo et al. (2010), GMO are supposedly used in floating agriculture, but no further detail is given.

for fertilizers, Burmese companies are not involved in the manufacturing process, and are confined to marketing tasks: local brand Ayeyarwady Seeds markets Lora 981 made in Singapore, while Magi Vision imports and sells seeds made by Nunhems, from Germany (a branch of Bayer).

Retailers sell massive amounts of tomato seeds (Figure 19): one of them sells 2500 bags a year (Kung Si Thu, oral information), that is enough to grow 90 linear kilometers of ye-chan[42]. One may notice that just a few seed bags are exhibited in the shops, while the others stay safe in the backroom: a bag costs 3500 to 6500 K (2,7 to 5 €) depending on the species, which makes it a valuable product. As a comparison, seeds for other vegetables (cabbages, gourds, beans) are less cared for, because they cost 500 K only per bag (0,38 €). Such a cheaper cost is symptomatic of a lower demand, and a lack of proper agronomic research to develop more efficient seeds.

Figure 19: Seed stall in a retailer's shop in Nyaungshwe.

[42] With two parallel rows of plants per ye-chan, and one bag of seeds for 70 linear meters.

Modern technics such as hybrid seeds and phytosanitary products, cumulated with traditional methods still in use allow farmers to get high yields (table 6). If we ignore a few extreme and unreliable values, we can conclude that farmers can pick up 8 to 15 kg/ linear meter. This wide range may be explained by the different agricultural practices: amount of inputs, species in use… Every year, more than 90 000 tons of tomatoes are picked from all the ye-chan on the lake (IID, 2012), i.e. a yield of 18 tons/hectare[43], which is higher than the South-East Asia average (16,7 tons/hectare[44]).

Table 6: Tomato yields on the Inle Lake (from the farmers we interviewed)

Name	ye-chan length (linear meters)	Tomato pickings (kilo per farming cycle)	Yield (kilo per linear meter)
U Soe Win	600	5600	9,3
Daw Myay	2240	38400	17,1
Ma Thir Dar	2800	4800	1,7
Well-off Nga Hpe Kyaung farmer	1000	12800	12,8
Kay La laborers	600	8000	13,3
Man Ngwe Mar	500	2400	4,8
Ko Aung Thein	3600	60480	16,8
U Thein Win	1400	14400	10,3
Ko Aung Win	2480	21600	8,7
Daw Hla Kyi	1600	24000	15,0

Therefore, the floating agriculture of the Inle Lake is one of the most productive in the country, and is quite far from the depiction given by touristic leaflets (a picturesque practice, confined to ancestral technics and local scale, with no connection with the rest of the world). While the upstream part of the agricultural sector is strongly linked with South-East Asia, and even with the whole world through local retailers and phytosanitary Multi National Companies (MNC, cf. figure 20), the downstream part of the sector, i.e. the sale of the production, is also included in an unexpected scale.

[43] According to IID, 90 000 tons of tomatoes are yearly grown on the lake (IID, 2012), but this total is the sum of two farming cycles. As a result, each cycle produces around 45 000 tons. Ye-chan area on the lake is around 50 km², but this figure includes the channels between floating gardens: out of the 50 km² of ye-chan, around 25 are genuine farming land. Therefore, 25 km², i.e. 2500 hectares, produce 45 000 tons of tomatoes per cycle, i.e. 18 tons/hectare. This figure is nothing but a rough estimation.

[44] Source : www.faostat.fao.org

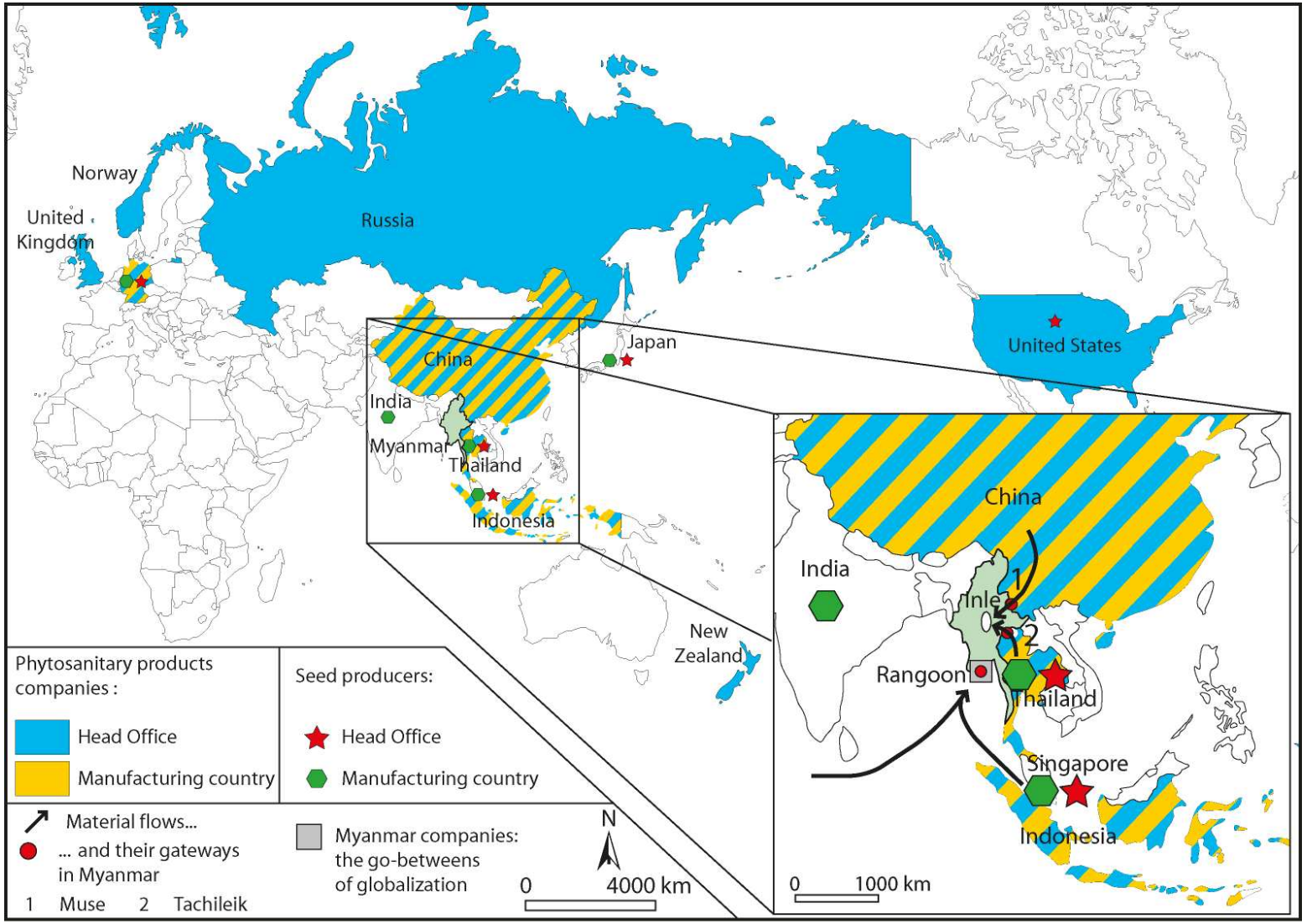


Figure 20: The phytosanitary sector, its players and its flows: a factor of integration of the Inle Lake region in the « System-World »
Map background: d-mpas.com, modified by the author.

b) The downstream part of the agriculture : a strong integration in the national scale

Tomatoes are picked when ripe, but often green as well, because they can be shipped more easily, and because green tomatoes are fancied by Burmese consumers. They are picked every ten days by labourers, who often live in the same village as the farmer and have worked with him for many years. Wages are quite low, even by local standards: women get 2000 to 2500 K/day (1,5 to 1,9 €), while men earn 2500 to 3000 K/day (1,9 to 2,3 €)[45]. One of the employers we met is even planning to increase the salaries to make up for the inflation, which rapidly becomes an issue with such low salaries[46]. While the preparation tasks are gendered (men scoop out mud and harvest lake-weeds while women weed), picking is often a mixt labour.

Vegetables are put into 30-viss (48 kg) bamboo baskets that are often stored at the farmer's house, to wait for the prices to rise. However, room is scarce in stilt houses, which limits the storage duration (Ko Myo Aung, oral information). Then, baskets are loaded on the iconic Inle lake long boats, and shipped to Nyaunshwe, which is the only trade and logistics hub in the region (Figure 21). On 2014 March 17th, between 6 a.m. and 11 a.m., we could count 52 boats loaded with freight on the channel linking Inle lake and Nyaungshwe, out of which 34 were full of vegetables (most of the time tomatoes). Each boat carried around 12 baskets: as a consequence, no less than 20 tons of tomatoes were shipped to Nyaungshwe that day[47].

Figure 21: Arrival of a ship loaded with tomatoes in Nyaungshwe

All those boats moor in « Mingalar Zay Canal », the main trade area in Nyaungshwe. From there, porters load baskets on pick-ups heading to Taunggyi, or on rudimentary carts to bring them to local brokers'. The accurate number of those wholesalers is uncertain, for some of them do not stay in Nyaungshwe for the whole year (cf. infra). According to U Aung Aung, one of the most influent and knowledgeable brokers in the area, around 50 traders work in Nyaungshwe, for 20 in 1998. Those characters are key stakeholders in regional economy: they buy and sell hundreds of tons of tomatoes per year (table 7) and, in spite of the risks they can take, they have managed to build up what appears like fortunes in the Burmese context. One of our interlocutors earns around 80 000 K benefits a day (63 €) in the high season, while another earns 100 000 K (77 €) and a last one 200 000 K (154 €). Thanks to those significant and

[45] According to the World Bank, average yearly income in Myanmar is around 715 €, i.e. 2 €/day (source: mm.undp.org)

[46] According to the CIA, the national inflation rate was 5,7% in 2013 (CIA factbook)

[47] It has to be specified that 34 boatloads of vegetables is a minimum: some boats are covered with plastic tarp, or carry diversified freight which is difficult to identify. One should also notice that those measurements were made on a low-season day: the amounts of tomatoes must be much higher in June-July-August or October-November.

regular incomes, brokers are important investors in the area, especially in the tourism sector, which is considered as a safe investment[48].

Table 7: Tomato wholesalers in Nyaungshwe: at the heart of massive and lucrative flows

			High-price period[49]		Low-price period	
Broker's name	Quantities of tomatoes in low season (kg/day)	Quantities of tomatoes in high season (kg/day)	Purchase price (€/kg)	Retail price (€/kg)[50]	Purchase price (€/kg)	Retail price (€/kg)
Ko Aung Thein	-	4 800	0,32	0,36	0,11	0,14
Ko Myo Aung	3 200	6 400	0,35	0,43	0,05	0,10
U Aung Aung	8 000	16 000	-	-	-	-
Daw Nyo Nyo	-	9 600	0,39	0,5	0,05	0,06
Daw Hla Kyi	3 200	32 000	0,34	0,48	0,03	0,06

Brokers are equipped with vast warehouses (Figure 22), in which they can store tomatoes for two weeks in the hot season, and even one month in the cold season, so as to wait for the best prices (Ko Myo Aung, oral information). Though such speculative strategy often works, brokers sometimes get trapped by price volatility. Around fifteen years ago, prices used to change weekly; nowadays, thanks to new technologies, they fluctuate daily. So as to take advantage of a high-price period, brokers sometimes resort to chemical products to accelerate ripening. In just two days, green tomatoes turn red, but they have to be sold quickly. If prices have collapsed in the meantime, wholesalers have to sell their stock at a low price (U Aung Aung, oral information).

[48] For example, Ko Aung Thein bought two boats that he rents for touristic day-tours, and he is planning to open a restaurant for tourists. Ko Myo Aung built a massive warehouse and a parking lot that he rents to truck drivers. U Aung Aung achieved a few land investments in Nyaungshwe, and is currently planning to open a 30-room guesthouse. As for Daw Nyo Nyo, she's intending to build a 24-room guesthouse, while Daw Hla Kyi wants to start a grocery business and a travel agency.

[49] It is difficult to compare the situations of different brokers, because their perceptions of low or high prices are quite subjective: for instance, some of them indicate the lowest price they have ever seen, while others just mention the lowest price in the last few years. Figures are then provided to shape a rough idea of the commercial profits made by brokers, and to estimate the gap between the high and low seasons for each of them.

[50] Quite often, a retail price includes the shipping price that has to be paid by the broker. Therefore, the commercial benefit is not only the difference between retail price and purchase price.

Figure 22: Ko Myo Aung's warehouse in Nyaungshwe.

So as to be shipped away, tomatoes are packed into wooden boxes which are loaded on trucks. Each Nissan truck can carry 500 boxes, i.e. 16 tons: as a result, middle-sized brokers cannot fill a truck by themselves every day, especially during the lower season. At such time, they often share a same vehicle, send a truck every other day, or resort to smaller vehicles, such as 180-box (5,7 tons) vans (Daw Nyo Nyo, oral information). In the high season (June-July-August), the harvest is at its highest, and each broker can charter one to three trucks a day. During the high season, no less than 15 trucks a day leave Nyaungshwe, and that amount often reaches 30 vehicles, i.e. 240 to 480 tons.

Those flows are significantly more massive than in the past, as 1994-95 data show.

Table 8: Tomato export flows in the 1990s

	Average shipping in July-December 1994 and July-December 1995 (high seasons)	Shipping during the best month: July 1995
Trucks on the period	1479	355
Trucks/day	4	12
Truck load (tons)	6,4	6,4
Shipping/day (tons)	26	75

Source: Ma Thi Dar Win, 1996[51]

Beyond this quantitative evolution, one may also notice a major shift in the shipping destinations. In 1994-95, according to Ma Thi Dar Win, almost all the trucks headed to Mandalay. From there, tomatoes were dispatched to Central Myanmar. Rangoon was nothing but a secondary destination, with no more than 8 tons of tomatoes shipped by train every day. One may explain the second role of the then-capital city by the poor quality of infrastructures: transporting such fragile goods on bumpy roads was difficult and expensive.

[51] Paradoxically enough, the data personally collected by this researcher seem more accurate than the official figures she cites. We don't have any data about low seasons (January-May) in 1994-95.

However, the main factor seems to have been the lack of proper commercial networks between the lake and this area. Since then, the situation has changed.

Indeed, Intha brokers now rely on specific networks and partners in the whole country. According to U Aung Aung, around 50 Intha families have settled in Rangoon in the last 10 years, and around 15 in Mandalay in the last five years. Those trustworthy partners, who are often Nyaungswhe brokers' relatives, are the keys to those urban markets. For instance, U Aung Aung works in a close relationship with his brother in Mandalay, and his nephew in Rangoon, while Daw Hla Kyi relies on her son, who is her only partner in the former capital city. This strategy allowed a significant increase of the flows towards the South: no less than 10 trucks a day in the high season, i.e. 160 tons. Therefore, ethnic and family links, as well as infrastructure upgrading have played a major role in the conquest of Rangoon and Irrawaddy delta markets.

In the meantime, a very reciprocal trend can be noticed: for a few years now, brokers from Rangoon, Mandalay or Monywa have settled in Nyaungshwe. According to our interlocutors, between one third and one half broking businesses in Nyaungshwe are run by "foreigners". The latter don't live permanently in town, but have warehouses built in the periphery (the canal sides are now saturated and prices soar), and stay there for a few months a year, during the agricultural high season. Those non-permanent wholesalers also use their regional, familial or ethnic networks, and play a significant role in the spatial deployment of the fresh products sector from Inle to the whole country.

However, for four or five years now, the Inle tomato sector has been under the competition of new production regions in Central Myanmar (Monywa and Sagaing) and in Rangoon periphery (Khayan, cf. Figure 23). Taking advantage of new technologies and flows of investments, farmers in this area have been able to produce tomatoes for longer periods than before (U Aung Aung, oral information). Farmers and brokers therefore have to cope with lower prices (cf. infra).

As a consequence, Nyaungshwe brokers had to conquer a near, but still marginal market, on which they could have a relative monopoly: Eastern Shan State. Because of insecurity, this "Golden triangle region" was a "blind spot" of the Burmese territory, outside the main (legal) commercial flows[52]. Nowadays, the security issues have settled, and it has become a popular market for Intha wholesalers. However, one may notice that few shipments are directly sold from Nyaungshwe to Kyaingtong or Tachileik: most of the time, they have to transit through an intermediary in Taunggyi. One may assume that Intha alone don't have sufficient commercial links with Eastern Shan State: thus, they have to rely on Taunggyi tradesmen[53], which are efficient connectors between Intha's network and Golden Triangle brokers'.

Therefore, fresh products flows have been significantly reshuffled since the 1990s. Twenty years ago, most of the trucks used to head to Mandalay; nowadays, out of the 30 trucks leaving Nyaungshwe every day, around 10 (i.e. one third) still go to Mandalay, while 10 make it to Rangoon and 10 to the Golden Triangle, via Taunggyi (Ko Myo Aung, oral information).

While we can notice a broadening of the shipping destinations, it is surprising to notice that Inle tomatoes are not officially exported abroad[54], whereas Thai and Chinese markets are within reach. According to scarce sources, they did use to be exported to Thailand a few years ago (U Aung Aung, oral information and www.globalpost.com), but trade was reportedly halted because of the concentrations of phytosanitary products in the tomatoes (Ko Myo Aung, oral information). Chemical agents used to accelerate maturation are especially fingered as culprits. Moreover, Nyaungshwe brokers lament the lack of international commercial networks (Daw Nyo Nyo, oral information), which may be the outcome of decade-long political and economic isolation led by the military junta.

[52] One may mention the numerous fights between Tatmadaw (the Burmese army) and armed groups, such as the United Wa State Army, in connection with narcotrafficking cartels.

[53] Among others, Chinese wholesalers living in Taunggyi are famous for their broad connections with Eastern Shan State

[54] One may assume that Burmese tomatoes trickle to Thailand through Tachileik, more or less officially… However, we could not have any confirmation about it.

In spite of the exportation hurdles, it is clear that the Inle vegetable sector outsizes the local or even regional scales, to fully encompass the national territory, thanks to ethnic or family-based networks (figure 23). Finally, it should be kept in mind that tomato is not the only agricultural product shipped from Nyaungshwe. Indeed, truckloads of beans, gourds, cucumbers and chilies from floating gardens regularly leave the town. Those goods are appreciated by wholesalers, because they can cushion the fluctuations of tomato price.

However, floating agriculture should not make us forget the firm-land production, which is the main occupation of thousands of households, and constitute significant flows, though not as symbolic and coherently-structured as ye-chan sector. For centuries, paddy has been a popular crop in the lake-rim lowlands. According to official statistics, no less than 125 km² of paddy fields spread around the lake (Nang Nwe Nwe Win, 2007). Harvests, that could not be quantified, do not seem to be massively exported[55]: on the contrary, the local population prefers the local rice to the one from the Irrawaddy delta, which is cheaper, but does not suit local tastes.

As for sugarcane farming, more commercial and extraverted, it is becoming more and more important in the region, even though we don't have enough elements to date such popularity. Most of the fields are in the lowlands, just behind (and higher than) the paddy fields belt. A same sugarcane plant can be cut four years in a row, and its farming is manpower-saving (except in harvesting period), which are noticeable advantages. Finally, sugarcane is processed in a local workshop to make jaggery, a little-perishable product that can be transported in any conditions and stored for a long time. Therefore, it is quite popular among brokers, who ship massive quantities to the whole country.
Finally, the hills that frame the lake are also agricultural zones. Traditionally, Pa-O, Danu and Taungyo living there grow corn and Cordia dichotoma, which leaves are used to make cheroot[56] that are then marketed in the whole Shan State, or even further (Daw Khin Tint, oral information). While Cordia fields spread on the hill slopes, new crops have appeared: hill tribes, and especially Pa-O, are specializing in horticulture. Nowadays, loads of citrus fruit and mangoes are sold on the local markets. Although those products are shipped to Southern Shan State, we could not determine whether they could conquer the regional or national markets. However, it would be interesting to lead an in-depth survey about those new sector's evolutions in the next few years.

As a conclusion, we may say that in spite of its dynamism, floating agriculture on Inle Lake is facing difficulties that are all the more serious as the sector has been commercial and integrated in high spatial scales. In other words, floating tomato farming is the most integrated crop… but also the most sensitive and the most fragile one.

55 The wholesalers we met neither mentioned any genuine and structured sector built on rice trade, nor spoke of massive rice bag flows or storage. However, those statements are to be verified.
56 Cheroot making entails long-range commercial flows: cigars are made on the lake with Cordia from the hills, but also with tobacco and toddy wood from Myingyian, South-West of Mandalay.

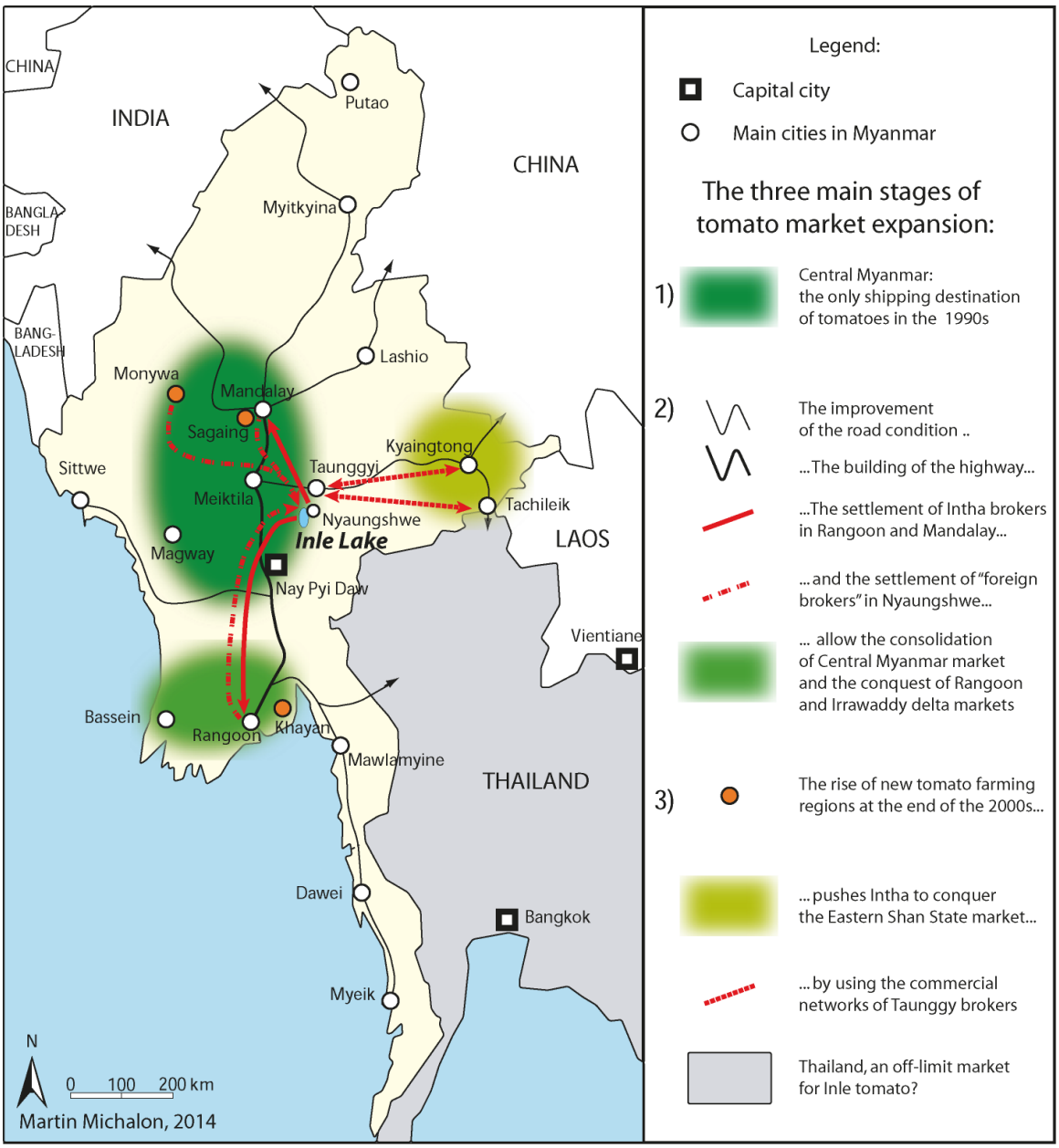


Figure 23: Inle lake tomato, at the core of a national market.

c) Tomato farmers at risk?

For a few years now, tomato farming has faced serious economic hurdles, for two main reasons. On the one hand, expanses dedicated to fertilizers have increased because of their more massive use, but also because of the low rate of the Burmese Kyat on the currency market: importing chemical products has therefore become very expensive (Oo et al., 2010). On the other hand, profits have decreased, because the ye-chan dissemination on the lake and the development of new production areas in the country (cf. supra) have led to a strong increase of the offer, while the strategy of demand extension is not enough: thus, tomato price has dropped.

It has to be noticed that agricultural and climatic conditions on Inle Lake still guarantee the farmers a relative monopoly in Autumn, with quite high purchase price, between 600 and 800 K/viss (0,29 to 0,38 €/kg). Nonetheless, competition is harsher in spring, and rates frequently drop to 50 K/viss (0,025 €/kg), as it was the case during our field survey. According to a few interlocutors, prices even reached 30 K/viss (0,014 €/kg) in spring 2013.

In spite of decreasing rates, farmers keep on growing tomatoes. Although some brokers attribute this behavior to inertia and ignorance, the researcher can emphasize the lack of alternatives. For instance, beans farming cannot be grown intensively yet, in particular because of low-performance seeds (Shwe Kal, oral information). Flower farming does not have proper outlet: even on Nyaungshwe market, most fresh flowers come from neighbouring town of Heho, because those from the lake are said to whither too quickly. As for lucrative alternatives, such as paprika, they require technics that farmers seem not to master (Shwe Kal, oral information).

One of the possible alternative would be organic tomato farming (Sai Win and U Aung Aung, oral information). However, the ubiquity of fertilizer in the lake water makes it impossible to grow organic vegetables genuinely[57]. Moreover, the organic products' market is still marginal in Myanmar, and international network are not developed enough to allow marketing abroad. Finally, in the absence of guarantees, farmers are highly reluctant to commit in such risky crop[58].

In such context, only one out of the two annual tomato pickings can generate real profits for the farmers, whereas this crop is highly demanding in expensive phytosanitary products. Therefore, quantities of chemical products that farmers use, and the yields they get define a break-even point, a profitability threshold that can vary from a farmer to another (table 9). For a few ones, tomato farming is not profitable when sale prices are very low[59]. Therefore, tomato farming features a high cost price, which cripple sale profits: Ma Thi Dar earns 6 million K (4600 €) a year, out of which 4 are devoted to inputs and manpower. As a consequence, her actual profit from tomato farming is 2 million K a year (1540 €). As for Ko Aung Win, his profits are 4,5 million K (3620 €), out of the 9 million K (6920 €) annual sales revenue.

Those massive expanses for inputs and manpower cannot be borne by the farmers at any moment of the year: until they pick and sell the tomatoes, they do not have enough funds. Therefore, they have to borrow money from local usurers. Most of them are Intha who made a fortune in vegetable or rice trade. Such resort is very common: all of the 8 farmers we interviewed on this topic, even the best-off, resort to loans, granted by traders from the same village or by a relative. Nonetheless, in case of a very low sale price, the most modest farmers, or those who have a high input budget, cannot repay their loans. Out of our eight interlocutors, two were facing this kind of concern: therefore, they are more vulnerable than the others. Oo et al. (2010) also dealt with this indebtedness issue: "Although tomato farmers generally did well in the past few decades, at present many farmers are unable to repay their debts for inputs (such as seeds, pesticides and fertilizers) to seed distributors or seed companies. Some small farmers have gone bankrupt, while many farmers have outstanding debts."

[57] Seemingly, a Burmese label for organic products does exist, but it requires a ten-year conversion time (Sai Win, oral information). Personally, we consider that such long conversion period may be due to the influence of phytosanitary companies.

58 Without pesticides, a farmer can loose around 10% of his crop in spring, but around 70% in Autumn… which is the most lucrative picking (Daw Myay, oral information).

[59] Those data cumulate uncertainties on chemical products use and on yields. Therefore, they can only provide a rough idea of business models. Moreover, those data only take into account expenses related to chemical products, and do not include expanses for manpower, seeds, or purchase of new ye-chan.

Tableau 9: Input budget: a hurdle to profitability?
Asterisks indicate low-reliability data.

Farmer's name	Chemical fertilizers budget	Natural fertilizers budget	Others	Total cost per farming season	Tomato harvest per farming cycle (kg)	Minimum sale price to pay the inputs expanses (€/kg)
U Aye	10 bags = 400 000 K (310 €)		N/A	400000 K minimum (310 €)		
U Soe Win	15 bags = 600 000 K (460 €)	30 bags = 210 000 K (161 €)	10 pesticides bottles = 300 000 K (230 €) + 5 bags of special nutrients= 50 000 K (39 €)	1,16 million K (890 €)	5 600	0.16
Daw Myay	10 bags = 400 000 K (310 €)	18 bags = 126 000 K (97 €)	Gave up pesticides 30 years ago	426 000 K (404 €)	38 400	0.01
Ma Thir Dar	20 bags = 800 000 K (620 €)		50 kg pesticides and 15 bottles of special nutrients = 600 000 K minimum	1,4 million K minimum (1076 €)	4 800*	0.22*
Well-off farmer in Nga Hpe Kyaung	10 bags = 400 000 K (310 €)	30 bags = 210 000 K (161 €)	90 000 K for pesticides	700 000 K (538 €)	12 800	0.04
Man Ngwe Mar	15 bags = 600 000 K (461 €)	5 bags = 35000 K (27 €)	Special nutrients	635 000 K minimum (488 €)	2 400*	0.2*
Ko Aung Thein	50 bags = 2 million K (1538 €)		15 bottles of special nutrients + 4 bottles of pesticides = 88 000 K (68 €)	2,088 million K minimum (1606 €)	60 480	0.026
U Thein Win	15 bags = 600 000 K (461 €)		1 bottle of pesticide = 22 000 K (17 €)	622 000 K (478 €)	14 400	0.03
Ko Aung Win	20 bags = 900 000 K (690 €)	30 bags = 270 000 K (208 €)		1,17 million K (900 €)	21 600	0.04

Farmer's name	Chemical fertilizers budget	Natural fertilizers budget	Others	Total cost per farming season	Tomato harvest per farming cycle (kg)	Minimum sale price to pay the inputs expanses (€/kg)
Daw Hla Kyi	5 bags = 200 000 K (154 €)	15 bags = 105 000 K (81 €)	N/A	305 000 K minimum (235 €)	24 000	0.01

As we have already mentioned, some households have to decapitalize by selling some of their ye-chan to better-off farmers. One may assume that the current situation, i.e. the increasing concurrence that pushes yields up and pulls prices down, widens social inequalities. This economical trend and the way it reshuffles local society would be an interesting focus for a future PhD thesis.

In this incertitude and vulnerability context, most households manage to overcome agricultural sector hazards thanks to the diversity of their activities. Kyaw Zin Aung Soe (2012) suggests that farmers started new activities they did not have before. Though Intha livelihood has always relied on multi-activities (Robinne, 2000), it is certain that secondary incomes have come to a new importance. For instance, some households grow other fresh vegetables: 6 out of the 10 farmers we interviewed on this topic state that they grow beans, chillies, gourds, cucumbers and flowers. Those activities only amount to small areas: U Thein Win only dedicates 3 out of his 35 ye-chan lines to those crops, but the latter can generate some supplementary incomes. Fresh vegetable farming is not the only cash-generating activities: farmers often resort to fishing or handicraft, while the best-off invest in hospitality and tourism sectors (table 10). However, we may notice that those activities are not enough to significantly reduce social inequalities between farmers.

Table 10: Our interlocutors' agricultural incomes and supplementary activities.

Farmer's name	Agricultural total income…	… and profits	Supplementary incomes
U Aye	3 million K	-	Fishing : 3000 K/day (2,3 €)
U Soe Win	3,5 million K (2690 €)	-	Labor in other farmers' ye-chan
Daw Myay	-	1 million K (770	Fishing : 3000 K/day (2,3 €) Taro stem harvest : 1500 K/day (1,15 €) for 10 years[60]
Ma Thi Dar	6 million K (4615 €)	2 million K (1538 €)	None
Ko Aung Thein	25 million K in good season (19 230 €), 10,7 million K in low season (8230 €)	20 million K in good season (15384 €), 5,7 million in low season (4384 €)	Guesthouse in Taunggyi for tradesmen : 1,5 million K/year (3 €/day) Rental of two boats for tourists : 12 000 K/day (9 €)
U Thein Win	2.7 million K (2076 €)	1 million K (770 €)	The daughter-in-law works in textile cottage industry: 8000 K/day (6 €), 7 month a year. The son works as a carpenter : 4500 K/day (3,4 €)

[60] For ten years or so, a few families have harvested taro stems that spontaneously grow in swampy areas. They have them dry, and sell them in Nyaungshwe. From there, they are shipped to Rangoon, and then to Korea to be used as a dye in textile sector (Daw Myay, oral information).

Farmer's name	Agricultural total income…	… and profits	Supplementary incomes
Ko Aung Win	9 million K (6923 €)	4,5 million K (3461 €)	None
Maw Aye	-	1,5 million K (1153 €) 0,7 million K in low season (577 €)	The son has worked as a carpenter for two years : 5000 K/day (3,8 €)
Well-off farmer in Nga Hpe Kyaung	-	-	The wife runs a souvenir shop nearby Phaung Daw Oo Pagoda : irregular incomes (0 to 20000 K/day, i.e 0 to 15,4 €) The daughter works in a hotel, and sends money to her parents.
Man Ngwe Mar	-	-	Fishing : 3000 K/day (2,3 €)

Though tomato farmers somehow manage to cushion price fluctuations and to preserve their families' standards of living thanks to supplementary activities, they are not able to save money or invest anymore. Therefore, they feature high vulnerability and low resilience levels. For instance, during the 2010 drought, the water level dropped so much that many ye-chan got stranded on the lakebed and took root in it. When the monsoon came and water level increased again, they got submerged: many households lost a valuable capital that they sometimes could not afford to reconstitute (Kyaw Zin Aung Soe, 2012).

Moreover, all households do not have enough financial or human capitals to have supplementary incomes, and it has a strong impact on those families' incomes. For instance, out of the two interlocutors who declared no additional activity, one stated that they lived better 20 years ago, when yields were lower but inputs cheaper, while the other one is not able to repay the previous year's loans.

Therefore, the foundations of floating tomato farming seem to be less firm than they used to be: farmers have benefited from the market widening, but have also faced competition from other production regions extending their markets. In other words, the connection to a superior spatial scale also means a confrontation with new stakeholders and new challenges. In such context, how will the Asian Economic Community (AEC, slated for 2015) impact local agriculture? Can ye-chan farmers adapt this free-trade agreement, which will include the lake and its stakeholders in even wider a scale and harder concurrence?

Last, but not least, floating agriculture may very well run up against its own limits: environmental sustainability. Indeed, massive use of phytosanitary products in the lake's watershed pollutes water, and it has consequences on crops, but also on the fishing sector.

III) The fishing activities: at the crossroads of the current dynamics and challenges in Inle area

At first sight on touristic brochures and tour-operator websites, the Intha fisherman appears as the symbol of the Inle region and even of the whole country. Fishing has deep roots in Intha culture and history. What are its contemporary trends? Is it still as widespread and significant? We found some clues during the interviews we made with a dozen fishermen. Four of them were interviewed while working on the lake, whereas we met the others at their places, which allowed us to have longer conversations. We asked them around fifteen questions about their ways of fishing, their habits, their current situations, the alternatives, etc. The answers we got described a sector that has been through difficulties.

1) No more fish? The core of the *Intha identity at risk…*

Aquatic fauna in Inle lake has long had noticeable characteristics: among the thirty-odd fish species of the lake (Robinne, 2000), five are allegedly endemic (Kottelat, 1986, in Myint Su and Jassby, 2000). The most famous species is a kind of carp (Cyprinus carpio intha), locally called nga-phein, which is a strong cultural symbol of Intha ethnic group. The link between Intha and the lake is almost symbiotic: « Intha » means « the sons of the lake » (Robinne, 2000). The consequence of this mythological ancestry is that the lake belongs to the whole community. Therefore, there is no control and no restraint on this resource. For instance, any fisherman can cast his net in any village, in any place of the lake. The lake and the fish stock can therefore be considered as a « free access resource » (Gordon 1954, in Cury and Miserey, 2008).

Intha fishermen are known in whole Myanmar for their unique techniques. They sail in small teak canoes, often made in Nampan village, and caulked with lacquer made from Melanorrhea usitata resin (Maung Kyaw Myo Twin, oral information). Traditionally, they row standing, with their leg wrapped around the oar, so as to better watch the fish under the surface, while handling the fishing gear with both hands. However, during our field trip in February-March 2014, we could notice a few fishermen using little outboard engines that are useful for long-distance trips on the lake. I. Okamoto reported this phenomenon in 2012, but specifies it was extremely marginal. That means that such engines are a very recent innovation that can be dated back to the 2010s.

The fish resources management has also undercome great change. Traditionally, the lake was an open fishing zone: anyone had free access to the resource. However, for more than fifteen years, Inle has been considered as an « open fishery »: every year, the government rents the fishing rights to a local entrepreneur, who subleases those rights to the fishermen. In 2009-2010, the then caretaker bought the fishing rights 300 000 K (230 €), and earned 3000 K (2,3 €) annually from each fisherman. However, such fishing rights do not imply any proper resource management, or any fishing restrictions (Okamoto, 2012). According to a few fishermen met, this kind of contract has allegedly been abolished since 2013, for a new tax, levied from fish sales on the market (Ko Htwe, oral information).

Traditionally, the fishermen used to fish with a saung, this famous conical net that has become the region's symbol. When a fish is trapped in this vast cotton fishing net, held open by a bamboo frame, the fishermen transfixes it with a 5-pointed harpoon through a hole at the top of the net. Nowadays, saung fishing is a very rare practice, often intended to tourists (cf. infra), and a massive majority of Intha use classical synthetic nets, that drift under the water (cf. infra). This technical change is an adaptation to the unprecedented crisis that has struck the sector: for around 10 years, fishermen have pulled out empty nets.

Figure 24: Nowadays fishing on the lake: engines have spread, and saung have been replaced by synthetic fishing nets. Picture by the author61, February 2014

At the start of the 2000s, Intha fishermen caught 550 to 650 tons of fish every year on the lake (FAO, 2003). Nowadays, it seems obvious that this amount is much smaller: according to 73 % of the fishermen, the quantities of the three main fish species have decreased[62] (Saw Yu May, 2007)

In his 2012 article, I. Okamoto dates the beginning of this trend. Out of the 46 fishermen he interviewed, 29 (i.e. 70%) dated this drop back to 2007, and only one considered that it started before 2000. This phenomenon is therefore recent. The author does not quantify the extent of the drop since it started. However, he compares the catches between 2009 and 2010: for numerous species, catches dropped by 50 %, the least-affected ones by 30 % (Okamoto, 2012). Nevertheless, one must keep in mind that 2010 was an exceptionally difficult year (because of drought): this inter-annual evolution cannot be extrapolated to longer periods.

The harshness of the situation was confirmed during our own interviews on the field: 100 % of our interlocutors deplored a dramatic drop of their catches. The figures they gave us are not perfectly reliable: some refer to average catches, others to maximum catches, and systematically oppose the current situation to a sometimes idealized « past », which temporal bounds are quite vague. However, the reality of the situation can hardly be questioned: around 20 years ago, most Intha caught 5 to 10 viss fish (8 to 16 Kg) per day. Nowadays, only one of our interlocutors catches more than 5 kg a day... by working 23 hours a day! We can therefore conclude that fishermen currently catch two to three times less fish than 20 years ago.

Another drop is also very visible: it affects the average size of the catches. Indeed, the fish rarely weighed less than 1,5 kg twenty years ago. Nowadays, one-kilo fish are very rare. According to one of the fishermen we met (U Soe Lwin) he needs to catch around 30 nga-pe (Notopterus notopterus) to get one viss (1,6 kg) of fish, i.e. 50 grams per fish. Young Kyaw Thoo very clearly remembers a 2,4 kg fish he caught... one year and a half before.

[61] Unless specific specification, all the pictures were taken on the field by Martin Michalon, in February-March 2014.
[62] However, the author does not indicate the time span on which this decrease has been assessed.

Table 11: Fishing yesterday and nowadays on the Inle Lake

	Daily catch trend			Catches' average size		
Fisherman's name	Catches in the past[63] (kg/day)	Current catches (kg/day)	Evolution	Average weight in the past (kg)	Average weight nowadays (kg)	Evolution
U Pyu	16 (50 years ago)	3,2	-80%	-	-	-
U Ba Thit	8 (40 years ago)	4	-50%	Doesn't notice any evolution		
Aye Aye Soe	16 (40 years ago)	4,8	-70%	1,6/2	0,8	At least -50%
Ko Hla Tun	9,6 (30 years ago)	4	-58%	6,4/8	0,5	At least -92%
Ko Htwe	16 (30 years ago)	6,4	-60%	1,6/2	0,8	At least -50%
Mwai Yan Phyoe	16 (25 years ago)	4,8	-67%	-	-	-
Kyaw Thoo	16 (20 years ago)	4,8	-67%	3,2	0,8	-75%
Aung Zaw Tun	8 (15 years ago)	4,8	-40%	1,6/3,2	0,8/1,2	At least -50%
Ai Thaunt Gyi fisherman	3,2 (9 years ago)	0,44	- 86%	-	-	-
U Soe Lwin	4,8 (5 years ago)	3,2	-33%	-	0,5/1,6	-

Lastly, a clear evolution is noticeable as for the species that Intha catch: the endemic species, such as nga-phein (Cyprinus carpio intha) and nga-lu (Crossocheilus latius), as well as the historical but not endemic ones, such as nga-pe (Notopterus notopterus) or nga-yan (Channida) are clearly on the edge of extinction. Aye Aye Soe barely catches any nga-lu, Aung Zaw Tun worries about nga-yan, and U Soe Lwin about nga-pe. Nowadays, fishermen do not come back home with empty nets thanks to species that were recently introduced in the lake. The most famous one is Tilapia: according to our interlocutors, it was introduced five years ago by authorities, so as to make up for the dramatic drop of traditional species (Sai Win and U Pyu, oral information). Tilapia has valuable qualities: it is rustic, it can eat human wastes, and it has a very fast reproduction cycle. That is why it is now proliferating and it makes up the huge majority of the catches of all the 7 fishermen who interviewed about this topic. We were not told which precise species of Tilapia were introduced, and it is therefore difficult to assess their impacts on aquatic life, but some researchers mention their invasive behavior that may be a risk for the lake biodiversity (IID, 2012b).

[63] It often refers to the period when fishermen started their activities.

Figure 25: Arrival of the day's catches at a Nyaungswhe broker's. All the fish is Tilapia. Picture by the author, March 2014

This transition from endemic species to « global species » can be visible in the fish price: nga-phein, which has become rare, now costs 5000 K/viss (3,5 €/kg), while Tilapia, which is a very common fish, is sold 1500 K/viss (1 €/kg). The mutations of fishing sector on Inle Lake can also be analyzed through the sale networks, which show a noticeable change of their sizes. While a part of the catches are locally sold, the rest feeds a broader market: at the end of a good day fishing day, 6 out of the 8 fishermen interviewed about this topic sell their fish to local brokers. The latter then send it to Taunggyi, which 200 000 inhabitants represent a massive consumption market. However, some elements indicate that it may be sent further: our interlocutors mention that fish is often trucked to Shwenyaung or Aungban, which are important hubs of regional trade. From there, it is sometimes sent as far as Mandalay (Aye Aye Soe, oral information). However, while fish is sent further and further, local stocks have severely dropped.

The reasons for such a trend are numerous, and often discussed. According to 6 out of 9 fishermen who told their minds about this topic, the main factor, the first they mention, is the excessive amount of fishermen on the lake. The very rare statistics we have seem to confirm this hypothesis[64]. In a 2003 report, FAO indicates that 460 or 800 fishermen families live on the lake[65]. In 2009-2010, I. Okamoto (2012) listed 1500 ones. In less than 10 years, the number of fishermen reportedly doubled or trebled (depending on the sources). This increase is partly due to the demographic growth of the area but in our opinion, it is above all linked with the recent hurdles of floating agriculture: many farmers or temporary workers have to fish, so as to supplement their incomes and overcome incertitude.

Though the growing amount of fishermen may be a significant factor, we can assume that severe environmental issues are also responsible for this unprecedented decline in fish stocks.

2) Inle Lake environment: the confluence of the regional nuisances?

In our opinion, the drop of fish stock can be linked with the environment deterioration. Indeed, the quality, and even the quantity of water are affected by the floating agriculture nuisances, slash-and-burn agriculture in the hills, mining and handicraft activities in the watershed.

a) A water body under eutrophication?

[64] Unfortunately, we were denied the access to the recent official figures. Therefore, we must trust other sources that are not always reliable.

[65] In the same report, we could find those two figures, that are very different from another... but no clue can help us choose the more accurate one.

Figure 26: A farmer spreads chemical products on his ye-chan, near Ywama village. Picture by the author February 2014

The most obvious and the most surveyed phenomenon is water pollution by phytosanitary products that are used in floating agriculture. Indeed, ye-chan farmers regularly use chemical fertilizers, pesticides and insecticides, because they need the highest yields to earn their livings. Therefore, they aim at reducing incertitude, and do not take any risk. That is why they always use chemical products, with doses systematically higher than indicated in the specification (« the more the better », in Oo et al., 2010). This risk management strategy also implies general mistrust towards natural fertilizer (U Aung Aung, oral information), and thorough quest for quality, which is more important than the price: the current success of the German fertilizer Comet is based on its quality.

Moreover, one can notice a severe lack of training about chemical products use. That is why farmers do not spread them at the right rate, nor at the right moment. The retailers are supposed to have got a special training, and to be able to give advice. However, they can do so only punctually, if farmers really ask it, and without being able to go on the field. Moreover, can a chemical products retailer be impartial about the use of his own products? Can he really incite farmers to reduce their consumptions?

One more detail is to be noticed: until 2005, the instructions leaflets were not translated into Burmese language, and the farmers had to use them very empirically, by trial and error (Oo et al. 2010). Since then, imported products must come along with a Burmese instruction leaflet... but this obligation cannot be enforced on black-market products, which are quite numerous.

This factor conjunction generates an excessive use of chemical fertilizer on ye-chan and then, high nitrates and phosphates concentrations in the lake water, as Akaishi et al. (2006), Saw Yu May (2007) and Mar Lar Htwe (2008) proved it. The results are clear: the concentration for those two substances are higher than the WHO guidelines that the authors chose as relevant (0,2 mg/L for nitrates ; 0,02 mg/L for phosphates). If we focus on spatial distribution of those pollutants, one can notice three main facts (figure 27):

- First of all, Nyaungshwe, its 10 000 inhabitants and all its service activities have a significant influence on the quality of the water that flows through: nitrates rates remain low, but phosphates ones are far too high.
- Moreover, one can highlight a clear North-South gradient: the water that feeds the lake from the Namlit Chaung shows pollutant rates that roughly match WHO guidelines[66]. However, the more South the water goes, through floating gardens, the more polluted it gets.
- Lastly, analyzes made on Kalaw Chaung (at the North of the lake), on Indein Chaung and in In Paw Khone (South) prove that floating agriculture is not the only responsible for water pollution.
    - Kalaw Chaung shows phosphates rates 22 times higher than WHO guidelines **before**

[66] We can assume that the vast marsh zone at the North of the lake contributes to purify water: this is a precious ecosystemic service.

reaching the lake, which emphasizes fertilizer use in the hills and lowlands fields.

- Along Indein Chaung, the role of agriculture can be completed with other factors. 21 km South-West from the lake (but in its watershed), lies the Tigyit coal mine, opened in 2002 by businessmen very closely linked with the military junta, with Chinese funds. Every day, more than 2000 tons of coal are extracted from this 200-hectare mine. Environmental and safety rules are not abided by, and major quantities of chemical products and heavy metals flow down to Inle (Pa-O Youth Organization, 2011). The sediment analyzes were made very close to the Indein Chaung delta, in In Paw Khone village. They show high concentrations for cadmium (163 to 270 ppm depending of the samples, while the guideline is 0,8 ppm), chromium (262 ppm, while the guideline is 100 ppm), and copper (167 ppm, more than the 35 ppm guideline)[67]. Such pollution can be attributed to the mining activities, but also to local handicraft. Indeed, In Paw Khone is the local textile capital city. Four workshops, visited by thousands of tourists, weave and dye huge quantities of fabric. According to Myat Pwint Chel workshop's manager, cotton and silk are dyed with German chemical products, and approximately 8 liters of residues are thrown into the lake every day, without abiding by environmental and safety precautions.

In the end, all the pollutions from the whole watershed accumulate in the lake, and converge to the Nam Pilu, the lake effluent, which water is significantly polluted: nitrates rates are 14 times higher than the guideline, and phosphates ones are 12 times higher.

[67] Those samples were taken by a local environmental activist and sent to the Agriculture Ministry laboratory, in Yangon.

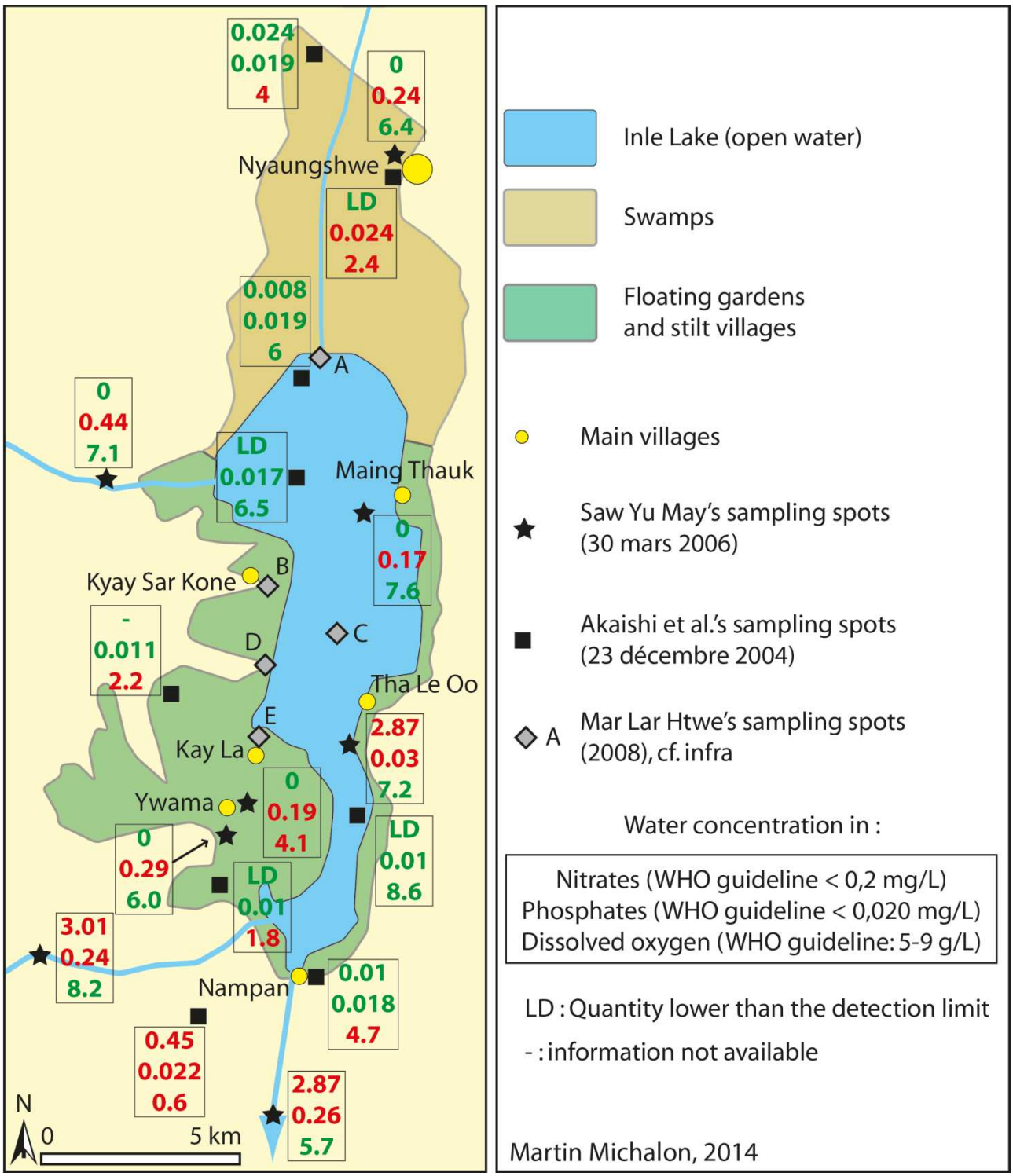


Figure 27: Pollution of the Inle lake: a spatially heterogeneous phenomenon.
In red: the figures that exceed the WHO guidelines chosen by Mar Lar Htwe and Akaishi et al.
Editing by the author, after Akaishi et al., 2006; Saw Yu May, 2007; Mar Lar Htwe, 2008.

The variability of pollution is not only spatial, but also temporal. Inflexions of pollution really correspond with the main stages of agricultural agenda, what seems to confirm the responsibility of ye-chan farming for the water pollution. In 2008, Mar Lar Htwe made monthly water analyzes, between March 2006 and February 2007. They reveal that nitrates rates peaked in August and July (figure 28), when tomato plants are abundantly cared for. Once more, pollution follows a clear North-South pattern, which is obvious in August : A, B, D and E sampling sites, that are located from up- to downstream, show growing pollution. That indicates that water gets more and more polluted while flowing from North to South. Tough it's far from the floating gardens, sampling site C has high nitrates rates, which proves the broad diffusion of pollutants.

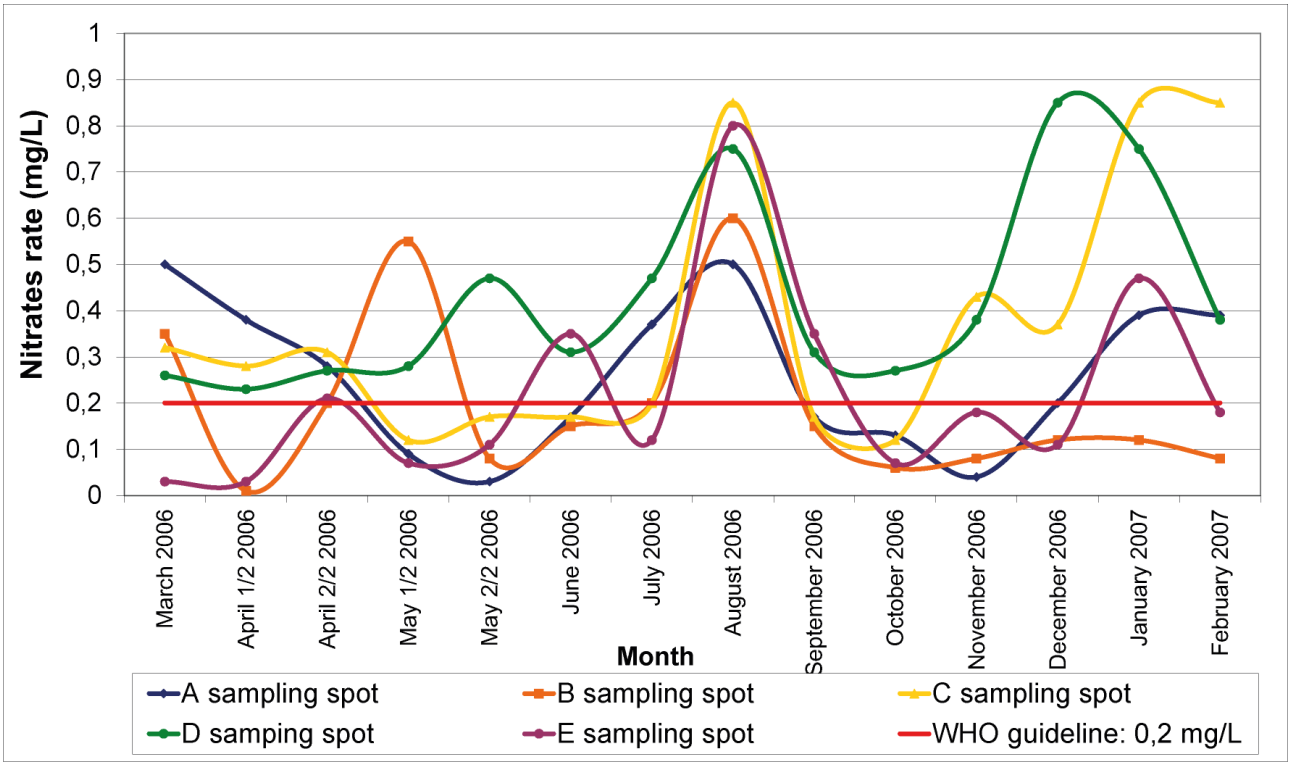


Figure 28: Nitrates rates in Inle lake water, from May 2006 to February 2007.
Source: Mar Lar Htwe, 2008

As for phosphates rates, they show the same temporal pattern, but two months later. We can assume that azote fertilizers are used on young seedlings, whereas phosphorus ones are spread on more mature plants. One can also make the hypothesis that the first has shorter diffusion time than the latter. Once more, the spatial variability is clear: sampling site A, at the North of the lake, shows very low phosphates rates, whereas site E records rates that are 50 times above the WHO guideline.

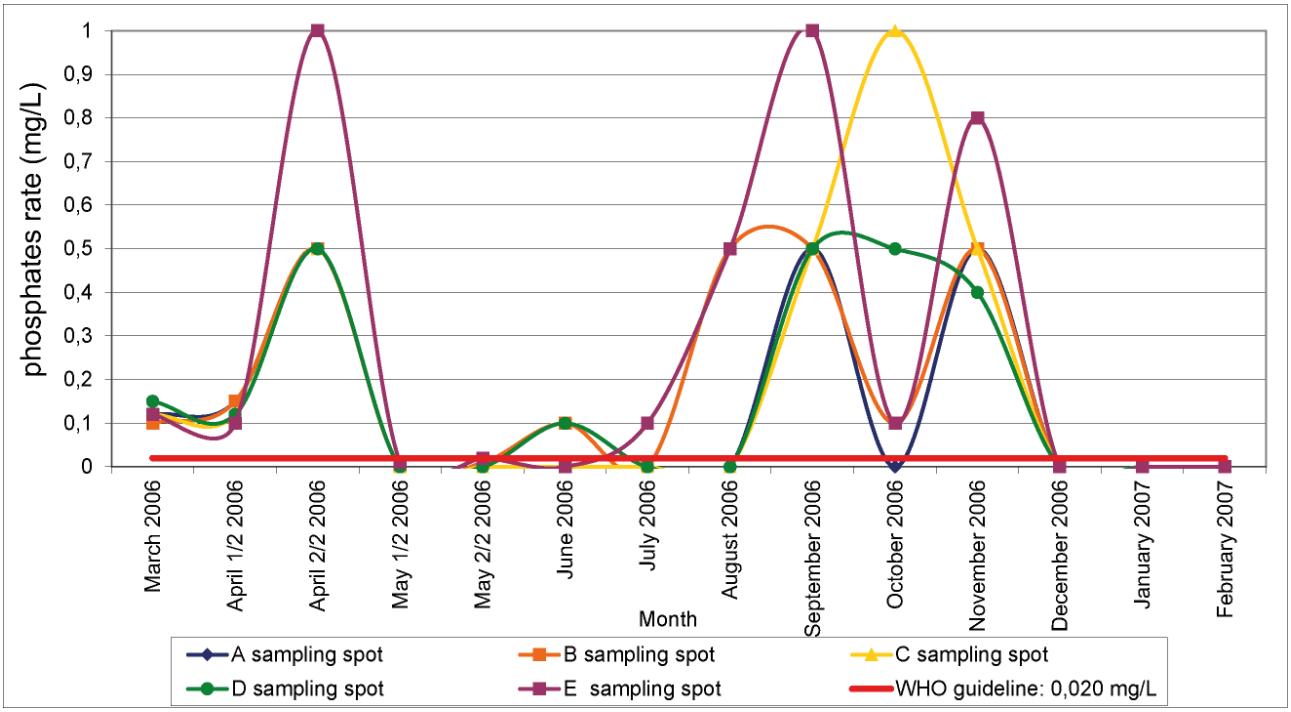


Figure 29: Phosphates rates in Inle lake water, from May 2006 to February 2007.
Source: Mar Lar Htwe, 2008

Although those pollution data are very clear, and unambiguous, we find it necessary to discuss the relevance of the quality standards chosen by Mar Lar Htwe (2008) and, to a certain extent, by Akaishi et al. (2006). For nitrates, they chose to refer to the 0,2 mg/L WHO guideline. However, WHO set several guidelines (INSPQ, 2003):

- Nitrates rates between 0 and 0,2 mg/L show a very safe water, without any human influence, and without any risk for health.
- Rates between 0,21 and 3,0 mg/L show a low human activity, but have no impact on human health, even on the long run.
- Rates between 3,1 and 10,0 mg/L are symptomatic of an environment affected by human influence, but their consequences on health have not been proven yet.
- From 10 mg/L onwards, nitrates do affect human health. The maximum WHO guideline is 50 mg/L. In France too, the legal rate is 50 mg/L for drinking water (Ratel and Debrieu, 2002).

Unlike those researchers, Saw Yu May chose to refer to a 10 mg/L limit. Akaishi et al. do not explicitly mention the impacts of pollution on human health, but on eutrophication. They claim that nitrates rates higher than 0,2 mg/L indicate « possible eutrophication conditions ». We can discuss the choice of such a low limit as a symptom of possible eutrophication.
Therefore, the authors resort to guidelines that exist, but which are far from the maxima, to illustrate the pollution of Inle Lake. However, the debate about concentrations can be settled by observing whether the lake is getting eutrophicated.

The eutrophication can be defined as « temporary or permanent excessive enrichment of water in nutrients, linked with natural or artificial fertilizer run-off, and that triggers off algae and micro-organism bloom. The latter absorbs too much dissolved oxygen, and that leads to the environment asphyxiation » (Brunet et al. 1993). While WHO considers that acceptable rates for dissolved oxygen (DO) are between 5 and 9 mg/L, some water samples from the Inle Lake record low concentrations. As nitrates and phosphates, they show a North-South gradient: 7 samples out of 17 have low DO rates, among which five are located in the Southern part of the lake, i.e. in floating garden areas. DO also has a seasonal variability: monsoon, from mid-May to October, allows water re-oxygenation, while dry season comes along with water stagnation. In those conditions, DO rates drop and sometimes reach 2 mg/L. Such conditions, with so little oxygen, are harmful for aquatic life.

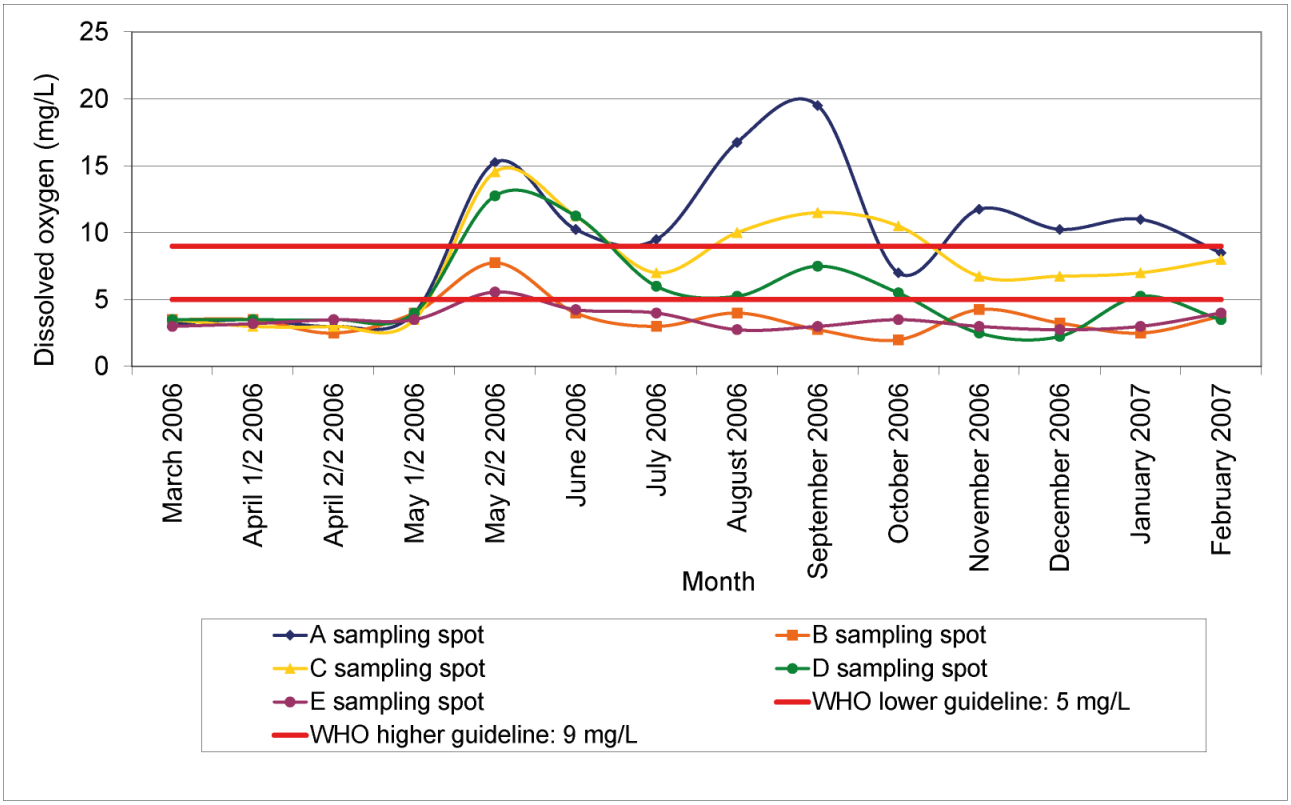


Figure 30: Phosphates rates in Inle lake water, from May 2006 to February 2007.
Source: Mar Lar Htwe, 2008

Usually, eutrophication triggers off green algae bloom in water bodies. No in-depth survey has been led about algae in Inle Lake but one can visually notice that green or blue algae are extremely rare and confined in few perimeters. Therefore, algae do not take advantage from agricultural nutrients run-off, but one may assume that water hyacinths do (Jensen, written information). The latter don't spread on the whole lake just because of their harvesting by floating agriculture. In other words, a positive retroaction seems to have started: ye-chan generate eutrophication that leads to water hyacinths bloom, which benefits back to floating agriculture.

Besides chemical fertilizer use, we may assume that the sheer ye-chan cultivation methods have negative impacts on the environment. Indeed, the last decades' booming of floating gardens has generated a major decrease of sub-water light and temperature (Jensen, oral information). The plot preparation itself can be harmful for biodiversity: researcher Anne Jensen emphasized how massive aquatic plants harvesting is. Before the Kalaw Chaung Delta, she could count up to 60 boats at the same time, harvesting huge quantities of weeds. Yet, the latter, in particular Nitella flexilis, which is highly appreciated by farmers, represent precious habitats and food source for fish. Field surveys showed that Intha are not aware of ecosystem services provided by those plants (IID, 2012 b). Lastly, one can make the hypothesis that the frequent silt scooping from the bottom of the lake destroys habitats for fish and their preys.

b) Serious health issues

The fertilizer use and the plot preparation operations are harmful for aquatic life, but pesticides can also be held responsible for environmental and sanitary impacts. Indeed, the farmers systematically try to reduce incertitude and risks. That is the reason why they try to prevent epidemics by massive use of pesticides. The reference survey about this topic was led by S. Butkus and Myint Su, in 2001. It aimed at comparing the quantities of pesticides that farmers use and the loading capacity of the lake for each substance.

Table 12: Pesticides concentrations in the Inle Lake

Pesticide	Lake's loading capacity (Kg/yr)	Quantities actually spread (Kg/yr)	Quantities that the farmers should spread if they abided by the manufacturers' instructions (Kg/yr)
Monocrotophos	2,36	242	-
Cypermethrin	1,50	3618	242
Endosulfan	3,07	-	25,8
Carbaryl	260,0	-	50,4
Methomyl	96,0	-	242
Esfenvalerat	29,8	-	12,1
Metalaxyl	195,0	4824	821
Mancozeb	10,8	-	3799
Chlorothalonil	32,1	-	820
Triflualin	10,5	-	271
Metribuzin	84,6	-	1091

Source: Butkus and Myint, 2001

This study highlighted a massive overuse of pesticides. Indeed, farmers reportedly use 3618 Kg of cypermethrin and 4824 kg of metalaxyl every year, whereas 242 and 821 kg respectively would be enough, according to the manufacturers' instructions.
However, the data show another obvious fact: even normal pesticides amounts would exceed the lake loading capacity, because of the sheer ye-chan area. In other words, floating gardens area is so considerable that even very modest doses of pesticides would still be too massive for the fragile environment. For instance, farmers currently use 2400 times the maximum dose of cypermethrin that the lake can absorb. If they reduced their consumption to match the use instructions, they would still use 161 times too much. As for metalaxyl, it is now spread at 24 times the maximum rate the lake can withstand. If farmers abided by the official instructions, the quantities would still be 4 times too high. Lastly, some substances should purely and simply be banned from the lake, such as monocrotophos. It was still in use in 2001, even if it had been prohibited since 1991 in OECD countries for its extreme toxicity for humans and animals[68].

Therefore, those data deeply challenges the floating agriculture structure. Not only do they incite farmers to reduce their pesticides use, they also call for a paradigm change. Is it still reasonable to use pesticides on the Inle Lake? Considering the farmers' economic vulnerability and the damages that an epidemic can generate, it seems that local actors only have choice between ecological (and sanitary) catastrophe, and an economic disaster.

Nevertheless, alternative techniques may substitute for chemical pesticides, such as a natural product made from neem leaves. The latter has long been used in the region under the socialist era, because the government provided it for cheap (Oo et al. 2010). In 1988, the government change and economy liberalization allowed the growing power of phytosanitary companies. The latter based on high-performance products and aggressive marketing strategies to conquer the market. Nowadays, the neem pesticides have almost disappeared, though Western NGOs try to re-introduce them (Oo et al. 2010). Can such a marginal trend extend?

Though S. Butkus and Myint Su's data are extremely clear and concerning, we find it necessary to question their reliability. Indeed the authors proceed in two main steps:

- Primo, they calculated the loading capacity of the lake by taking into account many physical factors, such as lake area and volume. Considering that this article was written in 2001, they had very few reliable academic sources, and they decided to base on Ma Thi Dar Win's thesis (1996) to find those

[68] However, farmers might have stopped using it since Butkus and Myint Su's article (2001).

information. However, as we have already showed, this study contains a few noticeable incoherencies or mistakes. Thus, Butkus and Myint Su considered that the lake is 72,5 km², whereas our research concluded it is rather 150 Km².

- Secundo, they compared this model and reality in two sub-steps :
  - They calculated the annual quantities of pesticides that a farmer spreads on one acre. For this, they based on Ma Thi Dar Win's figures, about which reliability we know nothing.
  - Then, they extrapolated those figures on the whole ye-chan area on the lake. That supposes to know the total floating gardens area. Once more, they based on this same thesis, which is extremely unclear about this topic. They ended up considering that the total ye-chan area was 603 acres, i.e 2,5 km²... whereas this amount was clearly inferior to reality.

Therefore, the data that Butkus and Myint Su got are questionable. However, pesticides overuse appears to be so excessive that methodological reserves, whatever significant they may be, cannot deny the extent of the problem. Thus, we can consider that pesticides have strong impact on the fish stocks... but also on the 25 000 lake-dwellers.

Some authors expressed their concerns for the health of lake-dwellers, after Saw Yu May (2007) showed that 22,7 % of villagers drank water from the lake, after simply boiling it. However, this figure must be put back in a more general evolution. Indeed, in her thesis, Saw Yu May proved that, compared to the « past » situation[69], during which 56 % of people drank water from the lake, it was already an improvement. This evolution towards a better water quality seems to have continued until now: none of our interlocutors seems to drink water from the lake anymore. Some of them explained that they did so until 2009-2010, and stopped as soon as their villages were connected to a spring on the shore or to a drinking water plant, as in Pauk Par (U Ba Thit, oral information), Nampan (Ma Thi Dar, oral information), or Ywama (U Soe Win, oral information). This rapid change was initiated by preventive campaigns by the Health Department or the UNDP, which is very active on this topic (UNDP, 2012b). Such campaigns were completed with appropriate infrastructures: very few villages are not equipped with a collective drinking water point. However, such equipment does not mean that the water is perfectly safe: the water is often pumped out wells on the shore... that are fed by the lake's water table, which can be polluted too.

Though the lake-dwellers seem to be aware of the importance of drinking water quality, there still is a long way to go: children always bathe in the lake, sanitary equipment are simple pits, and Intha consume products from the lake (vegetables or fish). According to some Burmese media, some chemical residues were reportedly found in lake-dwellers' blood (Myanmar Times, 2013 October 6th). The ban on tomatoes exportation to Thailand, officially because of their chemical products concentrations, may be an additional clue.

The impact of agriculture on the environment and its inhabitants seems quite obvious. All our interlocutors are aware of the water quality deterioration. It is even said that drinking water from the lake makes hair and teeth fall. However, surprisingly enough, we could not notice any visible conflict between fishermen and farmers. Actually, they know that water is not proper for consumption, but the link between chemical products use and fish stock drop is not always obvious.

Farmers' opinion can be summarized by Ko Aung Win, who notices that fish stock is decreasing, but strongly refuses any responsibility for this, and puts the blame on fishermen: « the problem is not water quality, but the fishermen quality ». Among the eleven farmers we met, just one gave up pesticides for sanitary reasons (Daw Myay, oral information).

As far as fishermen are concerned, the first, the most common factor mentioned is the excessive amount of fishermen on the lake. Only after further thinking do they mention farmers' responsibility: in their opinion, agriculture is not the main problem; it is a secondary, aggravating factor, but not the root of the trend.

Though it is not spontaneously put forward, this knowledge is quite widespread: among the 7 fishermen who told their minds about this topic, 4 are aware of the link between floating agriculture and fish stock; 2 cannot see any link, and 1 puts the blame on Pa-O farmers, in the hills.

[69] As often, this « past » has no clear temporal bounds.

Even though an interlocutor declared that this issue is discussed in Pauk Par village, all agree to say that there is no tension between fishermen and farmers, maybe because the latter are not unanimously considered as responsible for the fishing sector's difficulties. Moreover, many fishermen and/or members of their families supplement their incomes by working on ye-chan. Therefore, we can assume that they depend on farmers to a certain extent, and cannot put the blame on them. The current situation is all the more concerning and complex as the future of the water body itself is threatened.

c) Is the Inle Lake on the way to disappearance?

Though we assessed that the lake's area has little changed along the time, its depth is still discussed. In 1918, N. Annandale measured the maximum depth to be 3,6 meters in dry season, 6 meters in rainy season. The average depth in dry season was allegedly 2,1 meters.

Nowadays, the dominant opinion about this topic, which has mainly been built by media, is that the lake is getting shallower, because of siltation. The origin of this concern dates back to the 2010 drought: the lake reached record low levels, and even dried up in a few sectors. The picture of the famous Phaung Daw Oo Pagoda, lying on crackled mud became symbolic of the so-called lake's near death (figure 31).

Figure 31: Phaung Daw Oo Pagoda during the 2010 drought.
Source: Weekly Eleven Journal, in the Irrawaddy, June 15th 2010

On June 15th, July 20th and September 30th 2010, the Burmese Newspaper The Irrawaddy backed up this lake disappearance theory with pictures of this drought and a misunderstood version of the Sidle et al.'s survey (2007). According to the journalists, the origins of this dramatic trend were global warming and lake siltation because of hills deforestation. This theory was taken up by Western media, such as the American Globalpost and The Wall Street Journal.

From a scientific point of view, the phenomenon is less obvious[70]. In 2008, Furuichi concluded that the lake volume did not show any significant decreasing trend (Furuichi, in IID 2012b). During the late 2010 rainy season, an IID team measured a maximum depth of 6 meters (IID, 2012b): such a figure really matches with Annandale's, but contradicts Saw Yu May's thesis, about the locals' perception of their environment. Out of the 150 people she interviewed, 90,6 % thought that the lake's depth has decreased. We could find the same kind of information during our own interviews: according to fisherman U Pyu, from Ywagyi village, bamboo poles used to propel the boats are shorter now than around 40 years ago, which probably means that water is shallower.

Those apparent contradictions between scientific sources almost fade away when one spatializes the information. Indeed, 5 % of silt that gets into the lake flow out via Nam Pilu River, but that does not mean that the other 95 % silt up at the bottom of the lake (Furuichi, 2008). Actually, just 1 % of the silt charge settles down in the lake, while 62 % of silt accumulates in vast delta areas, 20 % in marshes, and 12 % in river mouths. That information is seemingly confirmed by Saw Yu May's interviews (2007): according to 79 % of her interlocutors, the lake's tributaries are getting shallower. In other words, the huge majority of silt settles down on the lake's edges, where most people live (that's why villagers report a silting process), while the depth at the center of the lake remains quite constant.

This silt has been massively brought by the Inle Lake's tributaries, and comes from the whole watershed, which has been deforested by human activities. Indeed, mountain tribes use slash and burn cultivation methods (locally known as taungya), which lay the soil bare. During the monsoon, the latter erodes and flows into the lake. However, the mountain tribes' responsibilities are still debated. Sidle et al. (2007) do not report any abnormal silting of the lake, and state that « the absence of dramatic deposition in the downstream reaches suggests that the role of contemporary sediment contributions to losses in lake area have been overstated ». In the hills, they could spot only few recently deforested or overgrazed areas. As a conclusion, they stated that « [they] found no evidence to support the widespread perception that the contemporary causes of the shrinkage of Inle Lake are due to recent forest harvesting/conversion and shifting cultivation. » Likewise, T. Furuichi (2009) himself seemed surprised to notice that the land use had not significantly changed between 1973, 1989 and 2008 satellite images, whereas the lake is increasingly silting. He then tries to solve this contradiction: while land use has little changed at the watershed scale, erosion may have soared locally, especially by gullies extension which could barely be seen on satellite images...

However, those articles, that dampen the extent of deforestation, contradict other researches that emphasize the shrinking of forest. According to the ICIMOD, 100 to 250 Km² of forests were chopped down between 1990 and 2005, i.e. 2,5 to 6,5 % of the watershed area (ICIMOD, 2005, in UNDP 2012a). As for UNDP, it is far more pessimistic. In 2013, the UN organization released a land use map at the watershed scale (figure 33), that highlights a seemingly dramatic shrinking of forests between 2000 and 2010 (UNDP, 2013). It also published a case study about the Kalaw Chaung sub-catchment (UNDP, 2012a) that points out a fast and massive land use change (figure 34) : between 2000 and 2010, this 750 Km² area reportedly lost half of its dense forest, while open forest shrank by 45 % and agriculture land extended from 300 to 400 Km².

[70] In a UNDP report (2012b), one can read that « According to the last 10 year records, the lake bed has silted up by about 2 m ». This one-sentence assertion, though dramatic and crucial, is neither developed further, nor backed up by any scientific reference. Therefore, we can consider this figure as not reliable enough to be taken into account.

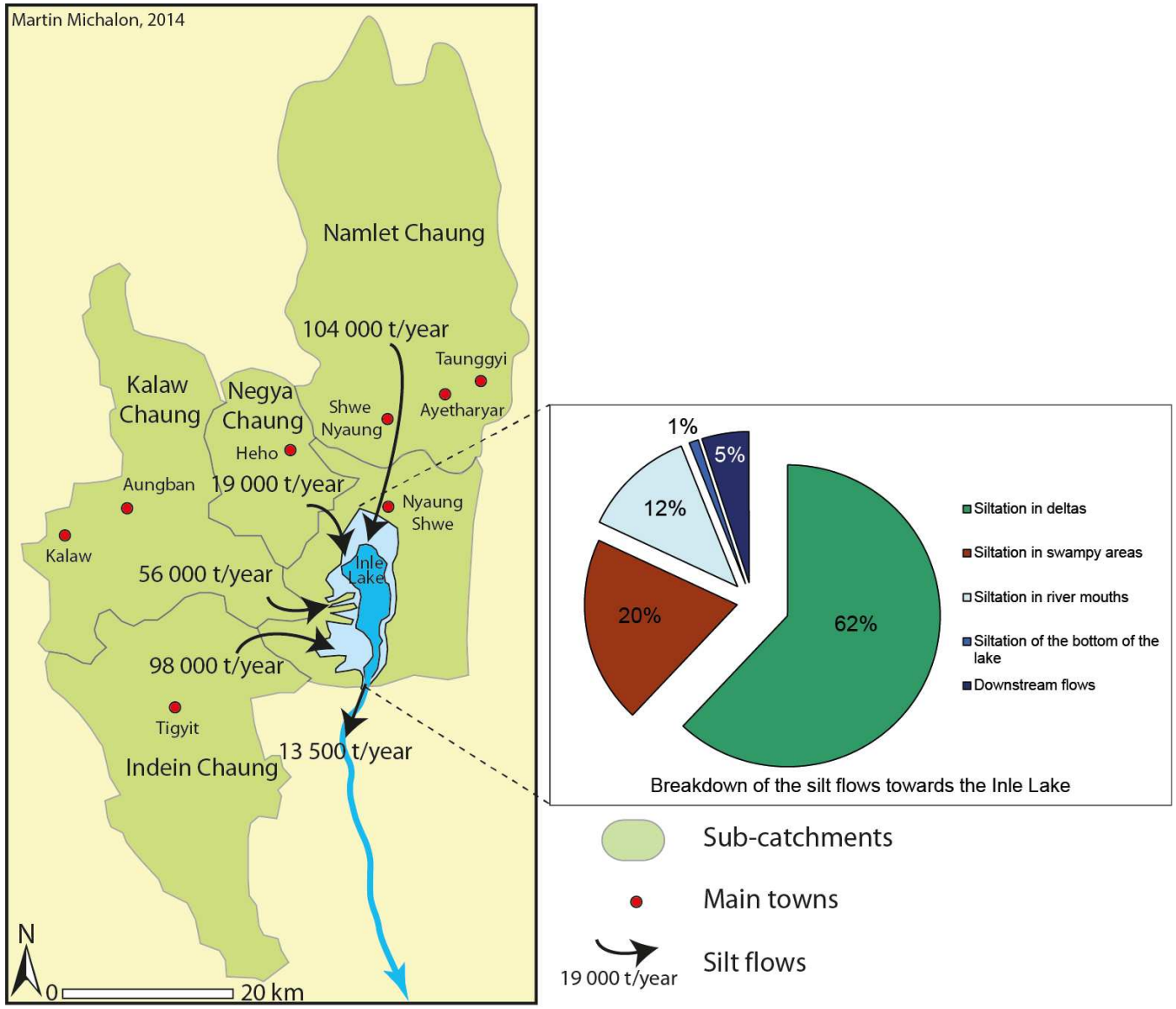


Figure 32: The siltation of the Inle Lake. Source: Furuichi, 2008

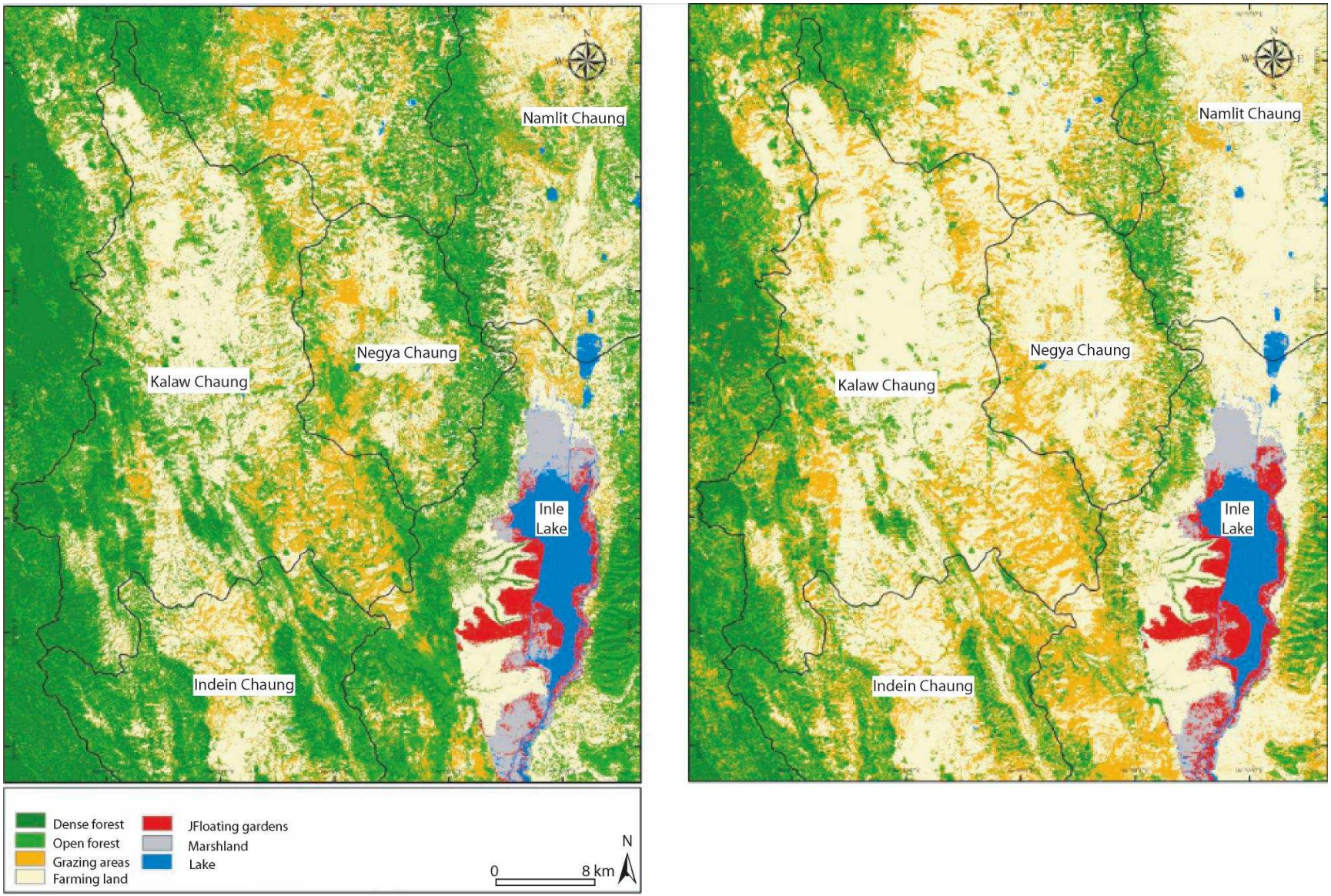


Figure 33: The deforestation process around the Inle Lake, according to the UNDP (UNDP, 2012a, modified by the author)

Those stunning results seem to prove the deforestation process, even though such a magnitude needs to be re-evaluated, and the methodology that was used for those two researches can be criticized. As far as the wide-scaled map is concerned, it was made with the same method as Furuichi's, but with a very different conclusion. While Furuichi used 2009 satellite images, UNDP used 2010 ones, but this year was abnormally dry. If the images were taken during the dry season, dense forest may have been classified as open forest, and the latter as grazing zones. However, no detail about the images date or classification method was provided to clarify this ambiguity. As far as the smaller-scale map is concerned, the figures do not seem to be reliable: how can a 750 km² watershed lose more than 160Km² of forests in ten years? In comparison, ICIMOD results look more realistic.

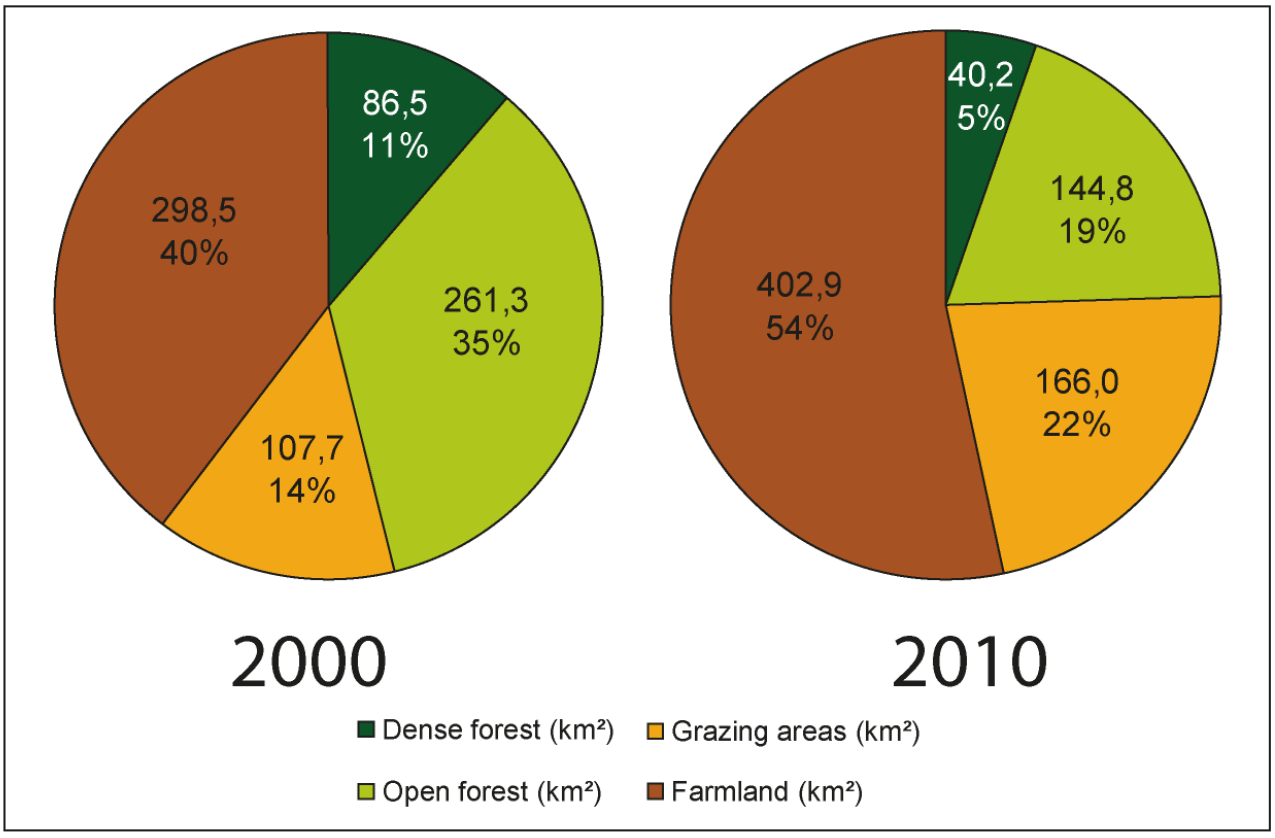


Figure 34: The dramatic evolution of the land-use in the Kalaw Chaung sub-catchment, according to the UNPD (UNDP, 2012a)

One more time, however, scientific controversies are partly settled by field observations: although our explorations in the hills were not as comprehensive as we intended, they back the theory of slope erosion. Indeed, any observer can notice four to five smoke columns rising above the surroundings of the lake (sugarcane fields are frequently burnt after harvesting) or above the hills. The phenomenon is even more visible at night. A short walk to the Eastern Pa-O hills leads the trekker in very dry landscapes that mainly result from slash-and-burn cultivation. On figure 35, one can notice a typically altitude-tiered landscape.

Figure 35: Hill landscape around Khone Sone, in the Pa-O territory.

On the upper slopes, one can notice the remnants of open forest: they are grazing and wood-fetching areas. On lower parts, potatoes, corn and curcuma fields are cultivated following the slash-and-burn tradition: before each culture cycle, farmers burn shrubs to clear and fertilize the soil. Because of the demographic growth in the hills (cf. chapter one), the agricultural lands are very likely to extend ; though the Forest Department is officially very mindful of forest protection, field extension rules are massively violated : open forest areas are frequently burnt down at night, purportedly accidentally. Once the soil bares, authorities are rarely opposed to its cultivation (Thandar Laing, oral information).
Though food crops dominate, fields are also frequently planted with Cordia dichotoma (that are visible in the foreground of figure 36), which leaves are used for cheroot industry. The dynamism of this sector is responsible for a part of the deforestation process: Htut Ei Village, North-East of the lake is nowadays surrounded by nothing but scattered bush and a few low trees. Around thirty years ago, it used to be amidst dense forest, where one-meter wide trees were spaced out by 70 meters. Between them, many low trees used to grow (Nang Myay Win, oral information). Though Cordia is perennial and does not entail frequent burning, it needs to be planted on bare soil. Thus, the existing and rather dense forest had to be chopped down to plant those two-meter high and frail trees that little protect the soil from the monsoon.

The Cordia industry thus has a clear environmental impact, not only because planting entails deforestation, but also to have fresh leaves dry: 75 two-meter long and 15 centimeter-diameter logs are necessary to dry 100 viss (160 kg) leaves. Such a wood consumption triggered off a price-soaring. Nowadays, 75 logs cost 30 000 K (23 €), for 10 000 (7,7 €) ten years ago. Some farmers, who could not afford such a burden anymore, gave up Cordia industry (Nang Myay Win, oral information). One

may assume that their fields are either abandoned, or bought by well-off people, who can build up more and more massive and lucrative businesses.

Figure 36: Firewood for sale in the Pa-O hills, near Lwe Kin village

Beyond these agricultural factors, the rise in wood prices may be caused by urban activities. We interviewed three wood traders, whose houses are surrounded by logs piles: they told us that those goods are mainly sold to Nyaungshwe restaurants. This industry, which is very active due to the tourism[71], guarantees regular incomes to our interlocutors. However, the latter emphasize wood's growing scarcity. The woodcutters currently have to walk one hour to chop down reasonable-sized trees, instead of thirty minutes twenty years ago.
Scarcity makes prices increase: while a 70 Kg cartload used to be worth 1000 K (0,77 €) three years ago, it is now twice as expensive. Therefore, tourism environmental impacts do not halt on the lakeshore: tourists and their practices impact the whole watershed.

The accumulation of slash-and-burn food crops, Cordia planting, and wood-cutting to feed cordia-processing workshops and urban restaurants has built desert-like landscapes, especially alongside busy trails: scattered dry bushes, and deep gullies that channel down silt during the monsoon (figure 37).

Figure 37: Gullies on the trail from Lwe Kin to Maing Thauk.

[71] Though all the restaurants in town are not for tourists, the others are very often used by stakeholders in tourism industry: tourist guides, bus and boat drivers, employees working on hotel construction sites, etc.

Though deforestation and current soil deterioration may reach serious extent, those phenomena are not recent: according to Sidle et al. (2007), most dense forests of the Inle Lake area were reportedly cut between the 1880s and the 1940s (i.e colonization era). Burmese wood, especially teak, was then broadly cut and exported. Deforestation was so massive that a Soil Conservation Unit was created in 1937 in Shan State to protect the land cover and promote a less harmful land use. However, its efficiency has been debated until its dissolution, in 1984 (IID, 2012a).

As a conclusion, the Inle lake seems to be at the confluence of processes that are taking place in the whole watershed : floating agriculture may be responsible for water eutrophication, its pesticides contamination and the fish stock decrease ; mining and handicraft have poured chemical products and heavy metals into the waterbody ; demographic growth, slash-and-burn cultivation, cheroot industry and tourism have caused watershed deforestation and erosion, which have triggered the lake siltation, from the edges to its center.
Therefore, several threats hang over Inle Lake... and its population and activities. Thus, adaptation and mitigation strategies have been set up by local stakeholders, as well as outsiders...

3) Facing the environment deterioration: intensification, diversification, education and protection

a) The fishermen's strategies: intensifying and diversifying

One of the most efficient answers to the collapse of the fish stock would be a better resource management. Theoretically, such a system already exists: fishery department officially prohibits fishing during the breeding period, between June and August, but this rule is not really enforced. Indeed, those months are the summer tomatoes growing period, and only agriculture workers stop fishing, while full time fishermen, with no alternative, go on fishing without being bothered.

If the fishing period reduction is not efficient, would it be possible to play with the spatial factor? The government set up two protection zones 25 years ago: some swampy areas in the North, and a perimeter in the center of the lake, delimited with buoys.
However, according to a few fishermen, those prohibitions are frequently contravened: after a bad fishing day, a few people reportedly complete their catches in the Northern Swamps. As for the central protection perimeter, we were able to spot a few fishermen working in it. Moreover, one must keep in mind that the authorities have no means to enforce the law (neither dedicated staff, nor boat), and that many fishermen work at night, when waters settle and nobody can see them.

The last option could be a community-based resource management: the quotas or fishing zones would be set up by fishermen themselves. Our interlocutors agree that such an initiative does not exist and is not to be created soon[72]. Here is a typical case of « tragedy of commons » (Hardin, 1968): the relationships between communities and the free-access resource lead to a lose-lose situation, because of a lack of dialogue and common rules about how to use this common resource.

Paradoxically enough, the only recourse of the fishermen is to intensify their pressure on the environment, in two parallel ways.
The first and most common reply is to increase their daily fishing time, because that requires no financial nor material investment. In his 2012 survey, Okamoto interviewed 48 fishermen, among them 34 (i.e. 70%) set up adaptation strategies (of any kind). Among them, 22, i.e. 65 %, chose to

[72] We could notice to what extent the notions of collective action, cooperation and governance are vague in Myanmar, and can even trigger fear. Some experts consider this as a remnant of the hard dictatorship of the military-junta era: how can people gather, discuss, debate, take a stand in social and political issues, whereas it had been prohibited for decades by the authorities?

increase their daily working time, from an average 11 hours to 16. Some of them even ended up working 22 hours a day. All the interviewed fishermen started increasing their work times after 2006: it is therefore quite a recent process (Okamoto, 2012).
During our fieldwork, we were able to notice such a strategy: out of the eight fishermen who answered this question, six had to extend their work time, up to a sometimes surprising extent. Twenty years ago, U Ba Thit used to fish the whole day during half of the year, and the rest of the year, half-day. Nowadays, he has to work every night, from 6 pm to 4 am, and then, every other day, from 6 a.m. to 12 a.m., i.e. 16 hour-long workdays. As for Ko Htwe, from Maing Thauk Inn village, he works a striking 23 hours a day, and takes rest only one hour a day for dinner, from 7 pm to 8 pm. He switched to this rhythm so as to make up for the catch drop.

The other strategy is gear improvement. Traditionally, the Intha use saung net, which use requires to harpoon the fish. Therefore, it was designed for big fishes in crystal-clear water. Nowadays, small-sized fishes, murky water and the numerous boats (especially hundreds of tourist-loaded ones) make it ill-adapted.
Out of the 10 fishermen we interviewed about this topic, 7 never use it anymore, and switched to classical synthetic nets, while the others sometimes use it, alternately with fishing rod and classical fishing net. In his survey, I. Okamoto (2012) made an even more dramatic statement: only 3 out of the 48 interviewed fishermen still used, either alone or in combination with other gear. It is clear that the saung less and less suits with the current Inle Lake's environment, and Kyaw Thoo, who is 18, has even never learnt to use it. Therefore, it is to become a memory, and to lose its practical use to become an identity symbol (cf. infra). However, this material adaptation entails a financial investment: a fishing net costs 5000 K (3,8 €), i.e. two days' income (Mwai Yan Phyoe, oral information), while the three good quality Japanese fishing nets cost 20 000 K (15,4 €), according to Aung Zaw Tun.

Those two strategies somehow improve the catches on the short-term, but also increase the pressure on a very fragile environment and, very often, are not enough to maintain the families' standards of living. As we have already reported about the use of chemical products is agriculture, fishermen increase their pressure on the environment because they don't really have choice: any alternative, any setting up of an organization, any restriction (even temporary) to protect the environment entails financial or human investments they cannot afford. As I. Okamoto (2012) notices that « fishing is officially prohibited for three months in the rainy season. Nevertheless, as we saw, the fishermen continue to work throughout the year if they need to do so to survive. They have no other option. The scale of the lake makes it difficult to reach any consensus as well as to place an enforcement mechanism among fishermen. If one fisherman starts fishing in the prohibited period, others would follow. »

However, some families, who have a sufficient financial or social capital, launched fish farming activities. Out of the 34 fishermen interviewed by I. Okamoto, who had set up adaptation strategies, 13, i.e. 38 %, initiated such an industry. Families set vast fishing nets between the posts of their stilt houses and release fingerlings, bought from special retailers. Fishes are then fed for eight months with rice bran, cooking wastes and aquatic plants harvested in the lake, before being sold on the market. The stock is sold at around 2500 K/viss (1,2 €/Kg), and progressively, so as to keep prices high (U Ba Thit, oral information). According to I. Okamoto, the most commonly-bred species is grass carp (Ctenopharyngodon idella), while our interlocutors seemingly preferred snakehead (Channida).

Figure 38: A fish farm in Nampan village.
Length: around 5 meters; width: around 2 meters.
Picture by the author, March 2014

As for Tilapia, it is not bred, because it's already too common on the lake. It is sold only 1500 K/viss (0,7 €/Kg).

Though it cannot provide a genuine income, this activity may generate a significant income supplement for some families: U Ba Thit earns 50 000 K/month (38,5 €) thanks to fish farming (table 13). That's why two other interlocutors recently decided to start this industry: Aung Zaw Tun released 500 fingerlings seven months ago, while Aye Aye Soe has been breeding around 20 snakeheads for five months. Interestingly enough, those three households live in the same Pauk Par Village, just North of Nampan, where fish farming has been done since 2006. This downstream village, where the lake gets more narrow to become Nam Pilu River, is told to be favorable, because the current is strong enough to oxygenate the fish farms. On the other hand, Ai Htaunt Gyi and Maing Thauk Inn fishermen, in the swampy North-East of the lake, told us that water is too shallow and murky in their villages: therefore, some physical factors must be taken into account.

On top of that, fish-farming entails a first significant investment that all households cannot afford. Fingerlings are bought at 20 to 50 K each (1,5 to 3,8 €). Aung Zaw Tun and U Ba Thit, who breed respectively 500 and 1000, spent 10 000 to 25 000 K (7,7 to 19,2 €) for the former, and 20 000 to 50 000 K (15,4 to 38,5 €) for the latter, without taking into account the price of the fishing nets and the rice bran that are used in this purpose. Though, a farmer doesn't always have this investment back: in 2010, drought, the very low water level and the quality were responsible for the loss of the two thirds of the fishes. Instead of earning 100 000 K (77 €) on average in the year, the fish farmers lost 15 000 K (11,5 €) at this time (Okamoto, 2012).

So as to complete their incomes, fishermen sometimes work in agriculture sector : out of 50 households interviewed by I. Okamoto (2012), 17, i.e. 34 %, worked in floating gardens, most of the time as day laborers, and this trend was confirmed in our interviews (table 13). In Ai Htaunt Gyi village, at the North-East of the lake, all inhabitants were exclusive fishermen 20 years ago ; nowadays, the figure has dropped to 50 out of 400 families, while the others work half-year as agriculture laborer (Ko Hla Tun, oral information), and sometimes in tourism (cf. infra). In neighboring Ywagyi village, only 10 to 15 old men are full-time fishermen, the others work in floating gardens six months a year (U Pyu, oral information). Lastly, in Maing Thauk Inn, Ko Htwe estimates that full-time workers amount to 30 % of the village population, for 50 % around 15 years ago. As we can see, the fishing sector’s difficulties date back to 15 to 20 years. It seems to reflect both the fishermen's enthusiasm for the attracting floating gardens and the more recent and less voluntary leaning towards ye-chan to make up for fishing's hardships.

We already established that many farmers complete their incomes by fishing, but the reverse is also true nowadays: a great amount of fishermen resort to agriculture, thus contributing to the fish stock decrease. Thus, we may consider that a retroaction loop has been set up.

Further South on the lake, where the handicrafts have always been a long tradition (Bruneau and Bernot, 1972), the fishermen families diversify their incomes by working in this sector. In Pauk Par Village, which used to be a stronghold of fishing, 60 % of the population currently works in other sectors, especially as carpenters. This industry has recently soared in link with the booming tourism in the area: in Nampan alone, seven stilt restaurants were built between July 2013 and March 2014 (U Ba Thit, oral information). Women are also called upon, most often in the cheroot-making cottage-industry, while grown-up children frequently live with their parents and contribute to the household's expanses.

Table 13: Supplementary activities led by the interviewed households

Name	Village	Fishing income	Supplementary incomes	Future projects for their children
U Ba Thit	Pauk Par	50 000 K/month (38,5 €)	- Fish farming : 50 000 K/month (38,5 €) - one son is a carpenter : 120 000 K/month (92,3 €) - one daughter makes cheroot : 90 000 K/month (69,2 €)	-
Aye Aye Soe	Pauk Par	90 -120 000 K/month (69,2 – 92,3 €)	For the third time in seven years, the husband leaves to Kachin State to work as a boat maker : 150 000 K/month (115,3 €)	She would like her son to be a carpenter and her daughter to work for textile workshops
Aung Zaw Tun	Pauk Par	75 - 100 000 K/month (57,7 – 76,9 €)	Fish farming. Expected profit : 25 000 K/month (19,3 €)	-
Ko Hla Tun	Ai Htaunt Gyi	50 000 K/month (38,5 €)	Is eager to start fish-farming, but lacks funding	He would like his son to study so as to work in tourism sector
U Pyu	Ywagyi	75 000 K/month (57,7 €)	- the son works as a fisherman, but also as a day labourer in ye-chan - the daughter works in a hotel nearby, and sends 50 000 K home every month (38,5 €)	-
Ko Htwe	Maing Thauk Inn	50 000/month (38,5 €)	His wife has made cheroot for 10 years : 45000 K/mois (34,6 €)	He wants his son to study to work in tourism sector
Mwai Yan Phyoe	Ai Htaunt Gyi	30 000 K/month (23 €)		
Kyaw Thoo	Ai Htaunt Gyi	90 000 K/month (69,2 €)	He will work as day-laborer for floating gardens if fishing goes on deteriorating	-
U Soe Lwin	Ai Htaunt Gyi	100 000 K/month (76,9 €)	-	He doesn't want his three sons to be fishermen

In view of table 13, it appears that in several households, fishing has just become an activity among others, and sometimes represent a small share of the family incomes. It is now challenged by handicraft activities, which incomes are earned with less work. Last, but not least, it is important to notice a kind of revolution: no single fisherman wants his children to do the same job as him. Fishing is therefore considered as a painful and futureless job.

Lastly, some fishermen turn to the booming tourism industry, which is considered as a stable and quite abundant source of income: Ai Htaunt Gyi village, near Nyaungswhe, used to be a fishermen-only hamlet. Nowadays, it is used by local tourism players as a tourist-boat driver tank. Indeed, the inevitable boat excursions on the lake require numerous drivers: in just one day, on 2014, 17th March, we could count more or less 550 boats in each direction of the channel linking Nyaungshwe and the lake. This figure, which was collected during the transition between high and low touristic seasons, may very well be much higher during the October-November peak season.
Boat drivers almost never own the craft: they are hired on a very regular if not daily base by local businessmen who have a few boats. The « usual » day-tour of the lake is billed 15 000 K (11,5 €) for the whole boat. Out of this amount, 7000 K are devoted to the petrol, 6000 K to the boat-owner, and

2000 to the pilot. The latter can supplement this income with the tips[73], that frequently sum up to the same amount. A boat driver's income can therefore be estimated to 4000 K/day (3 €), i.e 120 000 K/month (92 €) during the high touristic season (U Yee, oral information).
In low season, they sometimes have to switch back to fishing, but with much inferior income. We may even assume that fishing, in spite of its anteriority and cultural role, has itself become a supplementary activity, a secondary income to which people resort when the main one dwindles, but which cannot feed the whole family on the long run...

Other local inhabitants benefit from the tourism by harnessing the now familiar and symbolic image of the Intha fisherman. At the mouth of the canal between Nyaungshwe and the lake, we may now number a dozen of larger-than-life « Intha fishermen » (figure 39). Dressed, or even disguised with the traditional baggy brown trousers and a bamboo hat, they wait for the tourist-loaded boats to cast their saung in a very dramatic way, probably invented for the occasion, because we have never noticed it for « genuine » fishermen.
Their pose before the cameras is rewarded with a tip. It appears that group travelers with guides are more generous than independent travelers, because their guides often incite them to tip the fishermen. As a result, those « fishermen » can earn 5 000 to 10 000 K daily (3,8 to 7,7 €), which represents a comfortable income with little work. While the pioneer started posing in 2000, they were five men in 2012, and they are currently a dozen, which proves the acceleration of the trend (U Kyi Soe, oral information). Those figures only refer to the canal mouth. However, some tourists are not taken in anymore and are reluctant to cross the group of « tourist fishermen ». Maybe that's why we were able to spot isolated ones in other parts of the lake, such as Ywama or Nampan villages, which are important drive-through places.
Lastly, it is interesting to notice that the people who indulge in this activity sometimes have a thin link with fishing: U Kyi Soe has always had his ye-chan and he used to fish in low agriculture season. For two years now, he has posed for tourists. Whereas he has kept on growing tomatoes, his fishing has been nothing but fictitious since then. As for his friend, he started posing at the same time, and dramatically casts the saung... whereas he has never been a fisherman: he used to work as a laborer in Nyaungshwe vegetable warehouses.

Figure 39: "Tourist-fishermen" on the lake, posing for tourists.

As a conclusion, it is strikingly visible that the « Intha fisherman » symbol is considered as a safe heaven, an inevitable value of the tourism in Inle area that allows to draw at the closest to the financial

[73] The tips can be given by the tourists, but also from the handicraft shop owners when visitors do shopping

flows, even for tourism outsiders. This enhancement of the « traditional fisherman » is all the more interesting as it this industry has faced severe hardships that even threaten it as a professional activity. As it is often the case, it is an activity about to disappear which is made the symbol of a region or a community. As often too, this character outsizes its region of origin: the Intha fisherman, which used to be a symbol of Intha people, is now the emblem of the whole Inle area, if not whole Myanmar. In Rangoun's Bogyoke Market, shops sell thousands of paintings, pictures and postcards depicting it, while the 2011 Lonely Planet's frontpage shows an Intha and his saung.

b) State and supra-national stakeholders: protection and education

Until the 1990s, the socialist government launched rare initiatives in favor of environment, but often sector- based ones, such as the Soil Conservation Unit (cf. supra). The regime change in 1989 also meant a twist in the philosophy: in a wish for a more integrated approach of the lake and its watershed, a « steering committee for Inle Lake preservation » was set up in 1992. However, since the beginning, it had been hampered by its broad-scaled dimension: it was not led from Nyaungshwe, but from Taunggyi, by Shan State officials, and supervised by the military governor of Shan State. On top of that inhabitants and local stakeholders didn't appear in the organigram (NCEA, 2006). Right from the start, this organization showed the characteristics of a failing governance. One this committee's failures was the setting up of a 20 mile-radius reforestation program in 1997 (Okamoto, 2012). However, it has been totally absent from scientific and militant literature since then, and our interlocutors mentioned it only once, to emphasize its inadequacy. This kind of action illustrates the low efficiency of an ill-designed public action, in a context of poor governance, lack of funding and frequent corruption.

However, the lake preservation has all the more remained a concern as the government massively bets on tourism to get foreign currencies. The 2010 drought gave protection policies a new momentum: in July of this year, a ban on new floating hotel building was decided. This initiative was also remarkable for apparent progress in governance: the meetings gathered 300 officials, experts, journalists and activists and, officially, inhabitants were also involved (The Irrawaddy, 2010, 20th July).

For a few years now, supra-national public stakeholders, led by the UNDP, have also been interested in Inle Lake preservation. On top of a technical aid to local authorities since 2010, UNDP has led a two-year-and-a-half project (January 2012- June 2014), including a broad range of activities for the Kalaw Chaung sub-catchment area development. Those actions, funded by Norwegian aid, are resolutely integrated, involve local communities and civil society, and aim at protecting slopes, improve drinking water access, and teach environment-friendly agriculture practices: more than 20 hectares of organic products have been initiated (Thet Win Htun and U Htun Paw Oo, oral information). As often, some interlocutors working for other development organizations bear critics on UNDP philosophy, especially on the financial efficiency of its projects.

UNDP-led actions have come to complete initiatives by international NGO. From 1997 to 2003, Japanese NGO Karamosia led surveys on land use, set up reforestation projects or environment education, before handing over to another Japanese NGO, Terra People Association. Since then, the latter has run the only agriculture training center in the area, and has given trainings on chemical products use, organic farming, and encouraged villagers to plant trees, etc... The Ministry of Agriculture's local branch also provides with such training, but it is said to be much less efficient, because farmers are often wary of government staff (Oo et al., 2010).

However, Burmese and international players have been getting closer now in ambitious projects, aiming at an integrated and efficient approach. One may mention the in-depth work led since 2012 by the Institute for International Development (IID). This Australian organization was asked by the Burmese Ministry of Environmental Conservation and Forestry to set up a regional sustainable development project, centered on the lake, but which would also include a big part of Southern Shan State. This scheme, also funded by Norwegian aid and still under preparation, is based on highly

participative methods, including many thematic workshops gathering civil society, authorities and local inhabitants. One the main recommendations from the 2012 report was the creation of a permanent management and protection committee for the lake. The principle of this Inle Lake Conservation Authority was accepted by President Thein Sein in January 2014 (Mizzima News, 2014, January 28th). The framework of such an organization is still to be specified, and its efficiency will have to be evaluated on the long run.

One more evidence that new stakeholders and new ways of action have appeared is the mobilization of local stakeholders in favour of Inle Lake protection. The most visible organization in Nyaungshwe is Inle Speaks, an NGO founded in 2011 by local tourist guides on their own funds. It deals with environment education and capacity building. Therefore, it offers computer classes, tourist guide trainings and environment awareness campaigns. For long, this organization has been backed by Swiss Tour-Operator Diethelm, which used to fund some of their campaigns, and it recently went a step further by getting funds from the Norwegian NGO Partnership for Change (Sai Win, oral information). The Burmese branch of the latter, represented and partly led by Aung San Suu Kyi, is often considered as the 1991 Nobel Prize laureate foundation.

Though many of Inle Speaks campaigns aim at the locals, its message also targets tourists. The NGO's office is the only place in Nyaungshwe where visitors can collect information about the lake, its environment, fund its protection or visit an exhibition about water pollution. The involvement of Burmese tourist guides, the backing by a foreign tour-operator and the consciousness-raising campaigns aiming at tourists clearly shows the potential of a responsible tourism industry as a prime mover towards a sustainable local development.

IV) Tourism moments, places and practices: « main circuit », side roads and prospects

For around 20 years now, tourists have been more and more numerous to visit the Inle region. For their touristic practices, they resort to a tourism sector that has progressively been built locally. It gathers stakeholders from the local level, but also from the whole country, and sometimes from abroad. Those numerous and various stakeholders have had a major impact on the territory, in all its dimensions: they have affected space, landscapes, economy, representations, and have generated human migrations and changes in mentalities.

So as to better understand the tourism sector, we interviewed nine stilt resort managers. During this survey, we tried to cover the whole range of situations by visiting hotels in all our investigation territory, among which a few crony-owned resorts, and by interviewing a few foreign managers as well). We also interviewed six hotel managers on the mainland (i.e. in Nyaungshwe[74]), from low-range to top-end, from the oldest to the most recent ones. Moreover, we met seven handicraft workers and five souvenir sellers, so as to highlight how local populations get integrated in the tourism financial flows. Lastly, we interviewed three tourist guides - whose jobs are based on a close proximity with visitors - so as to analyze their customers' representations and practices. However, we wish we were able to meet more of them, and to lead a proper survey about tourists themselves to have a better insight on their visions and practices. Those relatively unexplored issues are stimulating tracks for a future PhD thesis about tourism in the Inle region.

We gave our interlocutors different questionnaires, but they aimed at dealing with the same main topics. In the framework of our work about globalization, we tried to draw the outlines of networks in which stakeholders are integrated (where customers, products and staff come from, where they go, etc.), to understand the economic strategies of their activities and the representations on which they are founded… The conclusion we can draw from those encounters is that the Inle region is getting more and more integrated in worldwide networks and flows. This trend deeply transforms the local touristic model, from a locally-based niche tourism to a globalized mass-tourism, which future is currently facing sustainability and human resources challenges.

1) Tourism : a recent phenomenon which fast growth depends on political factors

a) The « golden land » : a renewed attraction

For long decades, Myanmar has remained out of the main touristic flows: though tourists started ambling in the country in the 1950s, the coup by the junta military in 1962 put an end to such a trend. Indeed, the generals closed the boarders, nationalized tourism services (so as to better control visitors), and set up a rigid and constraining visa policy. In those ages of secession conflicts between peripheries and the central government, numerous regions were off-limit. As a consequence, tourist flows were very low under the socialist regime,

[74] As far as we know, there is no official hotel on the mainland out of Nyaungshwe.

compared to this sector soar in the rest of Asian countries. They almost dried up during the coup that ousted Ne Win: Flows dropped from 41 000 to 10 000 visitors between 1988 and 1989 (Henderson, 2003).

When the SLORC (State Law and Order Restoration Council) came to power in 1989, the situation changed. Tourism sector was broadly privatized, and the Ministry of Hotel and Tourism (MHT), created in 1992, encouraged foreign investments. In 1996, a Visit Myanmar Year was organized to boost the tourism industry. Goals were ambitious: no less than one million visitors. However, this initiative was massively boycotted: the1988 crackdown was still present in foreign minds, and Aung San Suu Kyi's 1991 Nobel Prize had raised the issue of the political situation in Myanmar. Official statistics conceded that only 250 000 visitors came to Myanmar this year (Henderson, 2003), but according to non-governmental sources, the Visit Myanmar Year even failed to reach 20% of its goals (Ko Ko Thett, 2011).

In spite of this disappointing start, tourist flows steadily increased in the next few years, before this momentum was halted by the 1998 Asian economic crisis. The sector went through another crisis a few years later, during the 2007 "Saffron Revolution". This massive contestation of the regime was sparked by the rise of the price of petrol. Those protestations were led by numerous members of the sangha, the monastic community, which was an exceptional event (Sabrié, 2007). The demonstrations were violently repressed by the regime, which tarnished significantly its reputation. The following year was marked by the cyclone Nargis, which wrought devastation in the Irrawaddy delta region, and brought tourism to a standstill. As far as tourism is concerned, 2000 to 2008 period were years of stagnation and disappointment.

The real move forward took place in 2010 and, once more, it was closely linked with political factors: in 2008, a referendum initiated the government's "roadmap towards democracy". One of the highlights of this so-called reform was multi-party elections in 2010. Though the referendum and the elections were marked by frauds and tight control from the government (Egreteau, 2012), those votes and the Aung San Suu Kyi's release in November 2010 were considered by the international opinions as significant efforts from the generals, who became slightly more trustworthy. The self-dissolution of the military junta in March 2011, for a nominally civilian regime, and Aung San Suu Kyi's election in the 2012 legislative vote made those hopes come to life (Egreteau, 2012). This relative politic opening generated the boom of the tourist flows to the "Golden Land": between 2008 and 2013, the number of visitors soared from 200 000 to 850 000.

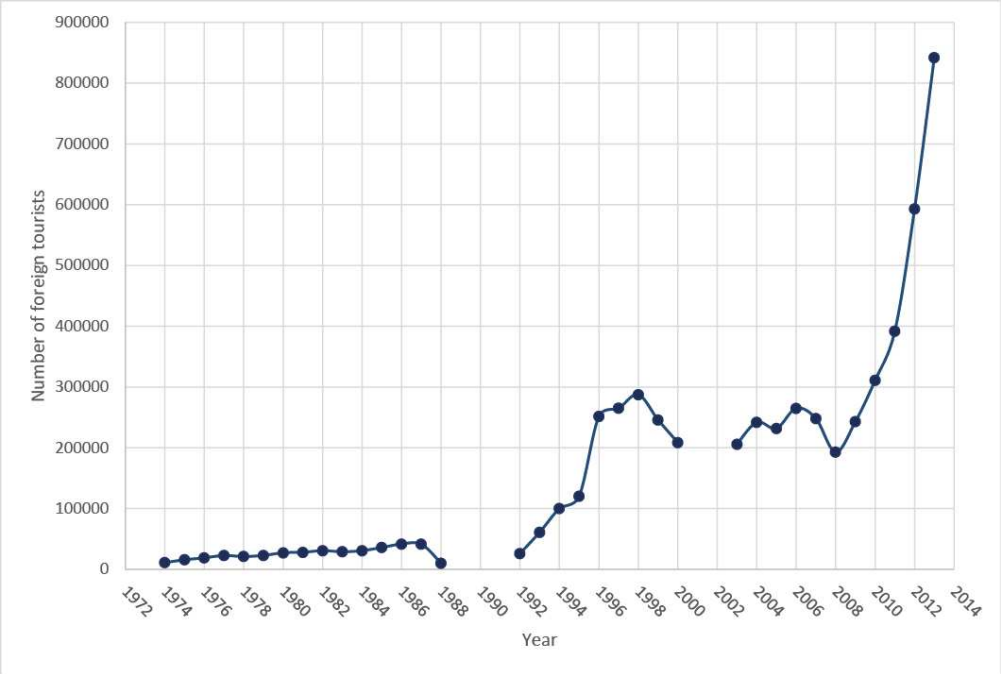


Figure 40: Tourist flows to Myanmar.
Source: Henderson 2003 and Myanmar Tourism Statistics, 2007 to 2014

However, those figures call for a clarification about the kind of flows they quantify[75]. Indeed, the authorities count separately tourists reaching the country by land and by air. In 2013, around 842 000 tourists arrived in Yangon, Mandalay and Naypyidaw international airports (out of which 97% for Yangon, which is the real tourism hub in the country), and 1,14 million came through land checkposts (MHT, 2014). Though the Ministry of tourism summed those two figures to claim that 2,04 million tourists visited Myanmar that year, such an assertion seems contestable to us: should we consider visitors who get into Myanmar by land as tourists? At the moment, it seems relevant not to do so, for two main reasons.

First of all, according to the consultancy cabinet Craig Hodges[76], it appears that the huge majority of those people come and go through the border for small-scale trade and business. Therefore, they don't match the definition of a "tourist" that we consider in this work, i.e a person who moves out of his usual place of living to go and live temporarily in other places for his "re-creation" (MIT, 2002). Besides those numerous traders, we may identify rare foreign tourists who just ask for a 24-hours Myanmar visa, such as those Westerners who live in Thailand and cross the border to get a new Thai visa. As they spend less than 24h in Myanmar, they cannot be considered as tourists.

Beyond those considerations, the main argument which proves that those visitors coming by land are rarely tourists is a specificity of tourism in Myanmar. Until the end of the year 2013, the huge majority of the border areas were off-limit for tourists (figure 41): it was almost impossible to get into the country through land checkposts with a tourist visa. The hundreds of thousands people crossing Thai, Chinese or Indian borders probably do so with business visa or entry visa that allow to visit relatives. However, according to the international NGO Tourism Transparency (which promotes responsible and fair tourism in Myanmar), those restrictions were canceled at the end of 2013. Though little-publicized, this decision is a

[75] We also insist on the fact that, like many official statistics in Myanmar, tourism figures must be taken with caution, as the recent DVB press release showed: "Myanmar statistics are wrong"
[76] Quoted on the web site of the consultancy cabinet on tourism www.tigermine.com

real revolution in the tourism landscape. Indeed, that makes it possible to include Myanmar in a land circuit through all South-East Asia. Moreover, many new regions are now opened to tourism (Valentin, oral information)[77]. However, considering that this decision has been enforced since the first months of 2014 only, we may consider that for the moment, only visitors coming by air are actual tourists.

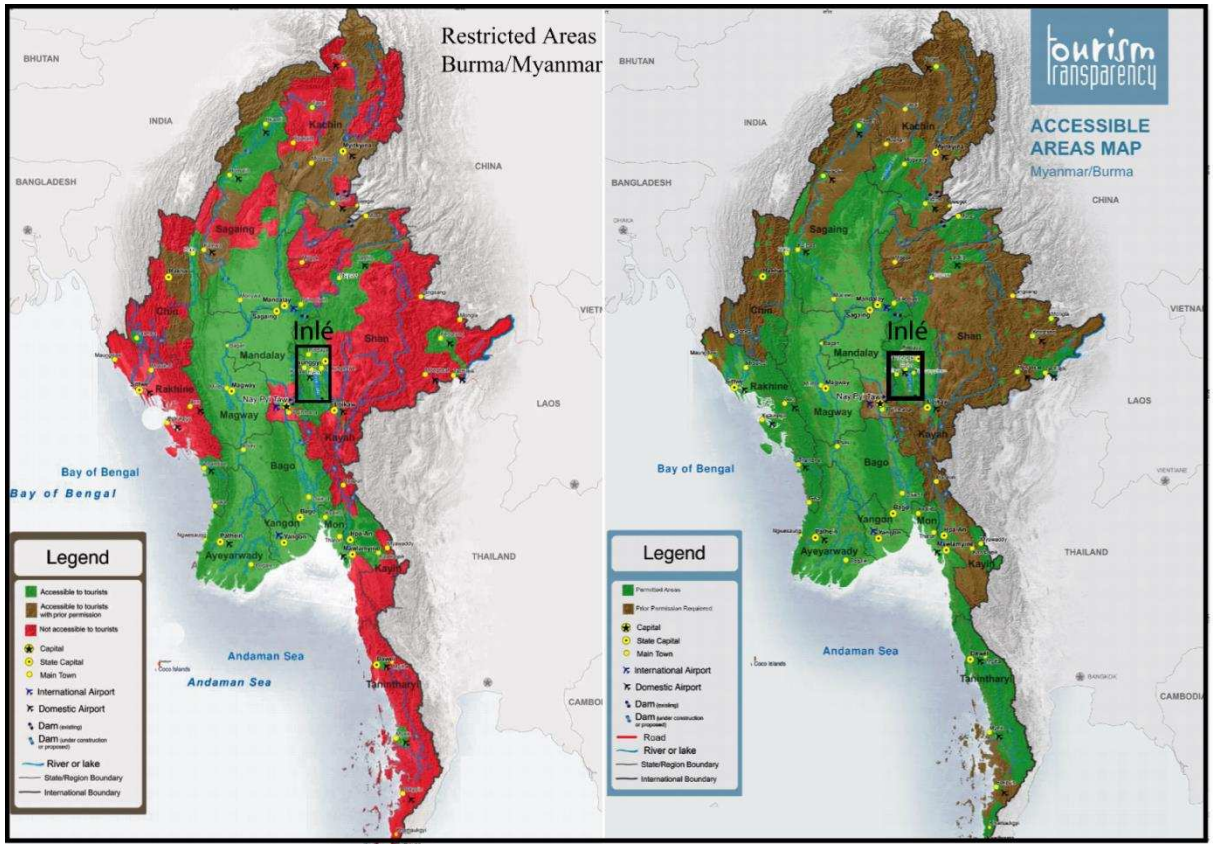


Figure 41: The forbidden and restricted areas in Myanmar.
On the left map, the red zones stand for the forbidden areas and the brown ones, the restricted areas. On the right map, the forbidden territories disappeared, and are now considered as free-access or restricted areas.
Source: www.tourismtransparency.org

This border opening, aiming at generating new flows of tourists, is a pillar of the government's tourism strategy. It came to reality in the authorities' Tourism Master Plan 2013-2020, which was carried out thanks to Norwegian funding. This strategy sets ambitious targets: 3 million tourists in 2015, 7,5 in 2020 (MHT, 2013). Such high targets obviously raise the issue of the tourism quality and sustainability.

This proactive roadmap aims at attracting money and capital flows of the tourism industry. This sector is already the Myanmar state's second source of income, after gas exportations (Info Birmanie, 2013). In 2006, tourists already spent 164 million dollars in the country, and this figure amounted to 926 million in 2013; on this time span, the expanses per visitor also increased from 94 to 145 dollar per person and per day[78] (MHT, 2009 and 2014). The latter

[77] It would therefore be extremely interesting to study how those recently-opened territories, such as Chin, Kachin or Kayah states will be integrated in the tourism flows, whereas virtually no visitor had ever visited them before. A comparison with Inle Lake area may relevant in the framework of a PhD thesis.
[78] However, the average stay duration has remained stable, around 7 days.

trend may be interpreted as a symptom of the evolution of tourism in Myanmar, which moves from niche tourism to a more luxurious one, with new and more globalized practices for well-off customers (cf. infra).

Besides the visitors' individual expanses, we also have to mention massive foreign investments in the hotel sector: in November 2011, 800 million dollars had already been injected in the national economy, while 300 million dollar-worth projects were already under progress. The neighboring Asian countries had a crucial role: 75% of those FDI[79] came from Thailand and Singapore[80]. FDI are not to slow down in a near future: the Tourism Master Plan set up 38 priority projects that are 500 million-dollar worth, a huge majority of which will be funded by private investors (Myanmar Times, 2013, October 28th b).

Considering Myanmar's recent history, it is clear that tourism closely depends on political factors, events and decisions. It is intimately linked to the values that it's entrusted with by the regime: under the socialist era, it was considered as a foreign intrusion that politicians had to be wary about; since the 1990s, it has been perceived, more and more obviously, as a source of financial incomes, and as a showcase for the country's democratization.

b) Inle Lake, a highlight of tourism in Myanmar

As we may see on figure 42, Inle lake region has always been accessible to tourists. Throughout the time, it has become a national must-see, thanks to a set of narratives and representations built by tourism stakeholders. Indeed, Myanmar is systematically described as the last refuge of the authenticity that much of Asia has lost: tour-operator Khiri writes about "hundreds of tribes that has lived in the country for thousands of years, many of which has kept until now their century-old ways of life". It is also depicted as a harmonious enclave that has reportedly stayed out of time and out of the torments of the modern world: French tour-operator Gulliver mentions a country that "has kept all his authenticity, protected from outside influences and sometimes harmful effects of modernity". While the ubiquitous Bagan temples are the symbol of the historical and archaeological heritage of Myanmar, the Intha fisherman is the human side of the country, the embodiment of its cultural specificity (figure 42). As we have already seen, it is a fading reality that is erected into a symbol of a region. When it comes to describing the sites where they will bring their customers, tour-operators often resort to the myth of the

Figure 42: Page d'accueil du site Internet du voyagiste All Asia Exclusive (www.allasiaexclusive.asia)

[79] Foreign Direct Investment
[80] Source: information letter of French Embassy in Myanmar number 3, November 2011.

unexplored land, sometimes abusively. For instance, Asian Trails describes the Indein stupas as “hidden and unknown”… without mentioning that the very long walkway leading to the top of the hill is lined with dozens of souvenir stalls.

Fed with those representations, tourists flock to the Inle Lake. The scarce statistics available, which reliability is uncertain, emphasize the significant impact of the 1996 Visit Myanmar Year. On that year, twice as many visitors came to the lake as in 1995 (figure 43). We may notice to what extent flows have soared since then: from a touristic point of view, the region of the Inle Lake has genuinely changed dimension in less than ten years.

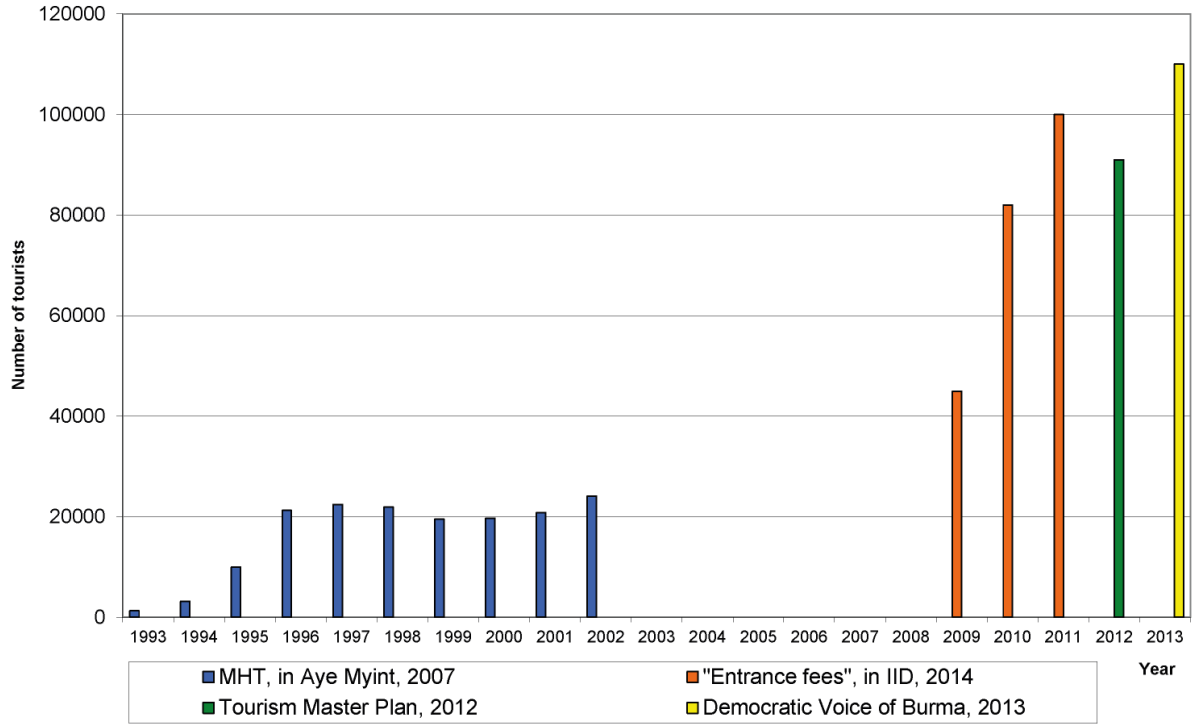


Figure 43: Tourist flows to the Inle Lake, depending on the sources

As in many other destinations, tourism in Inle shows strong seasonal variations. The peak appears to be in October and November (figure 44), which follows the end of the monsoon: temperatures are cool, water is high and vegetation is green and abundant, especially in the hills. Above all, this period corresponds to the Phaung Daw Oo Pagoda festival, which is one of the main ones in the country. This ceremony, that has taken place on the lake since the end of the 17th century and lasts around one month, is structured around the circumnavigation of five holy Buddha statues on the lake. After leaving from the pagoda, they sail around the lake, through no less than 21 villages. Legend has it that those sacred images were brought into the region by the mythical king Alaungsithu in the 12th century, and since then, they have been worshipped by the whole country. For the festival, the statues are set on two gilded barges that are towed by traditionally-clad villagers aboard long ceremony ships (Robinne, 2000). It is no surprise that such event be a major attraction of local tourism, based on authenticity, tradition, and even folklore. After this event, the inrush of tourists slightly decreases until March, when it drops during the dry season and the monsoon, before increasing again in the following September.

Therefore, tourist flows show intra-annual variations that we may try to quantify thanks to the three statistic sources we have (Figure 44): MHT data, tourism police, and tourism fee

collection booths[81]. Those three series of data correspond to indicate around 5000 visitors/month in the 2013's low season. However, they differ for the high season: on the one hand, the MHT and the fee collection booths report around 17 000 tourists in November 2013, before a drop between 10 and 15 000 the next three months. On the other hand, tourism police systematically reports more people: around 25 000 in November 2013, almost 30 000 in January 2014. Those data seem questionable, as police's calculation methodology is very unclear, and because police seems more directly under the pressure of authorities, which are eager to emphasize the tremendous growth of tourism.

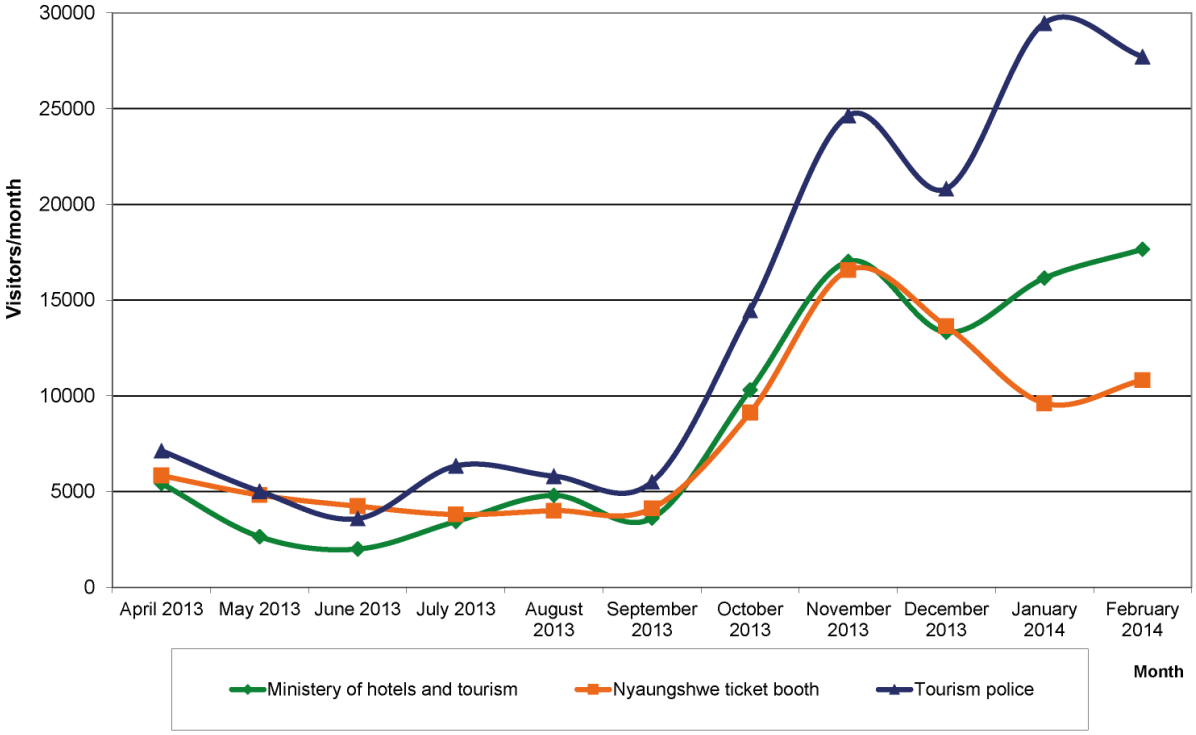


Figure 44: Tourists flows to Nyaungshwe between April 2013 to February 2014. Source: IID, 2014.

This seasonality also appeared in our interviews with tourism stakeholders, and especially with hotel managers (table 14): out of the twelve who gave their opinions about this topic, nine estimate the beginning of the high season in October, and increase their rates at this date. Reports are less unanimous about the end of the touristic season: three situate it in February, five in March, three in April, and one in May. A comparison of those schedules highlights that the high season is one or two month longer for lake resorts than for Nyaungshwe hotels. We may assume that the stilt hotels' amenities make a clear difference during the dry season.

[81] Since 2009, a fee has been levied at the entrance of the region. It used to be 5 dollars, but it was increased to 10 dollars in 2013. Those sums, collected by Shan State, are theoretically invested in the environment protection. However, all our interlocutors insisted on the lack of transparency of such a system, and the ubiquity of corruption. Basically, 100 000 visitors paying 10 dollars per person should yield one million dollar annually… but the concrete achievements are not obvious, to say the least.

Table 14: Occupancy rates of Inle hotels throughout the year.
In green, the months that our interlocutors consider as "high season";
in orange, the "low season"

Kind of hotels	Hotel's names	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Resorts on the lake	Inle Resort												
	Sky Lake Resort												
	Aureum Palace												
	Shwe Intha Resort												
	Golden Island Cottage 1												
	Paramount Resort												
	Pristine Lotus												
Hotels in Nyaungshwe	Hupin Hotel												
	Joy Hotel												
	Good Will Hotel												
	Remember Inn												
	Manawthuka Hotel												

Therefore, tourism in the Inle lake region has been temporally differentiated since the 1990s. Throughout the years, the Inle Lake has cemented its status of "Golden land's highlight". Out of the 593 000 foreigners who came to Myanmar in 2012, 91 000, i.e. 15%, visited Inle lake: as a consequence, the latter ranks as the third most touristic place nationwide outside of Yangon, after Mandalay and Bagan, and their 160 000 visitors (Myanmar Tourism Master Plan, 2013). On top of the international tourism, it is important to add domestic tourism which is far from negligible: in 2012, no less than 77 000 Myanmar visitors flocked to the lake[82] (Myanmar Tourism Master Plan, 2013). This distinction between foreign and domestic tourists gives a first glimpse of the variety of profiles that one may meet on the lake's shores.

2) The tourist : a multi-faceted character

a) At the national scale: the strength of the Asian visitors, the decrease of the tourist groups

The accurate statistics on visitors' profiles are very scarce for the Inle lake region. It is therefore necessary to use national data to get a first overall picture, which will be refined later. Though European representations have it that Myanmar is mainly visited by Westerners, the country is rather a clear example of the increasing power of Asian tourism, at the expenses of the Occident: in 2013, Asian customers amounted to 70% of foreign tourists, for 18,6 for

[82] However, it may be relevant to question such data, as domestic tourists are not counted: they don't have to pay any entrance fee, and many of them don't stay in hotels. As a consequence, researchers lack valuable data.

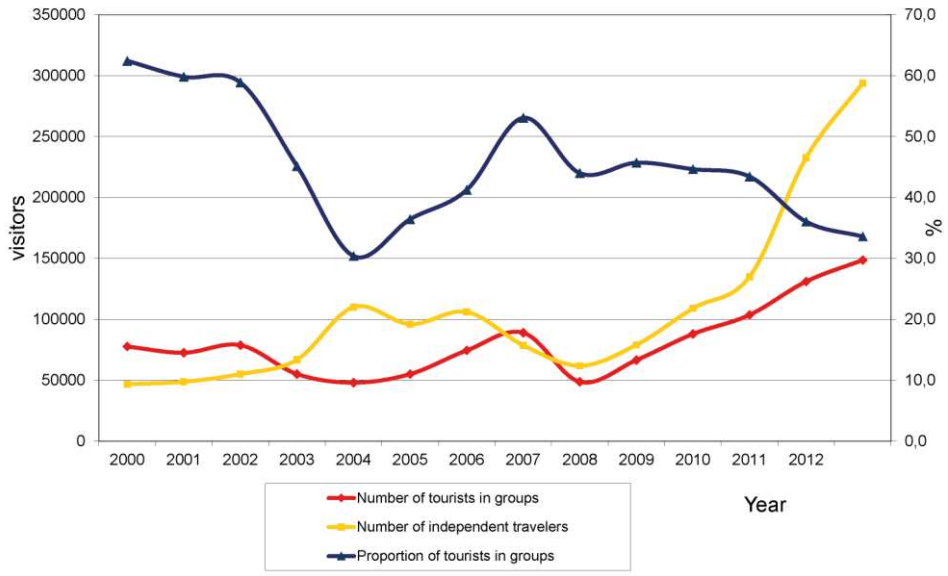
Europeans, while proportions were respectively 63,5% and 24,4% in 2007 (MHT, 2008 and 2013).

A deeper survey of the countries of origin gives more information about the profiles (Figure 46): in 2013, Chinese and Thai neighbors clearly topped the ranking, with respectively 140 000 and 90 000 visitors. In Europe, France was the main provider with 35 000 people, ahead of Germany and the United Kingdom. Lastly, more than 54 000 Americans now reach the "Golden land". Anglo-Saxons, who had been deterred to visit the country for years, have been more and more numerous since 2011 and the suspension of many international sanctions against the regime: the number of Australians increased by 150% in two years, 160% for the Americans, and even 230% for the British, who show the most significant growth rate in Europe (MHT, 2012 and 2014). This diachronic diagnosis also shows the massive increase of flows from Japan: 21 000 tourists in 2011, 69 000 in 2013.

Besides the distinction according to nationalities, another one is very important in Myanmar: it contrasts visitors who travel in groups with independent travelers, dubbed FITs (Foreign Independent Travelers) by the authorities. Indeed, for many years, independent travelers were repelled by the complexity of visa application and currency exchange, basic transportation and accommodation conditions, and by the tight control of authorities over tourists and their practices. As a consequence, many people chose the simplicity of travel tours. However, this reality is fading away: while 60% of visitors resorted to a tour-operator in the early 2000s, only 33,6% did so in 2013 (Figure 45).

This inversion is not only visible in terms of proportions, but also for raw figures (Figure 45): since 2000, curbs have crossed: in 2000, approximately 80 000 people visited Myanmar in groups, twice as many as FITs (45 000). In 2013, the situation was the other way round: there were twice as many FITs as groups (300 000 and 150 000 respectively), and the gap keeps on widening.

Between those two dates, proportions fluctuated: for instance, the proportion of groups dropped after 2002. That year corresponds to another house arrest for Aung San Suu Kyi and new sanctions to the country: those events probably worried tour-operators, but not independent travelers. Since 2008, and Cyclone Nargis, though, the new face of tourism in Myanmar has been confirmed, with the growing number of FITs, who take advantage from easier travel conditions in the country.



Those main trends draw the outlines of the current tourism in Myanmar. Those characteristics may be found, to a certain extent, at the local scale.

Figure 45: Flows of tourists: groups versus FITs. Source: MHT, in Tan, 2012 and MHT 2014

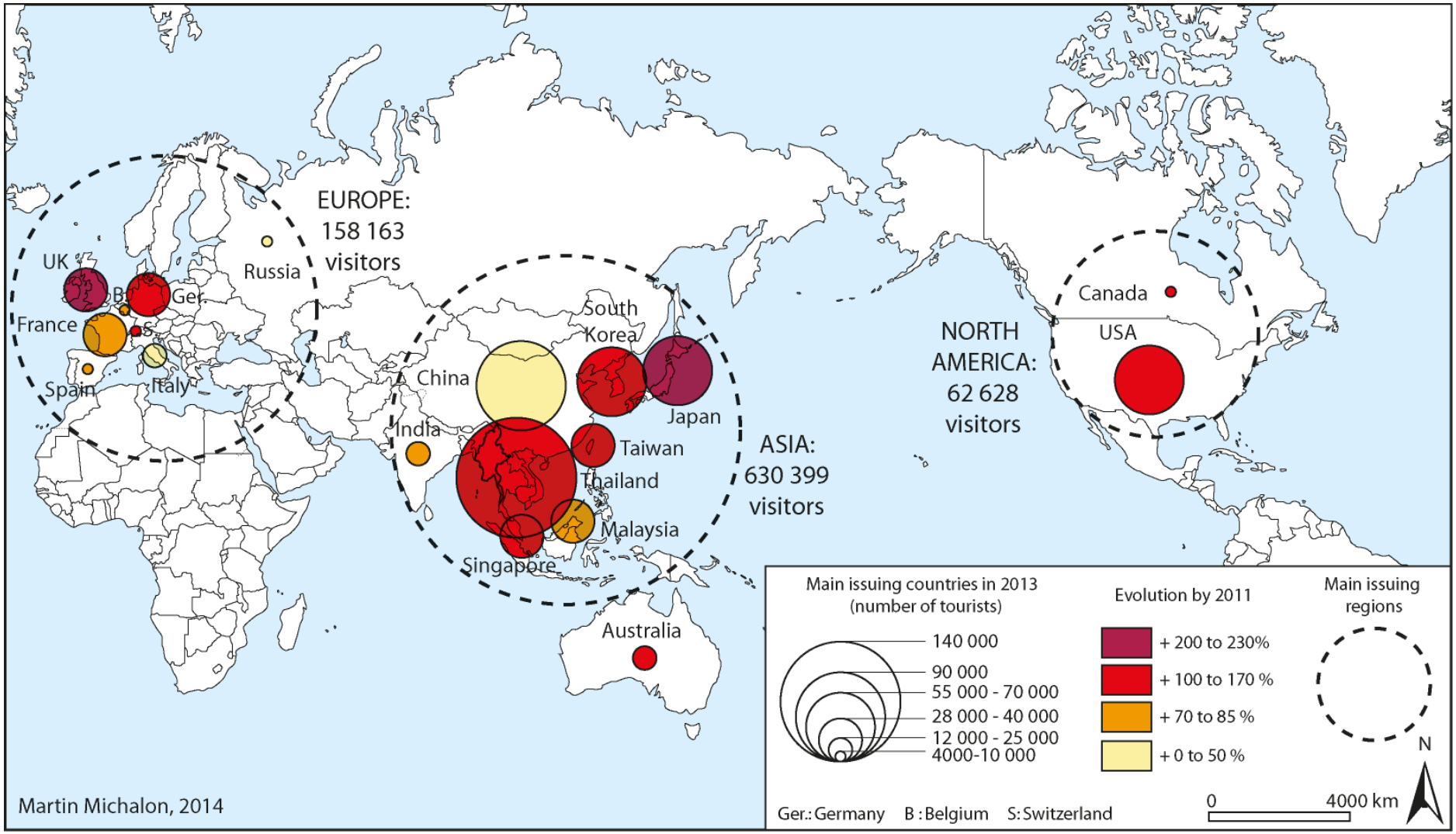


Figure 46: Main countries issuing tourists to Myanmar in 2013 (source: MHT, 2014)

b) On the Inle Lake : practices and choices depending on the profiles

Visitors ambling through floating gardens and local markets show a certain variety of situations and profiles. As far as nationalities are concerned, Asian domination that could be noticed at the national scale is much less obvious locally[83] (Table 15). Indeed, our interviews with eight resort managers showed that almost no Asian tourist stay in stilt resorts on the lake: only one of our interlocutors mentioned them, while specifying they just amount to 10% of his customers. They seem to confine to hotels on the land, which may better match their expectations, their practices and their budget (they are five to ten times cheaper than resorts), even though they very rarely account for the majority of customers: only one out the seven hotels we visited in Nyaungshwe mainly hosts Asian visitors. As for Thai tourists, they have never been mentioned by our interlocutors.

However, all the hotel managers reported a very clear over-representation of Westerners, and above all, French and Germans, in any kind of accommodation. In one of the resorts we visited, Westerners account for 80% of customers (Chagnon, oral information), and 90% in another one (Vaeth, oral information). Those two stilt hotels emphasized the significant growth of the Anglo-Saxons customers since the opening of the country in 2011. On the land, Westerners are as present as on the lake: 83% of the customers in Joy Hotel are reportedly French (Win, oral information)[84].

Table 15: Number of lake resorts and Nyaungshwe hotels considering the mentioned nationalities as part of their main customers.

The nationalities…	… in 8 Resorts	… and 7 hotels in Nyaungshwe
France	8	6
Germany	7	3
Other European countries	3	0
Anglo-Saxon countries	3	2
Asian countries	1	3

One of the conclusion of our interviews is that Asian tourists seem to be much less present in the region of the Inle Lake than in the rest of the country. It would be interesting to solve this discrepancy in future works, but we can make a few hypotheses.

First of all, in spite of all our precautions, our hotels sample might have been too narrow. Asian visitors, who often have tight budgets[85], may prefer cheaper peripheral hotels that we didn't visit (though we have never heard of ground-cheap hotel in the periphery). Some of our interlocutors assumed that some Asian groups stay in cheap Taunggyi hotels, and shuttle to Inle Lake to visit it (Haynes, written information). Some groups may even travel in very fast tours, with night buses and domestic flights that allow them to spend the day on the lake without spending the night there.

[83] We were not able to get official statistics at the local scale. Therefore, we had to make the most of our interviews to get data. We are well aware of the latter's limits.

[84] In many hotels, it was difficult for us to get accurate data about the origins of customers. Therefore, we have to be content with our interlocutors' feelings and estimations.

[85] We were told a few times on the field that Asian tourists have the reputation of being stingy. Such a reputation can also be found in Burmese media: when interviewed by a Burmese newspaper, a hotel manager declared that he had rather had 100 Western customers than 1000 Chinese, because the latter don't spend enough money (Myanmar Times, 2013a, 28th October).

Asian tourists might also come to Myanmar, but not to the Inle Lake. Indeed, many of them come for religious tourism and, though there is no lack of religious sites on the lake, their tight schedules may force them to be content with the other highlights of the country, such as the Yangon's Shwedagon Pagoda, Khyaikhtiyo's Golden Rock, or Mandalay's Buddha Mahamuni.

Lastly, one may assume that many Chinese or Thai people who get into Myanmar with a tourist visa actually come for other reasons, especially business: that might be why they are so little visible in touristic spots.

Besides Western and Asian visitors, one may notice that very few hotel managers mentioned the third category of tourists: domestic customers. Only one resort receptionist mentioned rare Myanmar tourists, just to emphasize that they don't master the specific behaviour code for such a place, which shows that tourism is not innate: it is a body of practices and codes that has to be learnt. On the mainland, only two hotels mentioned occasional Myanmar families. Our interviews, especially with the Manawthuka Hotel manager, highlighted the actual strategy of all the other domestic tourists: considering that they often come to the Inle Lake for pilgrimage, those modest families are frequently hosted by local monasteries for free.

As it is the case at the national scale, we can notice on the Inle Lake a clear distinction between visitors traveling with groups and FITs. Besides the official statistics (not easily accessible for researchers), the only way to distinguish them is to count them on the main inescapable activity on the lake: the boat-trip. Therefore, we sat by the channel that links Nyaungshwe and the lake, and counted approximately 680 FITs and 480 foreigners in groups[86]. Therefore, the latter account for 41% of foreigners we counted on the lake that day. That proportion is slightly superior to the national average.

On that day, we were also able to have a glimpse at the domestic tourism. Besides the 1160 foreigners we counted, we also spotted 465 tourists that seemed to be Myanmar, among which 84, i.e. 18%, were traveling with a tour-operator. It is not very difficult to distinguish Myanmar tourist from other Asian tourists, as they have different practices, mainly for financial reasons: while Chinese or Japanese are four or five per boat, and sit in wooden armchairs, domestic tourists are ten to twelve per ship, and sit directly on the floor. Reciprocally, it is quite easy to distinguish them from local people: domestic tourists stand out in their clothing and ostensible touristic practices, such as the permanent use of smartphones, especially to take pictures. All categories combined, Myanmar account for a non-negligible share of tourists on the Inle Lake (Figure 47): 28%, i.e approximately as much as foreigners traveling with groups (30%).

[86] It is quite easy to distinguish people traveling in groups: most of the time, the boat's bow is decorated with a removable sign with the name of the tour-operator on it, and a guide sits at the back of the ship. Such a method is obviously not infallible. The figures we cite here correspond to counting in both directions of the canal: those who left in the morning and came back in the evening were therefore counted twice. However, such method allows us to reach an average that is more reliable than a single counting.

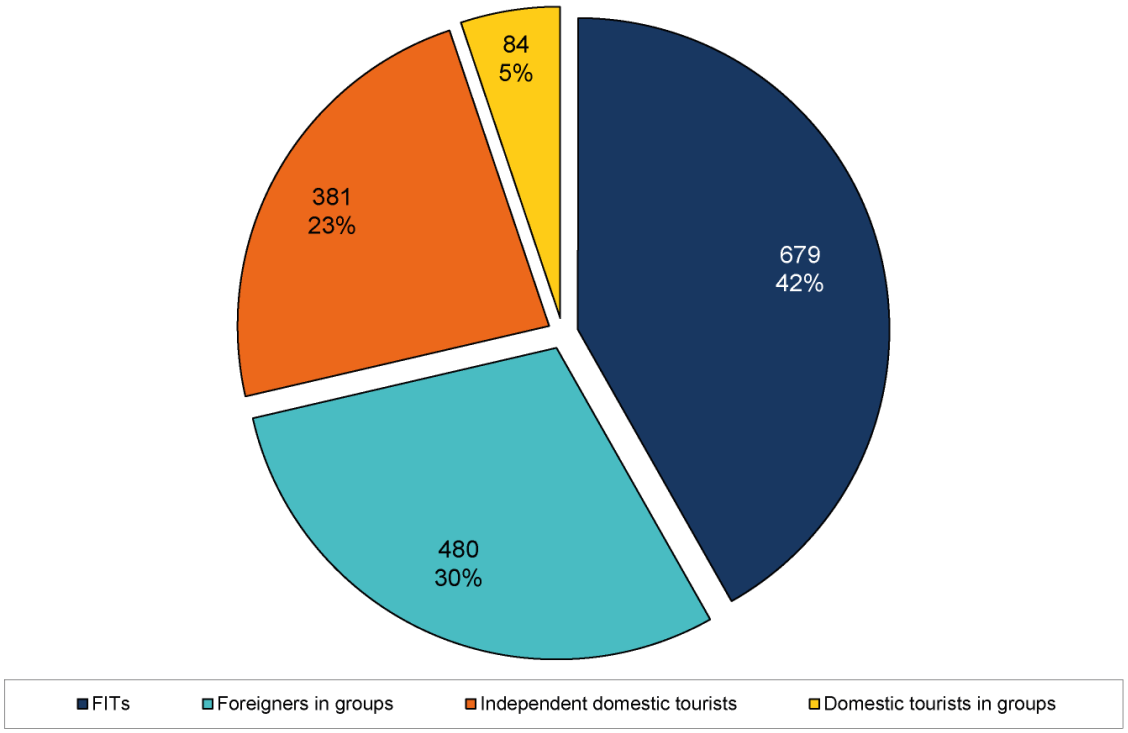


Figure 47: Distribution of the tourists on boat-trips, depending on their profiles. Source: field data

Distinction between FITs and groups can also be spotted in accommodation choices. Among the seven stilt-resort managers we interviewed, five mostly host groups, while the others have more diverse profiles (Table 16). Therefore, lake resorts seem specialized in groups, in particular because of their rates (100 to 380 $, depending on the hotel, the season, and the kind of accommodation). The rare FITs who stay there are honeymooners or expatriate families living in Asia and visiting Myanmar for holidays (Chagnon, oral information).

Table 16: Hotels and their customers

Kind of hotels	Hotel's names	Main customers	Room rate ($/night)
Resorts sur le lac	Inle Resort	-	100-210
	Myanmar Treasure	Groups	200-300
	Sky Lake Resort	Groups	180
	Aureum Resort	Groups	325-380
	Shwe Intha Resort	Groups in high season, FITs in low season	130-170
	Golden Island Cottage 1	Groups	120-180
	Paramount Resort	Groups	155
	Pristine Lotus	More FITs than groups in 2013, but the opposite in 2014	170-250
Hotels in Nyaungshwe	Hupin Hotel	Groups	70-90
	November Inn	Groups	40-60
	Manawthuka Hotel	Groups	60-85
	Cassiopeian	Groups	50-95
	Joy Hotel	FITs	20
	Good Will Hotel	FITs	15-45
	Remember Inn	FITs	25

On the land, four hotels mostly host groups, three are FIT-aimed. This more balanced repartition exactly overlaps two categories of prices: the groups, which are more modest than those on the lake, but better-off than FITs, stay in hotels that cost 72 $/night in average. As for FITs, they resort to 25 dollar-hotels, which are the cheapest in town. Those independent travelers with tight budget are the well-known backpackers.

The contrast between those two kinds of accommodation is also visible in the space: backpackers' hotels and guesthouses are often downtown, along the canal leading to the lake. This centrality signals their anteriority: in 1996, the first hotels to open were both basic and central. Reciprocally, hotels for groups, which are bigger and more recent, often had to be content with less central, but more peaceful locations. The only exception seems to be the Hupin Hotel, which has hosted many groups for years, whereas it is downtown.

3) *Pioneers'* time : itineraries and practices

Like the rest of the country, the region of the Inle Lake has long been a blind spot of global tourism, a place that only a handful of "happy few" could reach. Until the beginning of the 1990s, there was only one four-room hotel in Nyaungshwe: the Inle Inn, opened in 1976 (Yin Myo Su, oral information). Then, a few other structures opened in the village. However, many tourists still had to stay in Taunggyi guesthouses (Sai Win, oral information). At the national scale, the Visit Myanmar Year was a limited success, but it did trigger a dynamic at the local scale: five new hotels opened in 1995 and nine opened in 1996 (Aye Myint, 2007). Out of those hosting structures, we surveyed five, which allowed us to better understand the profiles of investors at that time (table 17): well-off local tradesmen, who made their fortunes in cheroot industry or local restaurants.

Though such a concept was totally unknown before, the first resorts appeared on the lake: the first one was the Golden Island Cottage 1 (GIC 1), built in Nampan, and soon followed by the Shwe Intha and the Paramount. At that time, very few people believed in their success. Because of the villagers' skepticism, the GIC 1, originally designed for 40 rooms, opened with only 20 ones, and for a few months, tourists (who were more numerous than expected) had to cram in nearby monasteries.

Such projects were much more expensive than a simple guesthouse in town: the investors were therefore quite different. GIC 1 was kickstarted by a Pa-O cooperative, with the help of the government, which provided the necessary land and three years of fiscal exemption[87]. This innovative initiative, led by the Pa-O, was also backed by the Swiss tour-operator Diethelm, which signed agreements to guarantee a clientele for the young structure (Khin Maung Ngwe, oral information). As for the Paramount, it was the only resort which belonged to a "foreign" investor, an Ethnic Chinese from Yangon, who had made his fortune in Japan. Thus, those two resorts appeared thanks to new stakeholders, and this was a turning point in the region's integration in the global scale and in the tourism flows. The Shwe Intha resort is an exception: it was opened by a rich family from Ywama, who made its fortune in boat making. This industry, more lucrative than cheroot making, allowed them to launch such an initiative.

[87] As we may expect, our interlocutors remained quite silent about this aid, but we may interpret this support as a means to ease the relationships between the government, after years of skirmishes with Pa-O guerrillas, and the fragile 1991 ceasefire. Rumor also has it that dictator Than Shwe, who was married with a Pa-O woman, had a favorable policy towards this ethnic group.

Table 17: At the origins of the first hotels in the Inle region

Kind of hotels	Hotels' names	Village	Date of opening	Owner's origin	Owner's job at the opening time
Hotels	Inle Inn	Nyaungshwe	1976	Intha family from Nyaungshwe	Cheroot industry
	Hupin Hotel		1995	Nyaungshwe	Restaurant and taxi
	Remember Inn		1996	Shwe Nyaung	Restaurant
	November Inn		1996	A Shan from Taunggyi	
	Joy Hotel		1995	Intha family from Kyay Sar Kone	Cheroot industry
Resorts	Golden Island Cottage 1	Nampan	1996	Pa-O cooperative	
	Shwe Intha		1996	Intha family from Ywama	Boat-makers
	Paramount Resort	Nga Hpe Kyaung	1996	Chinese from Yangon	Made his fortune in Japan

Besides innovations in the hospitality sector, those early times of tourism were also the times of new tourism practices. At that time, reaching Nyaungshwe and the lakeshore was a goal by itself. Beyond, horizons were limited: according to one of the earliest guides in town, tourist boats just sailed through Ywama village, rarely stopped there, and finished their trips at Phaung Daw Oo Pagoda (Figure 48). Further South, Nampan village and textile workshops of In Paw Khone appeared like "world's ends". Lakeshores were still under the control of Pa-O guerrillas, and boats didn't stop there. Most of the time, boat trips only lasted four hours only (Sai Win, oral information).

For tourists, the main attractions were the observation of agricultural and fishing activities, the visit of Phaung Daw Oo Pagoda and the visit of markets. Handicraft activities were very little developed: though jewelry workshops had existed for centuries in Ywama village (Bruneau and Bernot, 1972), there was only one showroom on the whole lake, and no other souvenir shop. A probable exception was the textile activity in In Paw Khone, which had existed for more than a century (U Myint Zaw, oral information). Tourists probably came to watch silk and cotton weaving, but above all a very specific and totally unique tradition: weaving of lotus resin. This technique, which was invented in the nearby village of Maing Pyaw (Yin Myo Su, oral information), is based on harvesting lotus stems, before cutting them into pieces and collecting sap, which is then used to get a coarse thread, which much-lauded comfort qualities. Originally, it was weaved to make clothes for Buddha images: this long and fastidious[88] work (from a plant which is a pillar of Buddhism) was considered as a good deed, and a way to get "merits" for one's next life (U Myint Zaw, oral information). Interestingly enough, this technic, which had been confined to a few women in a village, was adopted by textile workshops… at the early times of tourism. Shwe Pyae Shun workshop was one of the first ones to sell this kind of products at the beginning of the 1990s, when tourism flows started increasing after the socialist era (U Myint Zaw, oral information). As for the Myat Pwint Chel workshop manager, she declared that she started selling this product twenty years ago, which does correspond to the Visit Myanmar Year. Therefore, we may assume that tourism had a crucial role in the expansion, the diffusion, or even the re-invention of a

[88] According to Aye Myint (2007), it takes one full year for a whole family to weave a monk robe from lotus sap.

tradition which used to be marginal, and which has now become one of the symbols of the region and of the Intha culture.

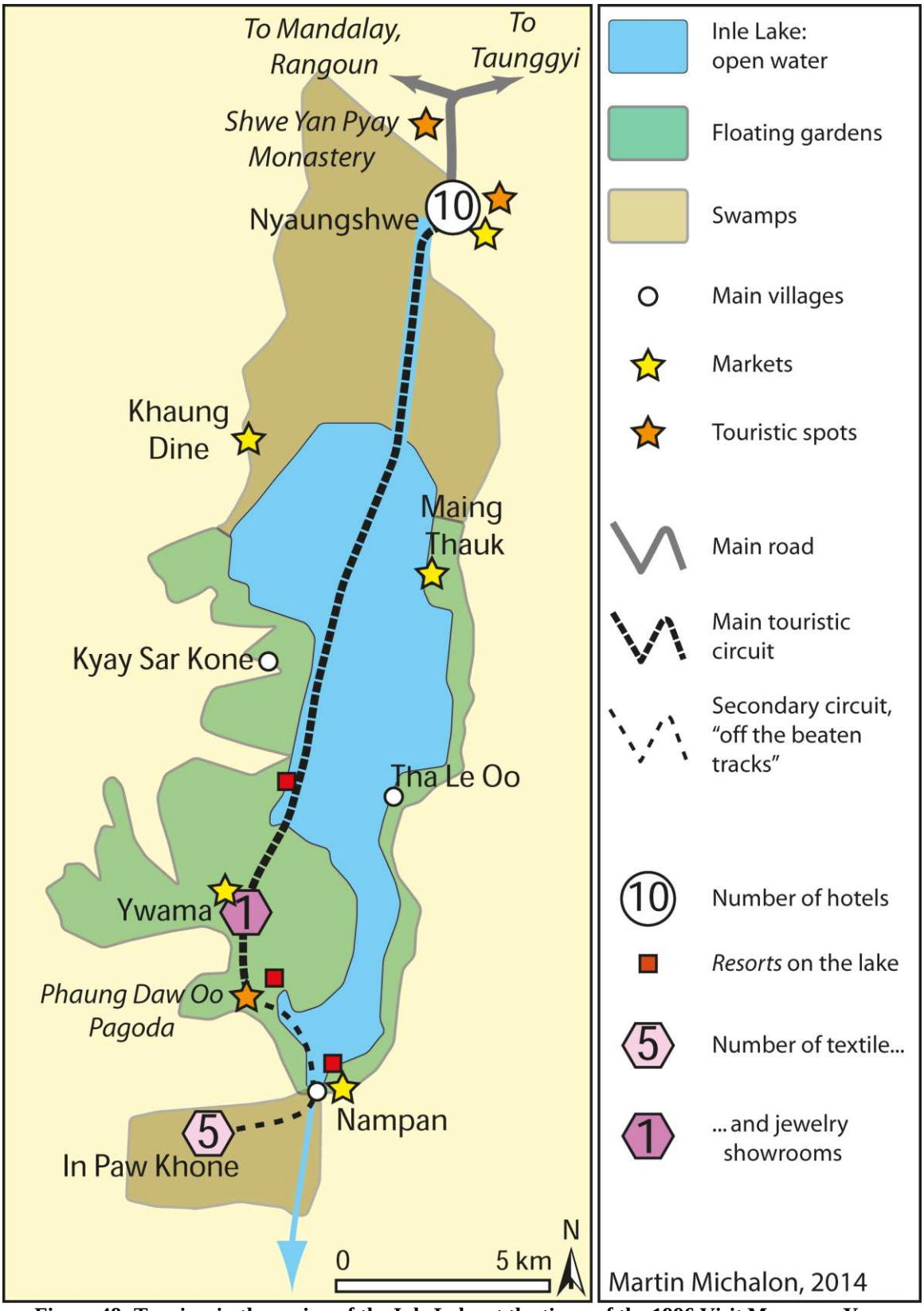


Figure 48: Tourism in the region of the Inle Lake at the times of the 1996 Visit Myanmar Year

4) *Times of maturity… and* new explorations?

The 1996 Visit Myanmar Year was therefore a ground-setting event for tourism in the region of the Inle Lake, and this trend extended and expanded in the years after, in spite of political and natural hazards. The thorough analysis of tourism since the 1990s highlights a well-known shift in tourism geography: "pioneer tourism" progressively gives way to "mass tourism", which codes and practices are quite different. However, while tourism extends, gets more visible, becomes a characteristic of the territory, and even trivializes it, some new touristic places are opened for the few tourists seeking to venture off the beaten tracks. All those trends deeply transform the region of the Inle Lake.

a) The institutionalization of the « classical boat trip»

The first trend has been the massification of the first touristic practices: boat trips have become inescapable, and virtually all tourists are likely to do it. As a consequence, the number of boats has boomed: 25 years ago, only a twenty-odd people used to rent boats for tourists, knowing that each of them had only one ship. Nowadays, no less than 50 boats owners operate between 3 and 12 boats each on the lake (U Yee, oral information). The Hupin Hotel employees have even pooled their tips to own more than 50 boats. Besides those genuine fleets, dozens of smaller owners rent their only boat, and sometimes personally drive them. As a result, a great amount of tourist boats shuttle on the water body: in just one day, we counted no less than 550 tourist boats in each direction of the channel between Nyaungshwe and the lake.

Simultaneously, an invariable circuit on the lake has emerged and consolidated. This itinerary is well-known by all the pilots, and is sold for a fixed price: 15 000 K (11,5 €) per boat for the day[89]. After leaving Nyaungshwe, visitors are first dropped at the market of the day. It is to be noticed that the latter is systematically depicted as a "floating market", whereas only Ywama market (partially) takes place on the water. However, this image is carefully nurtured, so as to preserve the alterity and the exotic feel of the region. Tourists are then ferried to the Nga Hpe Kyaung Monastery, North of Ywama, dubbed "the jumping cats monastery", where monks have cats jump through hoops for a tip, before heading to the Phaung Daw Oo Pagoda. After a meal in one of the numerous stilt restaurants, they visit one of the In Paw Khone textile workshops and Ywama jewelry showrooms (cf. infra).

This spatially well-delineated circuit is organized according to precise time schedules: tourism players' lives, but also life in Nyaungshwe, in restaurants, and in handicraft shops is tuned into tourism rhythm. Observation of the boat traffic on the channel allowed us to spot the key moments of an average day, which can be different depending on the category of customers.

The first stage of the day takes place between 5.30 a.m. and 7.30 a.m.: many empty boats[90] converge from the whole lake to the two Nyaungshwe jetties to collect their passengers

[89] However, we do not know whether this fee is the result of a dialogue between the boat owners. In high season, all the boats are rent every day (U Yee, oral information): therefore, concurrence is limited and boat owners don't have to give discounts.

[90] Though they are all exactly the same kind of ships, boats for tourists can be easily distinguished from boats for locals or for cargo: they are fitted with three to five wooden folding seats which can be spotted without difficulty.

(Figure 49). Almost simultaneously, from 6.30 a.m. to 8 a.m., other boats come from the lake, but with passengers, of which the great majority travel with tour-operators (Figure 50-B). Those tourists, who stay in lake resorts head to Nyaungshwe, either to catch an early domestic flight from Heho airport[91], or for a day-trip to Shwe Yan Pyay Monastery, Pindaya Caves or Red Mountain Vineyard.

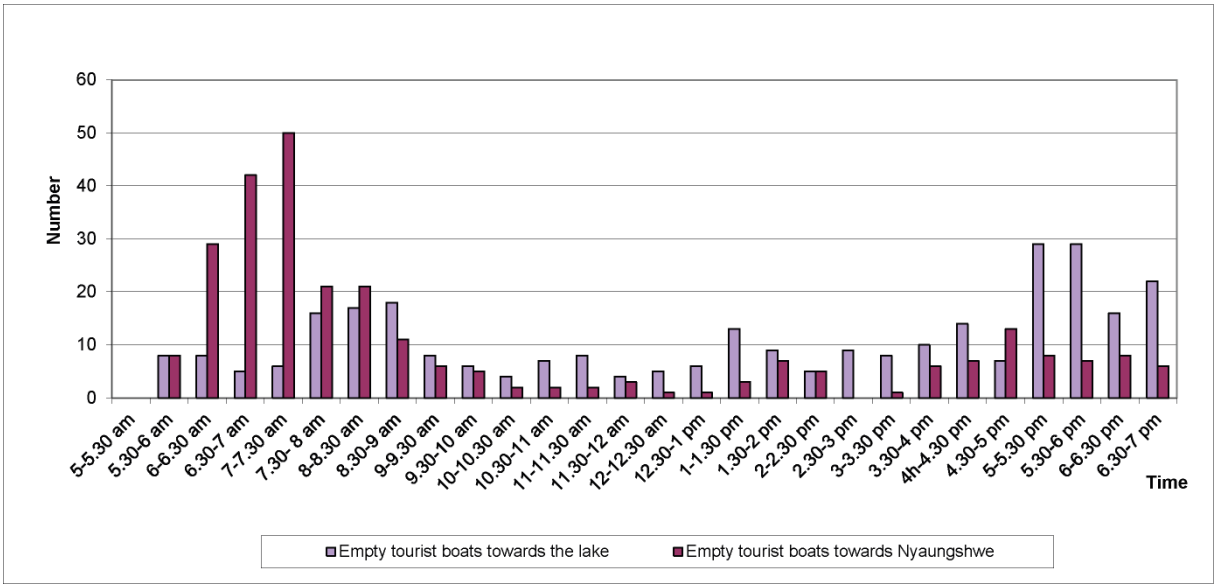


Figure 49: Flows of empty tourist boats to/from Nyaungshwe, 2014, March 17th

The second highlight of the day, between 7.30 a.m. to 9 a.m. corresponds to massive departures from Nyaungshwe to the lake, with sometimes 25 boats per half-hour, carrying up to 75 people (Figure 50-A). The great majority of those passengers are FITs, who autonomously rent a boat for the day. Another sub-stage can be noticed between 10 a.m. and 11.30 a.m.: boats heading to the lake are rather full of groups (Figure 50-A). Besides the mere group inertia that so many tourists deplore, reasons for such a late start may be the choice of a further accommodation (in Taunggyi, for a few Asian groups[92]), or an arrival in Nyaungshwe by bus on that very morning, coming from Bagan, Mandalay or Yangon.

The third benchmark takes place in the whole afternoon, until sunset, though we may notice a peak between 4.30 p.m. and 5 p.m.: all the visitors sail back to Nyaungshwe. Groups, who left later than FITs, also come back a little bit later (Figure 50-B). Those North-bound boats come across other ones which ferry tourists to the South, at a late time (Figure 50-A). Those people, mainly groups, probably come back from their day-trip on the land, or head to their hotels after landing at Heho in the morning.

Not surprisingly, the fourth and last moment of the day is when dozens of empty boats head back to the lake when empty, with frequencies up to one boat per minute between 5 p.m. and 6 p.m. (Figure 49).

[91] Most flights from/to Heho are in the morning, for Heho is usually just a stage in a long itinerary: planes usually take off from Yangon, fly to Bagan, Heho, then Mandalay, before heading back to Yangon. Some of them even serve Tachileik and Kyaingtong.
[92] Haynes, written information.

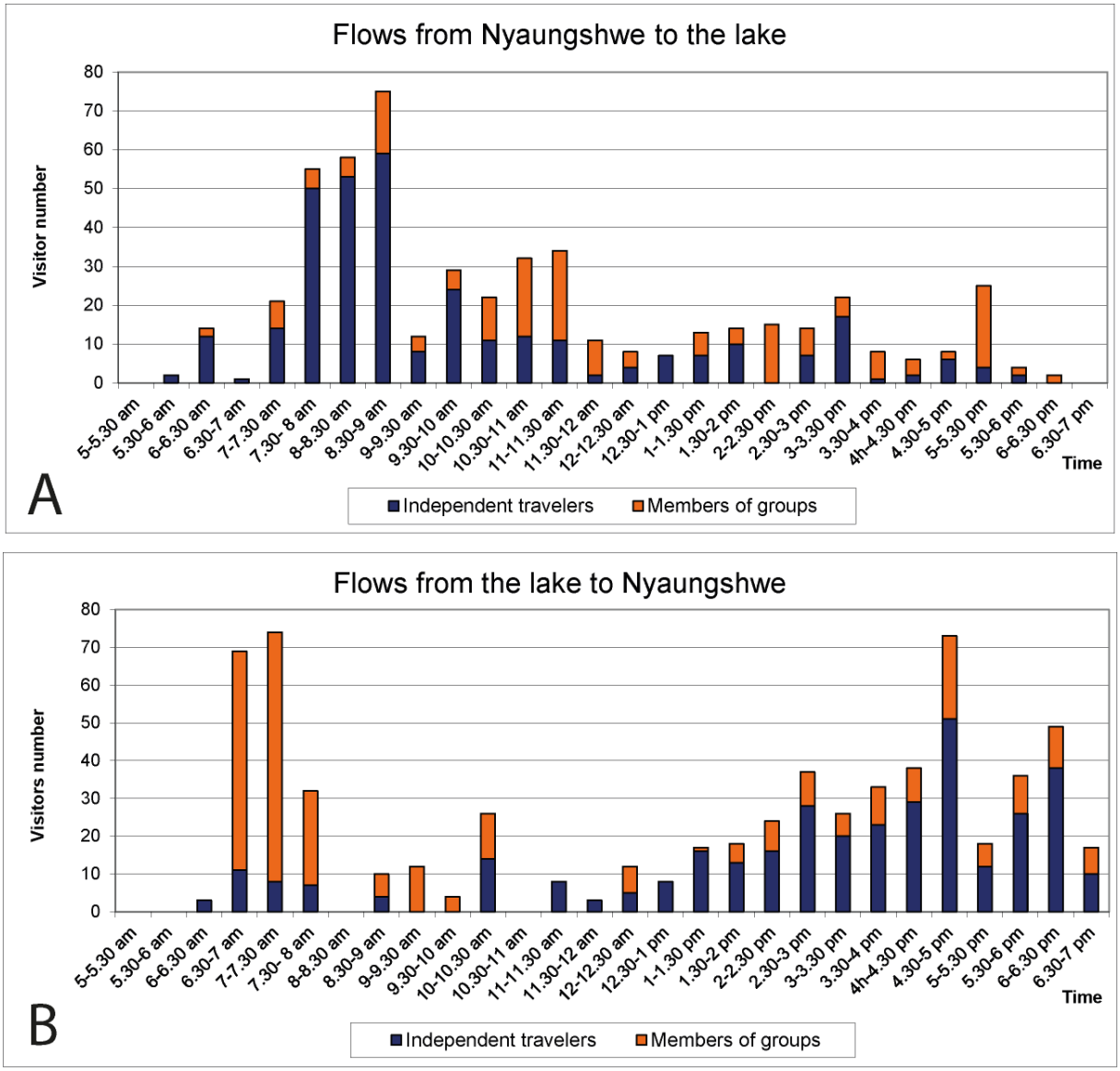


Figure 50: Number of foreign tourists to/from Nyaungshwe, 2014, March 17th

As we can see, modalities and temporalities vary according to the visitors' profiles, whether they are independent or travel in groups. Those different rhythms can also be spotted if we focus on domestic tourists (Figure 51). Indeed, their departures are more homogeneously distributed in time, with just a peak between 9.30 a.m. and 10 a.m., i.e. just between foreign FITs and foreign groups (Figure 51-A). Early returns are to be noticed (between 11.30 a.m. and 12 a.m.), as well as late departures, which may indicate that they spend little time on the lake. We may assume that the main goal of their trips is the Phaung Daw Oo Pagoda, 45 minute-boat each way from Nyaungshwe: their journey is therefore quite short. However, the domestic tourists in groups seem to stay longer than Myanmar independent families. They may visit more sites or spend more time in souvenirs shops: their touristic practices are therefore closer to foreigners'.

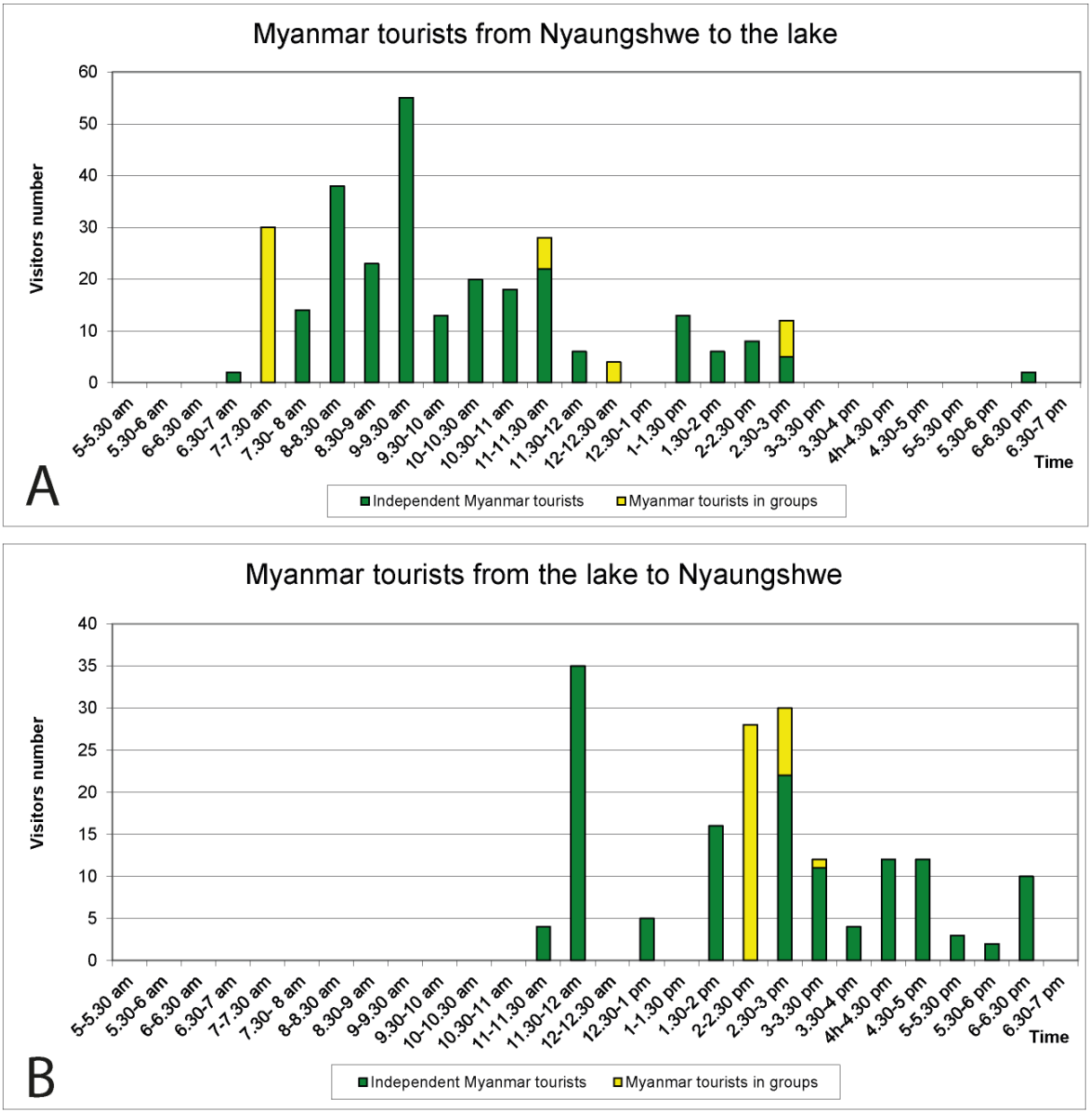


Figure 51: Flows of domestic tourists to/from Nyaungshwe, 2014, March 17th

As a conclusion, boat tours account for massive flows on the lake, and especially on the channel between Nyaungshwe to the lake. In just one day, this traffic was no less than 545 boats (empty and full) from North to South, and 566 from South to North, which carry around 1163 foreign and 465 domestic tourists[93]. On their day-trips, visitors mostly ply the same route, which generates several bottlenecks on the lake and on the shores. Nowadays, markets are crowded (Figure 52) and local tour agencies recommend to leave very early to avoid the peak time (Thu Thu Aung, oral information). Likewise, canals through Ywama and around Phaung Daw Oo Pagoda are now crisscrossed by lines of motor boats, which must have a clear environmental impact (Cf. infra).

[93] Besides those 1111 purely touristic boats, it is important to add 404 boats ferrying approximately 3600 locals and 258 cargo boats. Therefore, we could count no less than 1773 boats and 5200 people on that channel in one day: this waterway is thus a major transportation route. Such figures deeply question the environmental impacts of the traffic.

Figure 52: Morning rush at Nampan market.
All the boats on this picture are tourist ships.

Our observations and interviews emphasized a clear massification, systematization and even a trivialization of the existing practices. Some tourists, and especially independent travelers, do not find anymore the high alterity differential that used to be the main local attraction. As a result, they shift from the "classical tour" to the "off the beaten tracks circuits", often sold by local tourism agencies[94], which are eager to diversify their offers. As more tourists flock to Nyaungshwe, we may also notice a dilatation of potential touristic sites, though the historical core of tourism on the lake remains extremely popular.

b) The spatial dilatation of tourism

Nowadays, new boat trips and new destinations are sold to tourists (Figure 53). West of the lake, many tourists now sail to the Indein village, at the foot of a hill crowned by more than a thousand stupas[95]. This detour, which used to be off the beaten tracks, is now often sold as an extension of the "classical tour" and on market day, the boat jetty is crowded with visitors. One may even assume that in a near future, Indein will no longer be an alternative destination: it will rather be part of the "classical circuit". However, we lack data to back up this hypothesis.

Further down South, we may notice that, though most boats end their trips in In Paw Khone, some extend their circuits to Thaung Tho stupas (especially when a market takes place there) and to Kyauk Taing potters' village, where each workshop now exhibits a few pieces for sale. Lastly, a small proportion of the visitors heads even further South, to the Sankar

[94] What we call « tourism agencies » are small family businesses, which run little offices in Nyaungshwe and sell bus and plane tickets, boat trips, trekking tours, etc… They are incomparably smaller than well-established tour-operators, and unlike the latter, they mostly sell occasional services to independent travelers.
[95] Buddhist funerary monuments, built to house the ashes of a religious dignitary. They are five to six-meter high, conical-shaped and, in Myanmar, often gilded.

Lake, four hour boat from Nyaungshwe. Ten years ago, only one to two boats made it to this "Far South" every day; nowadays, more than a dozen of them reach this reservoir lake. For two years now, very rare boats have even headed further downstream, to Mobye Lake and Pekon, the gateway of Kayah state and its famed "long-necked women" (U Yee, oral information). This state was recently opened to tourism: it will probably boost tourism at the South of the Inle Lake, which seems to be the area with the main growth potential.

Lastly, those who cannot afford the additional cost to venture further South[96] (and especially independent travelers) take advantage from less busy part of the Inle Lake itself. Some focus on the less-crowded Eastern shore of the water body, crossing the more peaceful Maing Thauk Inn and Tha Le Oo villages. Others make an increasingly popular loop: they ride bicycles to the South-West from Nyaungshwe to Khaung Dine, where they rent a boat to cross the lake and reach Maing Thauk. From there, they ride back North to Nyaungshwe.
However, boat trips are not the only touristic activity anymore: many visitors get up high and tackle Pa-O hills trekking paths. The most popular route links Kalaw (on the road to/from Mandalay) and Indein, on the western shore (figure 53). Instead of reaching Nyaungshwe by bus, some tourists choose to stop at Kalaw and make it to the lake by a two or three-day walk. This itinerary, opened to tourists in 2006 (Sai Win, oral information), is nowadays quite busy: the 2011 Lonely Planet guidebook reports that monasteries, that had long been the only accommodation en route, were often full at night (Allen dir., 2011). Since then, the trend has amplified[97] and, according to trekkers, many homestays[98] are under construction in the hills.

The other trekking route is on the opposite side of the lake: all the travel agencies in Nyaungshwe sell one to three-day treks, with homestay. In high season, those packages meet quite a success: a Taungyo woman from Khone Sone reported she prepares lunch for up to three trekking groups per day.

Lastly, further down South, a new route is now sold to tourists, from Nampan village to the infamous Kakku site. This place, one hour drive South of Taunggyi, consists of a dramatic group of 2500 stupas. After decades, if not centuries of decay, it was rediscovered in the early 1990s, and opened to tourism in 2000 (Nang Ei Ei Mon, oral information). It is located in the Pa-O Self-Administered Zone[99] (SAZ); as a consequence, visitors have to pay a five-dollar entrance fee to the Pa-O National Organization and to hire a local guide. According to one of them, around two groups a day used to visit the site in the early 2000s, for five nowadays (Nang Ei Ei Mon, oral information). One may be surprised by such a slow growth of flows towards this place, though it really matches the tourists' expectations in terms of picturesque and photogenic sites. The reasons may be the following: for tour-operators, a trip to Kakku requires a whole day that may hamper their tight schedules[100]. As a consequence, most of them are rather content with the thousand stupas in Indein, or with those which crown Taung Tho hill, which can be easily integrated in a more global tour on the lake (Deeg, oral information). For FITs, one may assume that the cost of this day trip

[96] Indeed, a day-trip to the Sankar Lake costs 55 dollars, i.e. three times and a half as expensive as the « classical tour », because such journey requires six gallons of diesel, i.e. 27 liters!

[97] It would really interesting to quantify the success of trekking, thanks to Kalaw guides hired by trekkers, or through the booths which await for them in Indein, to have them pay the 10 dollar entrance fee.

[98] A homestay is a family-based accommodation structure, which offers only a handful of basic rooms in the family house.

[99] Since 2008, Pa-O, like other ethnic minorities (such as Danu) have been given a relative autonomy and some power on a Self-Administered Zone (SAZ). Pa-O SAZ spreads in two North-South strips of territory on both sides of the lake (IID, 2012c)

[100] According to the resort managers we interviewed, groups usually spend two or three nights on the lake, before resuming their tours.

(approximately 70 dollars for the taxi for the day, plus the entrance and guide fees) may be a deterrent. However, this destination may be given a boost by the trekking packages sold by the Golden Island Cottage. The prospect of reaching this unique site through very little-visited hills may be interesting for many travelers, and especially independent ones and group packages sold to more adventurous people. Pa-O authorities are already getting ready for an increase of the tourism flows and are slating the construction of a hotel in Kakku (Khun Maung Ngwe, oral information). Therefore, new territories are conquered by tourism sector players, which integrate them in their "ecumenes" and sell them to alterity-looking tourists.

As we can guess from a few previous elements, all visitors don't have the same expectations, and the same practices.

Most of the time, groups are little keen on venturing off the beaten tracks, and are content with reaching Indein stupas, which are, as we said, about to get integrated in the main circuit. However, some tour-operators precisely sell more adventurous tours: 30% of Diethelm customers are reportedly eager to discover more original destinations (Sai Win, oral information). Besides this kind of exception, we may however conclude that groups are still really satisfied with the authenticity and the alterity found on the main circuit, and do not feel the need to venture off this route.

Actually, the most demanding visitors in terms of new experiences are FITs, and especially backpackers, who have specific practices and ways of travelling: accommodation, temporalities and representations. That is why they account for the great majority of trekkers and bicycle riders that one may meet out of town. In Nyaungswhe travel agencies, it is frequent to hear FITs explicitly asking for advice to go off the main routes and escape the crowds. Thus, this kind of tourist is a kind of pioneer, who "invents" a path, a track, a site which will get more popular, before eventually become a mass destination.

As for the domestic tourists, they still stick to the main classical circuit, so as to visit Phaung Daw Oo and Alodaw Pauk Pagodas (Daw Nyo Nyo, oral information). They often conclude those meritorious trips with a stop at Ywama jewelry shops to buy silver alms bowls: U San Shwe sells 10% of his products to pilgrims, and at Aung Chan Thar shop, this proportion peaks at 35% during Phaung Daw Oo festival. As a consequence, we may assume that domestic tourists stick to the main circuit for religious reasons, but we may also make a hypothesis: while some foreigners make efforts to distinguish themselves from other tourists through new practices and unusual routes, domestic tourists rather have the opposite strategy: they are eager to indulge in "mainstream" tourism behaviors to show that they have the same practices as Westerners.

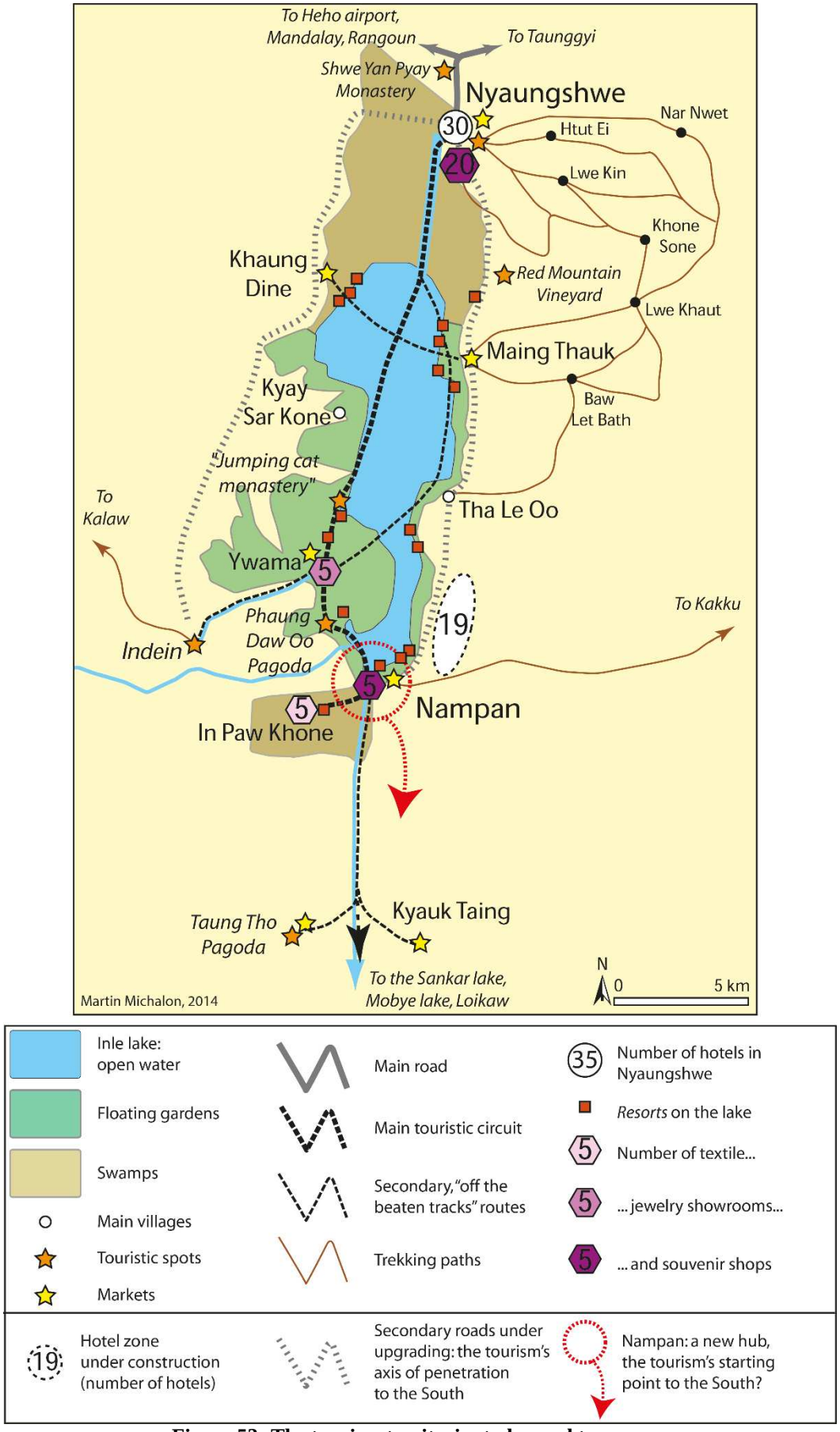


Figure 53: The tourism territories today and tomorrow

Though side roads do exist, it is however interesting to notice that they are gaining popularity quite slowly, at the exception of the Kalaw-Indein trek. For boat trips to the South, the budget factor and the total lack of accommodation may be rational reasons. However, we may make another hypothesis, which is deeper, more structural, and closely linked to the visitors' representations: Myanmar is reportedly still exotic enough, and going off the beaten tracks is not necessary yet. The country still has the reputation to be original and authentic by itself, a country where adventure starts as soon as the plane lands, unlike neighboring Thailand, considered as too touristic, and where visitors must struggle to find pristine and picturesque places. Such representations are nurtured by iconography and travel stories and blogs. It must be acknowledged that those representations are not only fantasy: tourism traffic in the region of the Inle Lake has nothing to do with the crowds flocking to Angkor Wat in Cambodia or Halong Bay in Vietnam; stilt houses on the lake are still very traditional-looking and no hawker cruises in Nyaungshwe. For many visitors, the alterity differential they find on the main circuit does match with their expectations: that is why they don't feel the need to leave it.

As for trekking paths, their popularity is increasing quite slowly because of the lack of time, as we have already said. We should also notice that, for a long part of the year, tracks wind through dry fields and freshly-burnt patches of land, which aesthetically do not correspond to the Western representations of Southeast Asia. We could make that assessment personally on the paths Northeast of Nyaungshwe. However, it seems necessary to make another and more structural hypothesis: the only popular trekking route is the one which goes from Kalaw to Indein, for the very reason that it leads to the lake. By the way, almost no trekker hits this route in the opposite direction. Therefore, the role of the lake as the central area, the attraction pole of the region is crucial: it polarizes the whole region. Tourism stakeholders used the images of the lake, the fisherman and the floating gardens to have travelers' imaginations converge towards the water body. That is why leaving the lake behind and heading to the hills means turning one's back to what makes the identity of the area. The crucial role of the lake and of the representations in tourism can also be read through the locations of the hotels, which all refer to the lake.

c) Stilt resorts: local anchorage, or deterritorialized insularity?

The very symbol of that dynamic is the series of resorts built on its water. The early days of that new niche seem to have been quite slow: in 1996, there were only three resorts on the lake, and nine in 2007 (Aye Myint, 2007). Since then, this sector has boomed, and we can count no less than 22 hotels now (Chagnon, oral information). Meanwhile, their average size has also soared: the eight hotels we visited rent 57 bungalows in average, but interestingly enough, the Paramount Resort, the Shwe Intha and the GIC 1, built in 1996, boast much fewer: respectively 28, 38 and 40 bungalows. Conversely, the most recent ones have much more than this average: 65 for the Aureum, opened two years ago, and 120 for the Pristine Lotus, inaugurated in 2008. All those stilt hotels clearly target well-off customers: the average rate for one night in a double room is 180 to 230 dollars, depending on the luxury of the bungalow and the season. The price can even reach 380 dollars for a night at the Aureum.

The architectural style of those resorts is very interesting: some chose resolutely Burmese designs for common buildings, such as the reception (Figure 54) as well as for bungalows (Figure 55).

Figure 54: Reception building at the Ann heritage Lodge, à Nga Hpe Kyaung.

Figure 55: Bungalows at the Inle Resort, Maing Thauk

It is to be noticed that those hotels are generally considered as examples, references by customers, but by other hotel managers as well: out of the seven who told us their minds on that topic, four consider the Inle Princess Resort as an aesthetic model that they would like to imitate. The Inle resort is also well-considered. Interestingly enough, those resorts are not more expensive than their competitors.

On the other hand, some other hotels focus on a still-luxurious architecture, but with a significantly more generic touch. Quite often, the choice of luxury and Western standards goes hand in hand with a merely vaguely Asian aesthetics[101]. For instance, the Aureum rents bungalows, designed by a Yangon-based company, which architecture openly refers to Thailand and Japan rather than to Myanmar, let alone Shan State[102] (Figure 56). As far as inside fittings are concerned, they are very generic, and may be found in any luxurious hotel in Asia. As for the Pristine Lotus, it rents boat-shaped bungalows which designs has nothing to do with Asia, and boasts a massive reception building, which architecture reminds us more of British Raj or Bavaria farms than Shan palaces (Figure 57).

[101] For a few resorts, this choice may also be linked to budget restraints: for a lack of ambitious investment, bungalows are just huts which designs may be found anywhere else in Asia.
[102] Our interlocutor in this resort declined to be named.

Figure 56: Bungalows at the Aureum Resort: more Japanese- than Burmese-styled?

Figure 57: Reception building at the Pristine Lotus, Khaung Dine.

Interestingly enough, the resorts that made such architectural bets are often the most recent ones: the Pristine Lotus opened in 2008, the Aureum in 2011. South of the lake, two other hotels have just opened: they are built on the shore, but boast boat jetties. One of them is the Amata hotel, opened in 2013; it looks like a massive concrete block, which Myanmar and even Asian visual identity is all but obvious. A few steps away, Inle Garden Resort rents concrete and barely Asian-styled bungalows, designed by a British architect (Tin Mar Myint, oral information). The choice of architectures and designers clearly shows the investors' will to show their belonging to the world of globalized and deterritorialized luxury, rather than their anchorage in the Intha, Shan, or even Myanmar cultural contexts. Everything is made for the well-off traveler, used to luxurious Asian hotels, to feel at home: he is provided a familiar and generic environment, of which he knows the codes and the norms. As a consequence, those recent hotels break away from their local or even national framework, to get integrated in the generic world of Asian luxury: the lake is nothing but a mere substrate for tourism practices that are the same as in Thailand, Philippines or Malaysia.

This strategy seems all the more paradoxical as all those structures, wide opened on the lake, abundantly play on the codes and the clichés that define it. Indeed, the great majority of the hotels we visited ostensibly boast a saung, the historical and traditional Intha fishing net, near the reception. In a few cases, the boat driver stops the engine 200 meters far from the hotels, and two traditionally-clad leg-rowers hop aboard to propel the boat silently to the jetty. In others, the staff welcomes visitors by playing traditional Shan music

However, such staging of local identity often goes along with a neat cutting off between residents and the local environment. Indeed, exchanges with the outside world are minimized: though resorts are often built on the rim of the lake, and accessible by road, boats are systematically favored, in particular to enhance the insularity feeling and to match the expectations of the customers who deliberately chose the entrenchment of a stilt hotel. Local people are not allowed in the precincts, and fishermen cannot cross this perimeter, which is made clearly visible either by stripes of floating water hyacinths staked by bamboo poles, or by continuous and massive wooden fences. Some fishermen complain about such restraints (Ko Htwe, oral information). Actually, the ubiquitous the leg-rowing fisherman, who stands on all the hotels' flyers, brochures and websites is nothing but an indistinct silhouette in the distance… unless the resort organizes a tourist-aimed event, such as the night floating markets that sometimes takes place at the Aureum jetty. We got the confirmation that the fisherman's role is merely abstract and folkloric when we noticed that those resorts' restaurants don't serve fish from the lake: out of the eight hotels we visited, five openly admitted that they import fish… from Yangon. Indeed, a few customers reportedly complained about stomachache after eating fish from the lake. As a consequence, the break off with the lake and its dwellers can even be noticed in food.

The tourist entrenchment does not stop at the hotel's gates: it reaches its core. As Jean-Christophe Gay reported for Maldives resorts (Gay, 2000), customers' and staff's spheres are clearly partitioned, often by a strong physical discontinuity (Figure 58). On the lake, the staff stays away from the bungalows, in a cluster of buildings that is accessible by a narrow bridge. In the resorts that overlap land and water, employees often live on the shore.

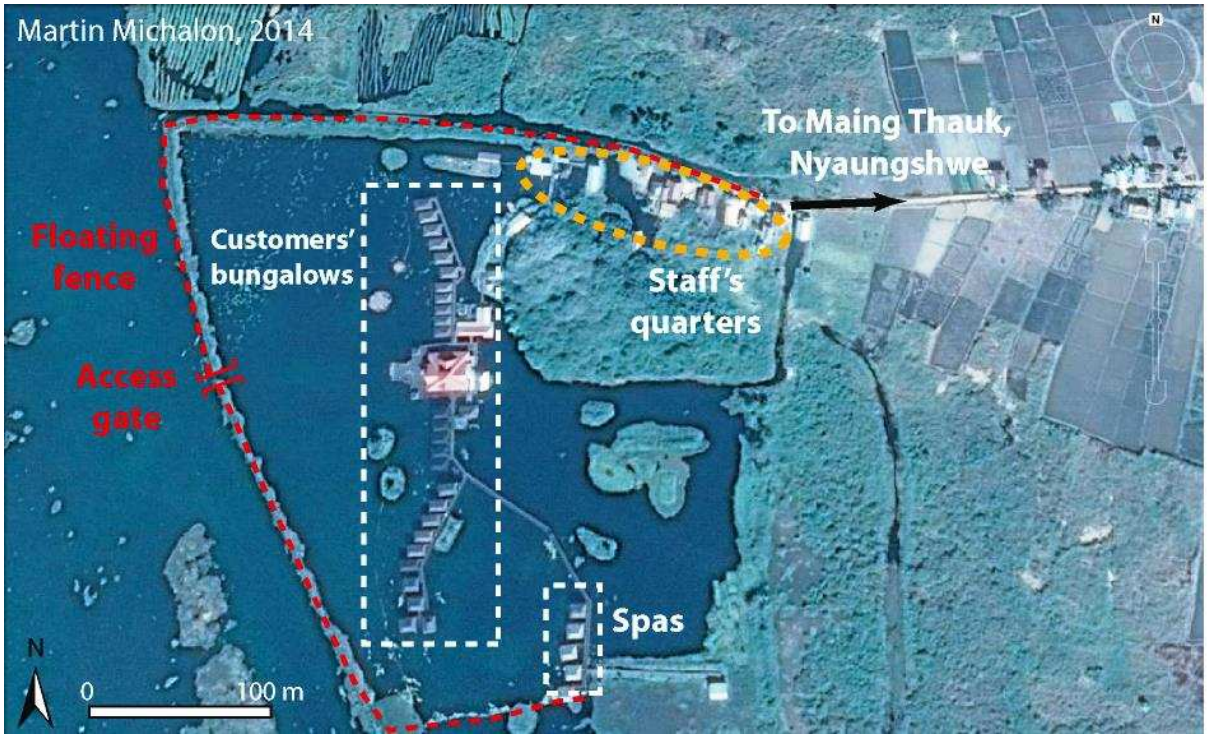


Figure 58: A resort, South of Tha Le Oo: a case of « touristic entrenchment" (Gay, 2000)?
Source: Google Earth

Those strategies, those architectural choices and this relationship to the local territory is mainly due to the tourists' expectations', but they are also linked to the profiles of the resorts' owners. While the first owners were often locals and had a firm local anchorage, they now come from the whole country: the Inle Resort belongs to a Burmese from Taunggyi, who made his fortune in rice-trade; The Sky Lake belongs to a Chinese Burmese from Pyin Oo Lwin; The Inle Garden Resort was built by a Yangon family. In those three cases, the resort on the lake is just one hotel among other assets, such as hotels in Bagan, Mandalay or Yangon. Other resorts even belong to Burmese hotel chains, such as the Aureum or the Myanmar Treasure, which are part of the groups of the same names, or the Paramount resort (part of the Amazing Hotels group). In such cases, we may assume that the main goal is to show that the resort on the lake is part of those groups, and boast their visual identities and standards of quality rather than emphasizing their local anchorages.

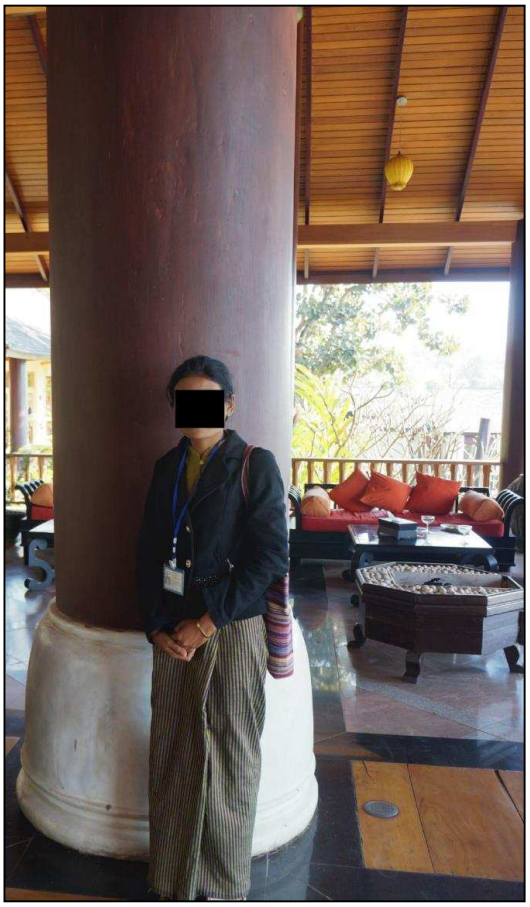
By the way, the investors' policies are implemented by managers who are almost systematically foreign to the region: that trend is one more illustration of the growing inclusion of the lake in the globalization. Out of the twenty-odd stilt hotels on the lake, five have a European management: the Inle Resort and the Lake View are run by French people, the Amata and the Nyaungshwe Viewpoint by Swiss, and the Pristine Lotus by a German. Those people's competences are highly valued and sought for by hotels' owners, in the context of a nationwide lack of skilled workers (cf. infra). While Burmese managers depict a cordial and collaborative atmosphere between them and those foreigners (Bo Bo Thy, oral information), some Europeans confess that they have "more and better" relationships between them, and that cooperating with locals is not always smooth.

Besides those individual stakeholders, one may notice the importance of tour-operators: in average, each resort has links with approximately 170 companies. While a few hotels have a large range of partners (The Myanmar Treasure has no less than 450 ones), some others rather bet on a handful of agencies, which provide a significant amount of customers: the Golden Island Cottage 1 relies on just a dozen tour-operators. It is to be

noticed that very few of them are foreign-based[103], for the business environment, and the current laws still prevent foreign agencies from treating directly with hotels: it is then necessary to resort to local agencies as go-betweens.

As a conclusion, the boom of the top-end hospitality sector on the Inle Lake seems to symbolize the opening of Myanmar and its connection in the flows and networks of globalization. The only significant legacy of the long isolation of the countries: all those resorts belong to Myanmar groups, for international sanctions prevented (official) foreign investments, though this is also changing quickly (cf. infra). The topic of the sanctions and the authoritarian regime prompts the researcher to have a closer look at the resorts' owners. Indeed, the world of top-end tourism is often the cronies' one[104]. It is common knowledge that the Aureum hotels belong to the Burmese businessman Tay Za, the ex-dictator Than Shwe's son-in-law, and considered by the US Department of Treasure as a notorious weapon trafficker (Ko Ko Thett, 2012), while NGOs also accuse him of drugs and teak trafficking. All the Burmese cronies are not as famous, and it is not easy to know how many hotels on the Inle Lake belong to some of them. This is all the more complicated that the mere definition of a crony is ambiguous: is any businessman who took part in governmental projects a crony? Generally speaking, is it really possible to be rich enough to invest in a resort without having, sooner or later, some kinds of links with the ex-junta?

Nonetheless, corruption and collusion with the government are more visible in some cases than in others: some resorts boast massive teak columns, more than one-meter in diameter (Figure 59). However, this precious wood now belongs to the state and its logging is now very severely restrained… "except if you know the right people", we were confessed by an interlocutor. Likewise, one of the resorts opened in the spring 2014 a series of 70 stilt bungalows. Such a move goes against the ban on any new building on the lake (voted in 2011). However, we were made understand that rules are not the same for all.



Nevertheless, it was interesting to notice that the sulphurous reputations of those hotels do not tarnish their successes: the Aureum resort, which is known worldwide as a symbol of the crony capitalism, is totally full in high season, and 70% full in the rest of the year, which is one of the best rates on the lake. One may assume that their customers' are not always sensitive to the crony capitalism issue; above all, they probably do not have the choice: most of them travel by group, and they don't really know the details of their packages.

Figure 59: Solid teak column in a crony's resort: illustration of two-tier laws?

[103] However, numerous foreign companies have office in Yangon.
[104] Considering that such issue is quite sensitive, we often chose to be discreet on the hotels and people's names.

Therefore, hotels are quite representative of the tourism mutations on the lake and in Myanmar: landscape transformations, economic changes, involvement of new stakeholders, shift in the relationship to the territory and the society. The new face of the sector breaks with the 1990s model: while the pioneer tourism aimed at the visitor's immersion in the realities of a local environment loaded with alterity, current forms of tourism are based on representations, narratives, and on a more or less fantasized environment that the industry players have built through the distancing from the territory and is inhabitants. This shift, extremely visible in resorts, is the symptom of a broader phenomenon that involves the whole region.

d) The tourism industry, the driving force of territorial mutations at all scales.

First of all, we can show that at a national scale, the boom of tourism on the Inle Lake reshapes the role of the region. It is quite striking to leave the Yangon-Mandalay highway, and to hit the road to Taunggyi: this artery is punctuated by pavement-widening building sites and plied by a heavy traffic, in particular by numerous coaches from Yangon, Mandalay or Bagan. Such flows deeply transforms the landscape: the road is lined with petrol stations, restaurants or accommodation structures, aimed at tourists as well as truck drivers, tradesmen and temporary workers flocking to Nyaungshwe, which has become a major economic and employment hub. For instance, the dynamism of the building sector has triggered intense migrations: 2000 workers from the whole country are reportedly taking part in hotels, restaurants and roads construction (Sai Win, oral information). The Inle Lake, which used to be a mere dot on a map, a remote periphery, has now become a new national centrality.

At a more local scale, one may observe the metamorphosis of a few stilt villages. While most of the ostensible wealth and new practices used to be shown by riche ye-chan owners, tourism has now become a major driving force of landscape mutations. Indeed, in the busiest villages, such as Nampan or Ywama, channels are lined with restaurants vast enough to host several groups at the same time. Their architectures often imitates traditional ones, but bamboo and wood now go together with corrugated steel and plastic.

Many Intha also leverage the long handicraft tradition in the current boom of tourism. The most significant activities are Ywama jewelry and In Paw Khone weaving. In those two villages, handicraft had existed for decades, if not centuries before tourism, but used to be confined in a few local workshops which were not tourist-aimed. Our interlocutors, two jewelers and two textile producers agreed to pin the year 1996 and the Visit Myanmar Year as a milestone, a kind of year 0 of tourism for them, after which tourists have become a fully-fledged target.

In the jewelry sector, a person opened a "show-room" on that year: a place that showcases the artists at work and sells finished products. The success was immediate, and since then, four more show-rooms have opened in Ywama. They now welcome many tourists: Shwe War Win is visited by 40 boats a day in the high season, 20 in low season, half of which actually purchase products. As for Aung Chaung Thar's workshop, they count no less than 60 boats in high season. While some workshops still send half of their productions to Yangon,

and thus do not solely rely on tourism[105] (U Myint Zaw, oral information), others heavily depend on visitors, who account for 90% of Aung Chang Thar's sales.

The textile sector has also encountered a strong success: the workshops, which had sometimes existed for more than a century, have widely opened to visitors by offering guided tours and handicraft exhibitions. At Shwe Pyay Shun's, the share of products sold to tourists has outnumbered the proportion sold to locals: the 50% threshold was reached in 2001; nowadays, it is as high as 70%. At Myat Pwint Chel's, the domination of foreigners is even more significant: 80% of the production is sold to the 30 to 50 daily boats. Such influx is due to the excellent reputation of local handicraft, and especially the one made from lotus sap, which manufacturing is thoroughly showed and explained to the visitors, and which is an extraordinary drawing card. It is to be noticed that boat drivers significantly contribute to such a success, for they systematically bring their passengers to the shops, where they get a commission on all the purchase.

Lastly, our interlocutors emphasize different behaviors depending on the customers' profiles: at jewelers, domestic tourists rather buy massive silver alms bowls (cf. supra), while Westerners buy small-sized jewelry. As for Asian tourists, they are famous for the scarcity of their purchase and their sobriety. In textile show-rooms, we were told that foreigners are fond of silk and lotus scarves that locals cannot buy: thus, the latter have to be content with cotton products.

As a conclusion, we may say that those Ywama and In Paw Khone traders managed to insert their businesses in tourism and financial flows by playing on local handicraft's specificities. They are now rich entrepreneurs, who are keen on showing their successes: while traditional houses show very simple volumes and natural-colored wooden walls, those people rather opt for colorful houses, with balconies, large windows, potted plants and a satellite dish on the roof. To a certain extent, tourism affects some parts of the territory, especially in a few villages.

The show-room model, which showcases in a same place the manufacturing and the sale of handicraft, has been emulated in the Nampan village, which also has a long handicraft tradition, but under a different form. Indeed, not only local shops show the cheroot making process, but they also sell many other products from the whole country. The pioneer in this field was Daw Khin Tint, who opened a cheroot workshop 15 years ago. In the early times, it was not tourist-aimed, but three years later, she started selling Tha-Le-Oo-made bamboo boxes, and two years later, she broadened her supply network and began to sell lacquer ware from Bagan. Nowadays, she is running a shop with a wide range of products, among which only a few carved-wood and textile items are locally-made, as well as the cheroots[106]. Those new activities did not prompt her to stop her cheroot-making activity: on the contrary, it is her shop's main attraction: all day long, four young girls wrap hundreds of cigars with accurate, fast and photogenic movements (Figure 60). This activity is a very good way to attract customers. Indeed, the latter come to Myanmar for cultural tourism, and the Inle Lake is a highlight of it: therefore, they are sometimes reluctant to have a "shopping-break" in their cultural tours. That is why such a commercial halt is described as a cultural one, even on tour-

[105] Those shippings to Yangon existed long before the tourism boom (Aung Chang Thar, oral information), and cannot be interpreted as a direct result of the touristic fame of the lake.

[106] It is now possible to buy one's souvenirs with credit cards, thanks to wireless payment terminals that use mobile phones networks. Such a connection to the worldwide bank network was nothing but a dream just one year ago.

operators websites: on their detailed programs, “visits of cigar workshops” are always announced, without mentioning the commercial side of such moments.

This strategy of maintaining a handicraft activity has paid off: for years, Daw Khin Tint had more than 50 boats a day. For five years now, she does not have the monopoly in Nampan anymore: nowadays, we can count no less than five shops of this kind in the village (Daw Khin Tint, oral information), which are visited by 10 to 20 boats a day. This shows an evidence of the tourism amplification, but also the impressive capacity of Intha to make use of tourism, to insert themselves in the flows, and to play on codes and representations.

Indeed, some innovations can testify to their adaptability. For four years, those Nampan businesswomen have imported lacquer boxes from Bagan, decorated with the now-ubiquitous pattern of leg-rowing fishermen (Daw San San Oo, oral information): this shows the local re-appropriation of outside product to match the customers’ expectations and representations. The shopkeepers also adapt local products to the tourists’ tastes: two years ago, Daw Khin Tint was the first to make and sell special cheroot for foreigners. Indeed, the latter found traditional cigars too bitter and acrid; then, she invented a new sweeter recipe with honey, tamarind, aniseed, brown sugar rice alcohol. Those “sweet cheroot” has met a tremendous success, it is a best seller in all the Nampan shops, and even well-off young locals buy them (Daw Khin Tint, oral information). Those products illustrate how well Intha succeed in innovating and harnessing the flows that cross their villages.

Figure 60: Myanmar women make cheroot before shelves laden with Bagan-made lacquer boxes. On the right, a tip box awaits the tourists’ donations

While workshops and showrooms have multiplied in Ywama, In Paw Khone and Nampan, Nyaungshwe, the tourism hub, has not been left behind. Indeed, tourists are sometimes reluctant to do shopping during their day-trip on the lake… but they are much less so when they come back to the jetty. There are approximately five main well-established shops in town, on top of the fifteen-odd souvenir stalls in the Aung Mingalar market. The latter has been through an intense development: the first shop opened in 1996, for the Visit Myanmar Year, and there were only four ones in 2004. Nowadays, approximately fifteen stalls showcase souvenirs in the alleys, out of which three just opened between February 2014 and February 2014 (May Aye Thein and Sonia Hombardoo, oral information). Such a strong growth does not mean, however, that business is flourishing: according to all the shopkeepers we met, many tourists amble in the market, but very few buy anything, and they rarely have more than four customers a day, even in high season. As a consequence, their benefits have nothing to do with Ywama or Nampan businesses’: Daw Thin Aye misses the year 2013, during which she could earn approximately 10 000 K a day (7,7 €), while young

Sonia Hombardoo values her monthly benefits to 30 000 to 50 000 K (23 to 38,5 €) in high season. In those conditions, the sale of souvenirs cannot be a sufficient earning, and it is always considered as a supplementary source of income, which tops the husband's or father's salaries.

The observation of the souvenirs for sale in the Mingalar market indicates the integration of those businesswomen in wider and wider supply chains. At the end of the 1990s, they only sold local items, before products from the whole country arrived on the stalls. Besides Ywama jewelry and local wood carvings, we can know find mother of pearl from Dawei (on the Southeast coast), teak statues from Mandalay, "precious stones" from Mogok[107] (but often cut in China). The widening of trade networks beyond the borders is clearly visible: young Imran sells Indian and Chinese coral, and all the shops sell fancy products from Tachileik (on the Thai border, which makes us think that they actually come from the neighboring country). This connection to new networks has been made possible thanks to Taunggyi handicraft brokers, who made use of their acquaintances in Yangon or Mandalay, where other wholesalers make a link with manufacturers in remote parts of the region, such as mother-of-pearl sellers in Dawei. According to one of our interlocutors, a broker from Dawei and another one from Tachileik reportedly settled down in Ywama three or four years ago, in the early days of mass tourism, so as make a more direct link between handicraft producers and Nyaungshwe shops (Daw Thin Aye, oral information).

Those fix and spatially concentrated shops, have their widespread, but less lucrative equivalents: the dozens of temporary stalls on market days. Indeed, the latter alternately takes place in Nyaungshwe, Khaung Dine, Maing Thauk, Ywama and Nampan (cf. supra), with secondary ones in Indein, Taung Tho or Kyauk Taing. On those occasions, numerous tourists come and amble between baskets full of fish and bundles of Cordia leaves from the Pa-O hills. Some women took advantage from those flows: on the outskirts of the Nampan market, we could count more than twenty rickety souvenir stalls, showcasing the same kind of items as Mingalar Market: jewelry, lacquer ware, "long-necked women" statues, "leg-rowing fishermen" images and prayers books reportedly from neighboring monasteries.

Figure 61: Souvenir stall at Nampan market.

[107] Mining town North of Mandalay, made famous in Western representations by the novel The valley of rubies, by Joseph Kessel.

Those initiatives, which are more and more numerous tell us a lot about the reception of tourism by local people. Indeed, relationship between visitors and local populations have long been considered from the perspective of "the impact" of foreigners on societies which were often idealized and somehow frozen in traditions (Picard, 2010). However, as we could assess, this uni-directional link underestimates the capacity of locals to initiate, stimulate tourism, to make profit of it, to re-appropriate and re-shape it[108].

Handicraft and commercial initiatives linked to tourism contribute to change the economic and even visual landscape of the lake, to a certain extent. However, the most dramatic changes can be seen in Nyaungshwe, the regional tourism hub: the position of the town, at the core of the tourism flows is at the origin of a deep urban reshuffle. First of all, the number of hotels is soaring. In 1996, there were about fifteen hotels in town (Aye Myint, 2007) and, according to 2010 maps, there were 24 at that time. However, those last years have seen a tremendous growth: 2013 was an exceptional year, which gave a boost to the sector. Though comprehensive figures are not accessible nowadays, there must be more than 35 hotels in town. However, the hotel bubble is already experiencing the drawbacks of the sector vulnerability, often because of the conjuncture: three out of seven hotel managers interviewed in town indicate that 2014 is reportedly not as good as 2013, in particular because of the turmoil in Thailand (Win, oral information).

However, building are still under progress. While hotels have long showed low-height concrete architectures, and basic aesthetic and accommodation standards, we may now notice the same shift as on the lake: an evolution towards architectures and standards which are at the same time more luxurious and more generic and global. Thus, buildings are getting higher, more massive, mainly because of the skyrocketing of land price, but also to match the image the globalized image of the "Grand Hotel", thus contrasting with the existing landscape (Figure 62).

In those projects, the global architectural model sometimes goes against traditional local values. Indeed, Nyaungshwe is dotted with Buddhist temples and pagodas topped with golden domes and spires. However, new buildings are sometimes higher than the latter, which is theoretically banned in Buddhist culture: some inhabitants disapprove this awkward situation, though no tension can be seen yet (Thandar Laing, oral information).

[108] Obviously, this does not mean that tourism does not affect local societies: many people worry about the cultural impact of those flows on the population, and especially on the youth: experienced tourist guide Daw Nyo Nyo suspects that tourism steers young generations away from their cultures. Such accusations were made by many other interlocutors, including youngsters (Win, oral information) and even foreign hotel managers (Chagnon, oral information).

Figure 62: The construction site of a hotel in Nyaungshwe: a rupture with the existing architectural fabric

Those new hotels often choose new architectural styles, which show more their belonging to the middle- or top-end price range than their insertion in the territory. For instance, the Cassiopeian Hotel, opened in September 2013 at the East of the town, shows a surprising Greek-styled pediment and massive neo-classic pillars. A few streets further, another hotel is under construction, and boasts a three-storied neo-classic frontage with incongruous wrought iron balconies (Figure 63).

Figure 63: Neo-classic hotel under building in Nyaungshwe.

The multiplication of hotels generates a reshuffle of the traditional centralities of the city. Indeed, Nyaungshwe had long been organized around Mingalar market and the small canal that supplies it. Nevertheless, the road along the latter is too narrow, and the goods traffic, on the water and on the road is too dense for a fluid movement of tourists and their boats. As a consequence, two jetties for tourist boats were created along the main canal. Progressively, the three streets that link those wharves to the city center have become new centers along a West-East direction: the Yone Gyi Road now appears as the core of the city while Phaung Daw Seig and Phaung Daw Pyan Roads are secondary centers (Figure 64).

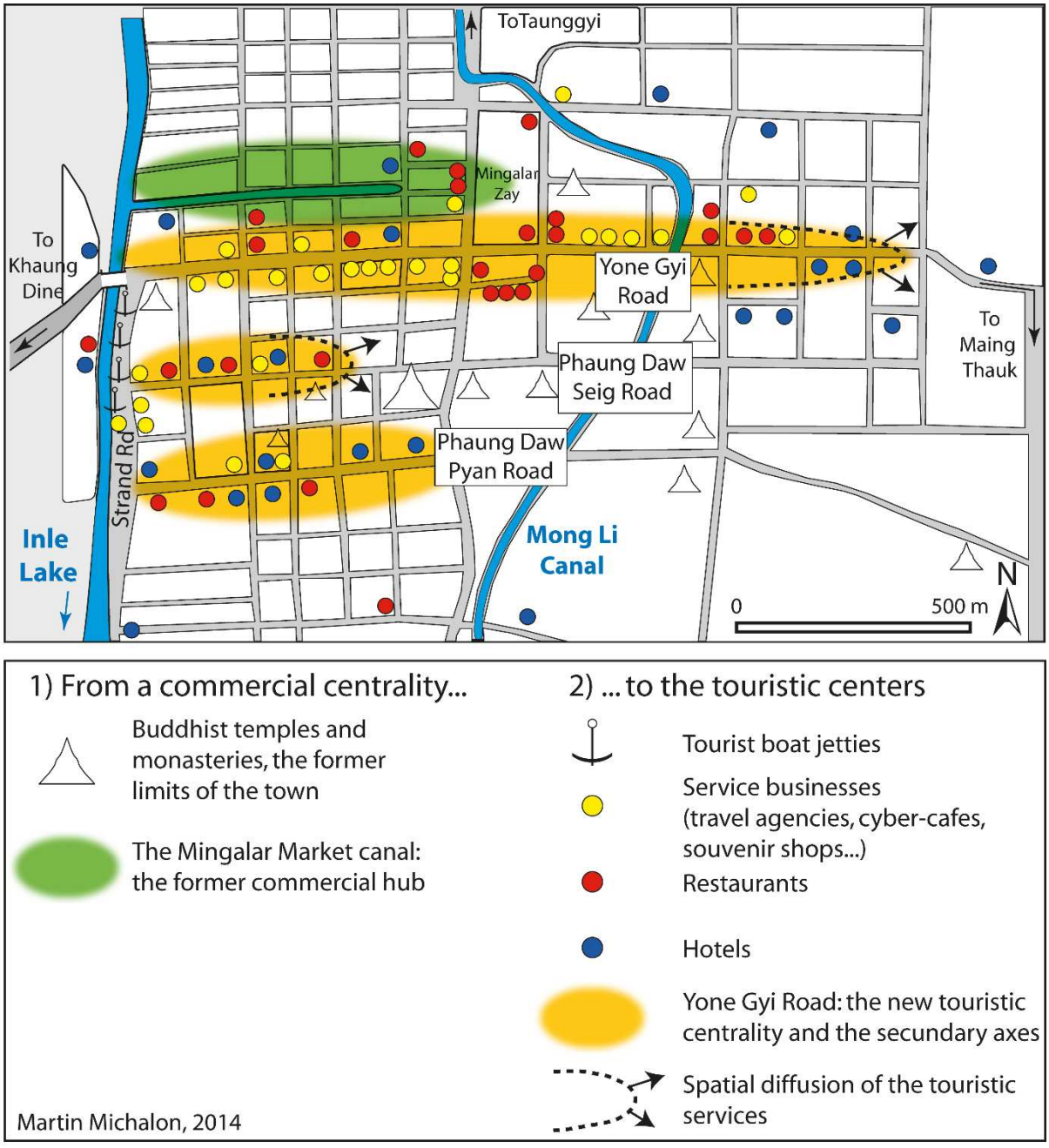


Figure 64: Tourism, a factor of urban re-organization.
All the touristic structures could not be spotted on this map

Those axes are now lined by hotels, restaurants, cyber-cafes and souvenir shops, while we may count around thirty travel agencies in town (Thu Thu Aung, written information), knowing that all the hotels also offer ticketing, guide and bike rental services. All the trims

and signboards create an urban landscape which is typical of the Asian towns at the core of a touristic region.

Figure 65: Fast food restaurant in Yone Gyi Road.

Besides the highlights of Burmese cuisine, such as Shan noodles, restaurants offer dishes that really illustrate what Gilles Fumey calls the "food globalization"[109] (Fumey, 2007), with the inescapable smoothies, sandwiches, pancakes and pizzas. At the end of 2013, the first outlet of a Burmese fast-food chain was built on Yone Gyi Road, selling hot dogs and American-Style fried chicken. The appearance of franchised shops, their products and their trims in the urban landscape is a new stage in the transformation of the urban way of life and identity in Nyaungshwe (Figure 65).

Whereas the hotel front is mainly extending Eastwards, we could notice a few building sites just alongside the canal. We may assume that the ban on new construction on the lake in 2010 has redirected rich investors to those areas because they can afford those last "hollow teeth" which could not be sold because of their prohibitive prices. Indeed, the multiplication of hotels has triggered a soaring of land price. According to one of our interlocutors, who is at the core of those issues, a 1000 m² plot in this valued Win neighborhood is worth 100 million K (77 000 €) now, for 1 million K (770 €) twenty years ago. According to this same person, the numerous buyers are separated in accordance to the bribes they give to the neighborhood's mayor, who is to sign the sale contract. It is to be noticed that the buyers do nothing but foster the price spike: out of the ten plots sold last year, only two were built (for hotels), while the eight left should remain empty and be sold again in a few years. Such strategies feed the speculative bubble. Another source indicated that those massive land investments are a convenient way for rich cronies to launder money from corruption or trafficking.

As a summary, we may notice that Nyaungshwe has been deeply restructured by tourism and we may conclude, as Isabelle Sacareau does, that "tourism has been progressively embedded in a traditional urban space, and accelerates the latter's mutation: part of the urban growth, symbol of modernity and anchorage in the World-System, it is now deeply structuring the town, by producing new economic and spatial dynamics and new centralities"[110] (Sacareau, 2001).

[109] Gilles Fumey specifies that this kind of globalization does not concern all the regions and all the people in the same way: it is rather punctual. Nyaunsghwe is one of those islets, one of those gateways of globalized food.

[110] Interestingly enough, this quotation, which describes Kathmandu (Nepal), is also relevant in Nyaungshwe context, but also in many other touristic Asian cities. It would be interesting to deepen this consideration and

5) *Tomorrow's prospects* : « touristic trading post », new *centralities… and new challenges*

Though the region of the Inle Lake is currently undergoing intense dynamics, a major change is yet to come: in November 2012, the Shan State government launched plans for a 250-hectare hotel zone on the hills South-East of the lake (Myanmar Times, 2013, December 1st). This settlement choice, back from the lake, is totally new, and it is a direct consequence of the 2010 ban on new construction on the lake: it is a means to go on building while bypassing the legal restraints[111], so as to encourage the tourism boom, keep on cashing tourism revenues and generating massive investments[112]. This Shan State initiative (but which was reportedly impelled from the very top of the Union government) shows the return of the proactive policy which had launched the Visit Myanmar Year and that has little shown since then, apart from the 2010 ban.

The plan is for the state to purchase 250 hectares from the local populations, make them viable, and sell them by lots to developers, who will build resorts and rent the operation rights to hotel groups (Chagnon, oral information)[113]. The lots made viable by the state are to be sold 75 000, 85 000 and 95 000 $/acre, depending on the location of the plot in the hotel zone, i.e. 135 000, 153 000 and 171 000 €/hectare. Such high figures are clear evidence of the land price skyrocketing. Besides its financial dimensions, the hotel zone project had colossal ambitions in terms of accommodation capacity: no less than almost hundred hotels were planned for building. However, such a plan generated conflicts, at different levels.

At the local scale, the Shan State government bought the 250 hectares from 86 farmers' families, but sharp disagreements appeared on the compensation issue. Indeed, the State offered 220 000 K/acre of sugarcane field, i.e 420 €/hectare, and 50 000 K (38 €) per mango tree. 68 families accepted those low compensations, in particular because some of them underwent strong pressure from the authorities (Myanmar Times, 2013, December, 1st). 14 others accepted revalorized sums that two lasts farmers refused: they asked for 60 million K/acre, i.e. 114 000 €/hectare. Tension flared when the latter decided to plough and farm their fields, and the year 2013 was punctuated by fights between police and Ingyi Gone villagers (The Irrawaddy, 2013, Juin 11th, Myanmar Times, 2013, December 1st). Now, this land conflict seems "solved": besides the authorities' shows of strength, the future investor reportedly made good will gestures and supplemented the compensations (Sai Win, oral information).

However, conflicts were not confined on the lake's shores: tensions also shook the government itself, and pitted the project's supporters and the departments of environment and forest protection: such a situation may question the outside representations of a unanimous government, following the orders blindly. Facing such a hard contestation, the Taunggyi

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show to what extent the mutations that take place in Nyaungshwe may be specific, through a comparative approach.

[111] We may assume that this law, which was voted under a government which was still wary towards tourism, appears in the current context as a decision that may cripple the tourism boom, and that has to be bypassed.

[112] The transparency of such flow is obviously questionable. Some people might have an interest to foster investments… and all the misappropriation and corruption opportunities that come along with them.

[113] The accurate details of this projects are still very opaque and secret. We had to be content with very few facts, given by informants who themselves had just fragments of information.

authorities accepted to change their plans and to bring down the number of hotels from 90 to 19 (Valentin, oral information).

Once those conflicts officially solved, works have been under progress and, for the moment, their impacts on the landscape are major: from the whole southern part of the lake, the barren slopes of the hills are visible (Figures 66 and 67). The roads and networks seem to be finished, but hotel building itself is still pending, and we may worry about the consequences of the heavy rainfalls on those fragile grounds.

Figure 66: The hotel zone slopes, seen from the Ywama village.

Although all our interlocutors agree to say that the hotels will be bungalow-style rather than high buildings, it is now impossible to get any more information about this hotel zone. We even learnt by chance that another area had been discreetly added to the first one, but according to different rules, for it includes two already-built resorts. One more evidence of the opacity of this operation: the investors' list is kept secret. The only elements we were given is that the chains Aureum and Amazing are to open respectively one and two hotels there. Though none of our interlocutors have heard of any foreign investment, it would be surprising that only domestic groups be involved. Indeed, numerous FDI can be done under the cover of Myanmar companies. It is all the more true that, since 2011 and the start of the democratization process, foreigners have been increasingly interested in the region. The most visible, and the probable pioneer in this field is the French company Accor, which will open in June 2014 no less than 120 rooms on the lake's shores. However, it is to be noticed that it will settle down out of the hotel zone: so far, no foreign company is reportedly interested in the hotel zone.

While this new area is transforming the visual landscape, can it deeply reshuffle the tourism industry in the region? Resort managers are quite critical towards those future hotels: out of the seven who explicitly told their minds on this topic, four confessed to be worried

about this competition, which will aim at the same customers as them (well-off groups), and one is concerned with their environmental impacts. The two last ones think that those mainland hotels will never have the same appeal as stilt resorts: thus, they are quite confident about the future.

As for Nyaunsgwhe hotel managers, they don't feel threatened at all by the project: out of the seven who gave their opinions, all are sure that the hotel zone will not aim at the same tourists as them. Thus, they are not a threat. On the contrary, they emphasize their own advantages, i.e. their location in town, where locals and visitors are mixed, where the latter can easily go and have dinner in town, visit the market and the monasteries, and interact with the inhabitants. From this point of view, the hotel zone is doomed to be in a vacuum, a symbol of "tourism entrenchment" (Gay, 2000).

Beyond the mere hospitality sector, the opening of this hotel zone is very likely to reshuffle the local territory, through the creation of new flows and new centralities. Indeed, so as to improve its connection, the Nyaungshwe-Nampan road is being upgraded[114] (Figures 53 and 67)

Figure 67: The hotel zone and its recent extension (in red), on both sides of the Nampan-bound road, which is under upgrading. The blue dots are the existing resorts, on the lake and on the shores.
Source: Google Earth.

[114] According to the MHT's Tourism Master Plan, a parallel roadway is to be built on the opposite (West) shore of the lake so as to connect Nyaungshwe to Indein and, very probably, to the Southern cities. As a consequence, the lake is to be framed by roads in a near future.

The new importance of this road, the traffic on it, as well as the creation of such a major consumption and employment market at the edge of Nampan is very likely to strengthen the village's position as the southern hub of the region. In the medium term, it will probably be the bridgehead of the South-bound tourism, towards the Sankar and Mobye Lakes, and even Loikaw and the Kayah State, which future is quite promising.

Considering the current trends and the future projects, the fates of the tourism industry and of the Inle Lake region are linked. However, the sector's stakeholders are facing several sizeable challenges they have to fix to guarantee their activities' future.

The first challenge is the environment protection: the lake is impacted by chemical products pollution, the drop of its biodiversity and, to a certain extent, by eutrophication and siltation, while the hills are broadly deforested. If the environment is crucial for the locals, it is also for tourism players. A resort managers worded his concern to the Wall Street Journal[115]: "one day, the lake will disappear altogether, and we will use cars instead of boats. But which tourists will like our hotel when it is not on a lakeshore anymore?". Though such predictions are not totally realistic (in a medium term anyway), the hypotheses of the depletion of fishermen (for a lack of fish) or a severe water eutrophication cannot be taken lightly, even in a near future. It is then necessary for the tourism stakeholders to preserve the lake's attraction, by limiting their own environmental impact on the one hand, by supporting the local preservation initiatives on the other hand.

The main tourism players related to those issues are the restaurant and hotel managers: the first burn massive quantities of firewood from the hills, and contribute to the deforestation process; the latter have to manage great amount of garbage and wastewater. Wastewater management is quite a technical issue, that very few of our interlocutors really master, but it appears that the mainland hotels collect sewage from the toilets in septic tanks, while the rest flows to the channels in town and, ultimately, to the lake. As far as the stilt resorts are concerned, only five or six hotels are reportedly fitted with septic tanks (Chagnon, oral information), while the others use massive tanks that are shipped away when full and emptied by the local authorities. However, we know nothing about this process: the tanks might be emptied in remote areas of the watershed, and the pollution might eventually flow back to the lake.
The solid waste management is also quite basic: out of the 14 hotel managers who told us about that topic, 13 indicated that rubbish are collected by the government and sent to a garbage dump on the West shore of the lake, where they are burnt. Seemingly, only one hotel is involved in recycling: the staff collects, sorts garbage, sells them to a recycler and shares the benefits (Chagnon, oral information).

However, the pollution issue is not confined inside the hotel's precincts: the touristic practices on the lake do have an impact. Though most of the garbage in the nature are thrown by locals rather than by tourists (who are more sensitive on that topic: Valentin, oral information), boat trips also have harmful consequences in terms of noise and of water quality. Indeed, tourist boats, who often sail in the same areas and on the same time-spans increase the water turbidity and undermine the channels' banks (IID, 2012a). Moreover, the water-cooled engines may change the temperature of the upper layers of the water column. Lastly, those rustic Chinese engines, which are not always designed for such a purpose, often show oil or diesel leaks: in the touristic "hotspots", such as Nyaungshwe, Nampan or Ywama, the hydrocarbon pollution of the water is obvious. For the moment, many tourism players

[115] In Courrier International, 2010, July 15th

regret those nuisances, but credible alternatives lack. Therefore, the current tourism industry has environmental impacts that cannot be neglected, and we may all the more question the ones of the future model as ecotourism does not appear explicitly in the core of anybody's strategy.

Obviously, tourism stakeholders may have an important action capacity on their sector, but also beyond, on the whole region: in a country where the authorities lack budget, expertise, and where corruption is endemic, the private sector may be the most efficient in local development. We even met private stakeholders who confessed to fraud on tax to directly inject their resources in the local development, for efficiency's sake. The tourism industry seems to be the most adequate and powerful player, because visitors (and especially foreign ones) are the only ones who can really afford to pay more to support environment-friendly services.

However, for the moment, we can just spot a few punctual and uncoordinated initiatives. For instance, the Shwe Intha Resort has set up and funded teams to collect garbage in a few lake villages and manage them properly on the mainland (IID, 2014). As for the Inle Resort, they set up an organic food supply chain: the manager signed contracts with farmers from the neighborhood, who get prices 25% higher for chemical products-free vegetables. The hotel helped the farmers in the first stages of this transition, by providing training, in particular about the use of compost… made from the restaurant's wastes (Chagnon, oral information). As for the Inle Princess Resort, it opened a unique hospitality training school (cf. infra) with a large organic garden and a phytopurification-based wastewater management system, which uses a combination of four aquatic plants, out of which three originate from Myanmar (Yin Myo Su, oral information). Lastly, the Golden Island Cottage 1 initiated quite a few agro-environmental actions in the Pa-O hills. All those projects have positive impacts, but the latter would be greater if the whole sector, if all the hotels and restaurants got involved, and if a real dialogue and coordination framework was set up. For instance, this would be the only and most efficient way to create a real demand for organic products or to implement a coherent solid waste management system.

However, until now, relationships between hotel managers have been very tenuous. Out of the 14 hotel managers we met, only one mentioned a real in-depth collaboration: the assistance provided by the Inle Princess Resort to support the staff training process in the early day of the Golden Island Cottage. Beyond such an example, indifference, or even competition seem to prevail. Our interlocutors mentioned four to five annual meetings which gather all the hotel managers in the area, but those assemblies are actually convened by the authorities to explain and implement new regulations (Myint Myint Thein, oral information). Environment is sometimes on the agenda, but the top-down philosophy of those meetings somehow prevent any horizontal and fruitful cooperation between hotels.

However, higher in the administrative hierarchy, the environment has become a concern and an asset to preserve the attraction of the country. In such a context, a plan for the environment protection and the sustainable management of the Inle Lake was launched for the period 2010-2025, and a diagnosis survey was ordered to the Institute for International Development (IID, 2012b). This mission was prolonged towards a "regional tourism destination management plan" based on sustainable tourism (IID, 2014). The conclusions of those surveys are not public yet, but we already know that they will emphasize the importance of eco-tourism, will promote a spatial and temporal widening of tourism so as to decrease its impacts, and will call for a better social redistribution of the sector's benefits.

Indeed, sustainable development is not only environment-related: the social equity is also one of its main components… but we may wonder to what extent the tourism revenues really benefit to the local population. Some locals criticize the widening distance between the world of tourism and the lake society: "I don't like the number of hotels increasing on the lake. The companies said establishing hotels and tourism is best for the development of Inle and Intha, but I am doubting it. Is it really for us or for them?" (Myanmar Times, 2013 October 28th). Though souvenir sellers, tourist guides and restaurant owners get significantly richer, we may assume that the positive impacts of tourism are marginal for the rest of the population. Of course, the farmers can sell their products to the hotels, but at the market price: that allows nothing but a thin margin for the producer, which is enough to live, but not enough to invest, or to take initiatives towards genuine human development (education, health…). Even the proximity with tourism is not a guarantee of significant incomes: when trekking groups head to the hills, they stay and eat at locals' houses. According to the guides we met, the villager earns 2000 K (1,5 €) for the lodging of the whole group and 500 K/person for the meal (0,4 €). In other words, a group of four people, which pays a 40 $ (30 €) daily fee to their guide, just leaves 3 € in each village where they stay. As a conclusion, the social and geographic distribution of the tourism benefits may be improved.

At the very core of the touristic system, the situation is not much better: in the mainland hotels in Nyaungshwe (and especially in budget hotels), the staff earns very low salaries, barely higher than an agriculture laborer. The youngest employees, often manager's relatives, just have free accommodation and meals with a symbolic salary. Seemingly, very few people earn more than 100 000 K/month, i.e. 77 € (Gobinda, oral information). Though much more expensive, resorts don't have a much different policy: in the four hotels where we could get an answer on that topic, salaries ranged from 40 to 130 €/month all tax included depending on the job and the responsibilities. Only one hotel, already committed to a significant social strategy, stands out: salaries range from 185 to 250 €/month. However, all the incomes mentioned here are waiters' or receptionists': most of the time, small staff only earns 50 000 K/month, i.e. 38 €, which corresponds to the wage of a laborer in tomato fields. We must admit that environment protection and balanced social development are long-term targets for just a few tourism players… In those conditions, how can we consider a tourism-based sustainable local development, which may balance the hardships of traditional activities?

However, even before facing environmental hurdles or social difficulties, the tourism industry has to deal with another crucial challenge: human resources. Indeed, at a national scale, tourist guide training cannot keep pace with the tourism flow surge (Myanmar Times, 2012 November 12th-18th). At a local scale, hotel keepers complain about the difficulty to recruit skilled staff, even though the gap between guesthouses and resorts is obvious on this topic.

Out of the seven Nyaunsgshwe hotels we visited, five only hire local staff, mainly relatives. In spite of the latter's low level of training, the managers don't find it necessary to recruit more skilled employees: their hotels often aim at FITs, who have modest expectations in terms of service. The two others resort quite massively to people from other parts of the country: at Hupin's, half of the 100 employees come from Mandalay region; at Manawthuka's, only 5 out of 15 people are locals: the others come from Bagan area. The specificity of those two structures has several causes. The first one is that those hotels are at the top of the price range in town: a room at Hupin's is 80 $/night, and 70 $ at Manawthuka's, while the average price in the hotels we visited is 50 $. Therefore, the expectations in terms of service are higher: that is why the managers hire people from Bagan, where tourism has always been more massive than in the Inle region, and where there is a longer tradition of

service and hospitality. Staff from Mandalay, who are also accustomed to visitors and, most of the time, better trained, are also popular. As a consequence, there is a correlation between the price-range of the hotel and the spatial scope of recruitment.

The other reason is that a hotel and his staff are always part of social, familial and interrelationship networks. Indeed, the Manawthuka's owner is from Bagan, and he resorted to some of his relatives to help him in his settlement in Nyaungshwe. At Hupin's, the Mandalay-born community has been built from a little core of employees who were hired in the early days of the hotel. Year after year, they have pleaded for the recruitment of friends and relatives. In both cases, social interrelationships have played a key-role in the staff recruitment.

On the lake, the situation is quite different: the manpower qualification is unanimously considered as a currently intractable concern. In the eight resorts we surveyed, almost all the small staff are locals, but high-responsibility jobs are entrusted to workers from the whole country, or even from abroad (Table 18). It is to be noticed that those people from Yangon or Mandalay quit very quickly to go back to their region of origin (Bo Bo Thu, oral information): the Shwe Intha Resort had four managers in five years: two from Yangon, one from Pindaya, one from Nay Pyi Daw (Win Naing Oo, oral information).

Table 18: Human resources in the lake resorts: a sizeable challenge

Resort's name	Manager's origin	Proportion of locals in the staff	Training strategy
Inle Resort	France	95% of the 140 employees	The manager, who graduated in a French hospitality school, trains the staff and also resorts to Myanmar teachers
Myanmar Treasure	Not from the region	Great majority of the 120 employees	-
Sky Lake Resort	Yangon	75% of the 80 employees	The deputy manager, who got a three-month training in Yangon, trains the staff during the low season.
Aureum Resort	Magway	90% of the 120 employees	A trainer gives classes in low season, some employees are sent to Yangon's top-end hotels
Shwe Intha Resort	Nay Pyi Daw	Great majority of the 60 employees	The latest one-month training took place two years ago
Golden Island Cottage	Nampan	100% of the 70 employees	A member of the staff, who had a training in Yangon, teaches the personnel
Paramount Resort	Taunggyi	60% of the 28 employees	A part of the staff is sent to Yangon's hotels
Pristine Lotus	Germany	90% of the 120 employees	Training by a German company every year. Some staff is regularly sent to Yangon
Inle Princess Resort	Nyaungshwe	100% of the employees	Training in a private hospitality school, with the support of employees who came back from abroad

However, all the resorts we surveyed offer staff training, which intensity and thoroughness depend on the hotels (Table 18): while some give this mission to one of the employees who got a training himself (Bo Bo Thu, oral information), others go further and send their staff to Yangon famous hotels. Some, such as the Pristine Lotus, even pay foreign trainers to come and deliver a European-standard training. However, our interlocutors complained that it is hard to keep the staff once trained: they very often leave the region to work in top-end Yangon or Mandalay hotels, or even to Dhubai or Singapore, as our informant at Aureum's told us.

To solve this skill drain, the biggest and most famous resorts on the lake do not hesitate to reverse the flows: the French manager of the Inle resort offered a 1200 $/month salary to his chef to have him come back from Dhubai, while the Inle Hospitality Vocational Training School, genuinely unique in the region, was launched in September 2013 by the Inle Princess Resort's manager (who was trained in a hostelling school in France herself) and built around an Intha who proved himself in the Gulf countries. This center offers a top-end training to 40 students from the Inle area: it has a Myanmar certification, but it is currently aiming at a Swiss one, considered as a reference in this field and a guarantee of future professional and even geographical mobility of the students. The program costs around 3000 $/student, but it is broadly funded by the Norwegian NGO Partnership for Change (cf. supra). This example shows how some stakeholders can play one the international networks, between Gulf countries, France, Switzerland and Norway to build a major initiative towards the fair development of the local tourism sector.

As we may see, the insertion of the Inle Lake in the worldwide tourism flows and the evolution of the demand towards top-end quality and services highlights the structural limits of the tourism industry in Inle, and the hurdles towards local development. The reply of the concerned stakeholders is, on a short-term, to mobilize national networks to attract outside knowledge. However, on the long run, such a system gives way to international networks, used to build locally the missing skills.
Generally speaking, in terms of local development (environment protection, fair distribution of the tourism revenues), one may observe the same logic: local and national stakeholders do not seem able to lead the region towards sustainable development for the moment. The solution may come from the tourism financial flows, and thus, from the insertion into the global scale. However, this will have little positive impact on the region, unless the concerned stakeholders really anchor in the local territory (instead of disconnecting from it) and set up a better governance at all scales.

Conclusion

All along this thesis, we sought to understand how, and to what extent, the Inle Lake region is getting inserted in globalization, and how this territory is a good laboratory to analyze its impacts. We tried to highlight the links between the lake and the other parts of the World-System, discover which stakeholders weave those networks, and which logics lead this process. We also analyzed how this integration is at the origin of numerous local dynamics which deeply transform the territory. Lastly, we sought to show how those economic, social, landscape and even cultural mutations put the local territory and its inhabitants in front of new challenges.

At the end of this work, we can first emphasize the crucial role of the political players in the relationships between Myanmar and the rest of the world: for half a century, the military junta kept the country off the integration of Asia in the World-System. Nowadays, the democratization process is one of the main reasons for the opening of the country and its insertion in globalization. At the core of this changing Myanmar, the Inle Lake appears as a key gateway of globalization, a territory where this process takes a shape and where it can be read through societies and their spaces.

The Inle Lake's floating agriculture is a symbol of the mutations of productive systems in developing countries under integration to the global scale. Indeed, we may say that the floating agriculture is, to a certain extent, the result of the early stages of globalization: its boom is linked to the upgrading of roadways (thus allowing a better integration at the national scale), and then to a progressive liberalization of the economy. From a national-scale integration, the local agriculture has since then moved forward a worldwide integration. First, it has intensified through the insertion in worldwide flows of agricultural inputs made by multinational firms along the principles of the international division of labor. Second, the distribution networks have broken through new quantitative and spatial thresholds, in particular under the impulsion of mobile commercial players using traditional (familial or ethnic) networks. However, while the Inle stakeholders have succeeded in creating one of the first intensive agricultural sector in Myanmar, other regions have followed this model, and used the same networks and the same strategies to compete with them. In other words, the more local stakeholders get connected to broader scales, the more they have to face new challenges and new stakeholders which widen the social inequalities, threaten the whole sector, and prompt it to adapt.

However, the lake is a system, and the agricultural dynamics have consequences on another lake activity, which is the core of the Intha identity: fishing. Indeed, phytosanitary products used by farmers, chemical dyes used in local handicraft as well as the pollution linked with the tourism boom contaminate the lake, trigger the drop of fish population, and, very probably, the eutrophication of the water body. In the meantime, the deforestation of the neighboring hills is fueled by the demographic growth and the traditional agricultural practices, but also by the ever-growing demand of firewood for drying Cordia leaves and for the Nyaungshwe restaurants. This process is broadly responsible for the progressive (though debated) siltation of the lake. Therefore, the integration and the intensification of the agricultural sector and the boom of the tourism industry are responsible for the environment degradation, increased by the fishermen's strategy: for a lack of alternatives and appropriate dialogue, they do nothing but increase the pressure on the resource. In such a situation,

exogenous solutions have been set up, such as the introduction of Tilapia (a "global species") and the action of International NGOs or even the UN, which have backed up local activists and inhabitants.

While agriculture and fishing have been facing the globalization and environment challenges, tourism has asserted as the key dynamic in the region for more than a dozen of years, the one which has the greatest impacts on the territory, its balances, its landscapes and a part of its population. The analysis of the tourism sector allows us to shape its evolution from the 1990s niche tourism to the current early stages of mass tourism, thanks to an ever-deeper insertion into globalization flows. Obviously, visitors are one of those flows, but the analysis of the players who built and organize the tourism is very instructive as well. Indeed, the sector has evolved thanks to the involvement of new exogenous Myanmar stakeholders, such as cronies and hotel chains, handicraft brokers, tourist guides and skilled hotel staff, but also thanks to the action of foreigners, such as European hotel managers, architects, international NGOs and tour-operators. The latter have built a traditionalizing narrative about the region, whereas it is precisely going through unprecedented changes. The anchorage of the Inle Lake in the World-System appears as paradoxical because, in the meanwhile, the tourism has been less and less anchored in the local scale: the sector is moving towards global and generic activities and places, further and further from the local territory and populations.

Such a distance nonetheless generates radical changes on space. It appears that tourism is spreading in the whole region: mass-tourism, and the progressive trivialization of the main circuits prompt some visitors to venture off the beaten tracks and initiate new (though still marginal) practices. Thanks to tourism, new polarities have also appeared, or strengthened, and other ones are yet to come: this deeply changes the balances and the structure of space, at all scales. Lastly, we may notice the emergence of sustainable development issues that only a structured and pro-active tourism sector can properly deal with.

As a conclusion, the Inle Lake is far from stuck in the local scale, everything but frozen in an immemorial floating agriculture and leg-rowing fishing: our survey tried to draw the portrait of a region which is suddenly subject to the influence of an ever-wider and ever-more-massive globalization which is connecting it to the rest of the world. For twenty years, the region has been through a deep overhaul which is now putting it in front of new socio-economic, environmental, ethical and even cultural challenges that may threaten it on the long run.

In front of those hurdles, all the territory's players, locals as well as foreigners, shall set up sustainable and responsible alternatives, which implies to alter, to curb the globalization as it is taking place now. How can a region and stakeholders that have just started experiencing globalization can already shift to a kind of alter-globalization? That seems hardly imaginable nowadays. However, if the Inle Lake can be considered as laboratory of globalization, it may also stand as a testing ground for innovative projects and models that may be re-invested in other parts of Myanmar which are still little integrated in globalization, but which are likely to be more and more so. Moreover, a few local initiatives show that globalization itself may be re-appropriated to build alternatives: integration in international expertise and aid networks, in

sustainable agriculture networks, orientation of touristic and financial flows towards ecotourism, harnessing of skill-workers migratory circuits…

Although we tried to make that research as comprehensive as possible, a few lines of approach were only draft, most of the time for a lack of time on the field: they are calling for a deeper analysis. In the agricultural field, it would be interesting to focus on the networks that link the lake and the rest of the world, by studying more accurately the phytosanitary sector and its links with the farmers, and by following the Inle tomatoes from the field to the Mandalay, Yangon or Tachileik markets. Moreover, we would like to lead a complete socio-economic survey on many families, so as to understand whether or not the agriculture globalization generates a widening of social inequalities.

As for tourism, it seems the most interesting to us, for it is now the main driving force of the territory's and society's mutations. On this topic, we are really aware that there are a few significant loopholes in our work: we would like to achieve a more comprehensive survey about hill tourism and its consequences on space and populations, on the trekking paths of course, but also further. Indeed, we want to question whether the physical presence of visitors is necessary for a space to be transformed, or whether tourism may indirectly affect marginal areas. That would enlighten our knowledge about the relationships between the lake and its watershed, which is currently quite incomplete.

Another flaw of our work is that we focused on hotelkeepers, handicraft workers, and local sellers: in other words, those who host and harness the flows, and we did not focus enough on the tourists themselves and the guides. Of course, we talked quite a lot with them, but we were not able to lead a systematic and in-depth survey about them, so as to back up our hypotheses about representations, narrative and practices.

We really wish to be able to deepen our survey about tourism in the framework of a PhD thesis, so as to plug those loopholes and tackle other issues of that topic.

First, that seems very interesting to us to clearly analyze a feature which makes the originality of Myanmar in the contemporaneous tourism landscape, i.e. the political dimension. How does the State consider tourism and tourists? To what extent may we say that tourism in the Inle region is characteristic of a still-authoritarian regime, through the presence of crony capitalism, governance choices or conflicts management? To what extent are visitors aware of the still-perfectible regime and how does it affect their choices and their practices (boycott of cronies' companies, for instance)? Lastly, it would be enriching to wonder whether tourism can contribute to the democratization of the country. In this respect, the results of the 2015 elections may be instructive.

Moreover, our project would be to prolong our study of the territorial reshuffle generated by tourism. On the one hand, labor migrations from or towards the Inle area are a significant dimension of globalization and tourism that we only outlined in that thesis. Therefore, we are

planning to study this mobility more systematically and comprehensively so as to draw the networks, itineraries and representations on which it is built. On the other hand, the hotel zone project which is slated to open soon may be subject of an interesting follow-up throughout the time, so as to analyze its impacts on the territory and its reception by the different customers and local populations.

In addition, tourism in the region of the Inle Lake is clearly linked to territory's representations, built by tourism stakeholders at all scales, and we would like to understand better this issue that we just mentioned in that present work. To do so, it would be crucial to be immersed in the tourism industry, within tourist groups to better highlight the expectations and the practices of those people, in all their diversity. To what extent is the "authenticity" an inescapable driving force of the local tourism? To what extent do the ever-growing flows and the integration in global networks threaten this value, progressively superseded by the "general falsification" process (Picard, 2010)? In other words, how does the relationship between the tourist and the territory change because of the visitors' practices, and what are the locals' tourism re-appropriation strategies?

Lastly, as we could see, tourism is soaring in the context of fishing and agriculture difficulties. Therefore, we would like to understand how tourism appeared in the 2000s as an exit gate for the local society: which strategies, which networks did they use? However, the current transition towards mass tourism is facing environmental and social limits, and we wish to understand how tourism can assert as a credible alternative to reach sustainable development.

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Appendix: List of our interlocutors on the field

Name	Job/status	Place	Date
U Aye	Farmer	Ywama	17th February 2014
U Soe Win	Farmer	Ywama	17th February 2014
Daw Myay	Farmer	Ywama	17th February 2014
	Grocery owner	Ywama	17th February 2014
	Boat owner	Kyay Sar Kone	18th February 2014
	Agriculture labourer	Kay Lar	18th February 2014
Ma Lwin Mar Khing	Agriculture labourer	Kay Lar	18th February 2014
Ma Myat Noe Phyu	Agriculture labourer	Kay Lar	18th February 2014
Ma Thi Dar	Farmer	Kay Lar	18th February 2014
	Farmer	Kay Lar	18th February 2014
Man Ngwe Mar	Farmer	Maing Thauk	19th February 2014
Ma Myint Win	Farmer	Maing Thauk	19th February 2014
Ko Aung Thein	Farmer	New Tha Le Oo	19th February 2014
U Thein Win	Farmer	New Tha Le Oo	19th February 2014
Ko Aung Win	Farmer	New Tha Le Oo	19th February 2014
Ko Myo Aung	Tomato broker	Nyaungshwe	20th February 2014
U Aung Aung	Tomato broker	Nyaungshwe	20th and 21st February 2014
Daw Nyo Nyo	Tomato broker	Nyaungshwe	20th February 2014
Daw Hla Kyi	Tomato broker	Nyaungshwe	20th February 2014
U Shwe Kal	Tomato broker	Nyaungshwe	20th February 2014
Myo Tin Tun	Phytosanitary products broker	Nyaungshwe	20th February 2014
	Fruit and vegetables sellers on Nyaungshwe market	Nyaungshwe	20th February 2014
Thu Thu	Tourist guide	Nyaungshwe	20th February 2014
Kung Si Thu	Phytosanitary products broker	Nyaungshwe	21st February 2014

Name	Job/status	Place	Date
Daw Thin Aye	Souvenir seller on Nyaungshwe market	Nyaungshwe	21st February 2014
May Aye Thein	Souvenir seller on Nyaungshwe market	Nyaungshwe	21st February 2014
Sonia Hombardoo	Souvenir seller on Nyaungshwe market	Nyaungshwe	22nd February 2014
Imran	Souvenir seller on Nyaungshwe market	Nyaungshwe	22nd February 2014
U Ba Thit	Fisherman	Pauk Par	24th February 2014
Aye Aye Soe	Fisherman's wife	Pauk Par	24th February 2014
Aung Zaw Tun	Fisherman	Pauk Par	24th February 2014
U Kyi Soe	Fisherman	On the lake	24th February 2014
Nyi Nyi	UNDP Branch manager	Nyaungshwe	25th February 2014
Thet Win Htun et U Htun Paw Oo	UNDP Managers in Nyaungshwe	Nyaungshwe	25th February 2014
U Yee	Boat owner	Nyaungshwe	25th February 2014
Sai Win	Tourist guide	Nyaungshwe	25th February 2014
Ko Hla Tun	Fisherman	Inntaungyi	28th February 2014
U Pyu	Fisherman	Myawagyi	28th February 2014
Ko Htwe	Fisherman	Maing Thauk	28th February 2014
Mwai Yan Phyoe	Fisherman	On the lake	28th February 2014
Kyaw Thoo	Fisherman	On the lake	28th February 2014
U Soe Lwin	Fisherman	On the lake	28th February 2014
Aung Kyaw Swar	In Paw Khone Hospitality school's manager	Nyaungshwe	2nd March 2014
Saw Yu May	Geography teacher in Taunggyi University	Taunggyi	3rd March 2014

Name	Job/status	Place	Date
Mg Kyaw Myo Twin	Boat maker	Nampan	4th March 2014
Daw San San Oo	Souvenir seller	Nampan	4th March 2014
Daw Khin Thint	Souvenir seller	Nampan	4th March 2014
	Myat Pwint Chel textile workshop's manager	In Paw Khone	4th March 2014
U Myint Zaw	Shwe Pyae Shun textile workshop's manager	In Paw Khone	4th March 2014
U San Shwe	Shwe War Win Jewelry workshop' manager	Ywama	4th March 2014
	Aung Chan Thar Jewelry workshop' manager	Ywama	4th March 2014
Bruno Chagnon	Inle Resort manager	Maing Thauk	6th March 2014
Aye Aye Aung	Receptionist at the Myanmar Treasure Resort	Maing Thauk	6th March 2014
Bo Bo Thu	Sky lake Resort deputy manager	Maing Thauk	6th March 2014
	Receptionist at the Aureum Resort	Maing Thauk	6th March 2014
	Receptionist at the Shwe Inn Tha Resort	Ywama	7th March 2014
Khun Maung Ngwe	Golden Island Cottage Manager	Nampan	7th March 2014
	Receptionist at the Paramount Resort	Nga Phe Kyaung	7th March 2014
Kathy Vaeth	Pristine Lotus Resort Manager	Kyaung Daing	7th March 2014

Name	Job/status	Place	Date
Myint Myint Thein	Hupin Hotel Manager	Nyaungshwe	8th March 2014
Panyadannar Cho	Souvenir seller	Nyaungshwe	8th March 2014
Win	Joy Hotel Manager	Nyaungshwe	11th March 2014
Sandy Cho Aung	Good Will Hotel Manager	Nyaungshwe	11th March 2014
	Remember Inn Hotel Manager	Nyaungshwe	11th March 2014
	Receptionist at the November Inn	Nyaungshwe	11th March 2014
Kyu Kyu Twin	Manawthuka Hotel Manager	Nyaungshwe	11th March 2014
Nang Myay Win	Farmer	Htut Ei	12th March 2014
	Restaurant owner	Khone Sone	12th March 2014
	Farmers	Dala Pin	12th March 2014
Daw Tin Mar Myint	Inle Garden Resort owner	Ingyin Gone	14th March 2014
Yo Myo Su	Inle Princess Resort owner	In Paw Khone	14th March 2014
Andrea Valentin	Expert for the Institute for International Development	In Paw Khone	14th March 2014
Nang Ei Ei Mon	Tourist guide	Kakku	15th March 2014
Meret Deeg	Tour-operator	Kakku	15th March 2014

Figure table:

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