



CANNABIS
CATALYSTS

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THAILAND

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MEDICAL CANNABIS IN THAILAND

For the last decades most Asian countries, to many cannabis is a native crop, were characterized by harsh narcotic laws and severe punishments. Now, various countries are starting to realize that those drug policies did not only fail their citizens but also ignored one of the oldest agricultural crops known. With it's growing population and economy the Asian region is connected to cannabis by tradition. As the origin of cannabis sativa, the region's history with the first plant cultivated by humans goes back thousands of years. The Asian continent holds the potential to become the one of the largest cannabis markets in the world with up to 77million potential users, second only to Africa.

Thailand, which legalized medical cannabis in February of 2019, is leading the paradigm shift, but not without controversy as they proceed to integrate multiple interests in their jurisdiction. The authorities aim to benefit not only patients, but also researchers, farmers, tourists, and domestic businesses while protecting the Thai market from big pharma and intellectual property theft, as well as considering international

narcotics treaties. This leads to a complex licensing practice and a diffuse schedule of responsibilities to secure strict and safe practices around the medical substance. Several countries in close proximity have also made steps in the direction of legalization. Thailand acknowledges it's first-mover advantage and continues to make quick adjustments to the jurisdiction, to secure their edge in developing the cannabis sector. This indicates their goals to become a key player in the region. This is unsurprising, since Thailand seems destined for cannabis cultivation considering its good weather and working conditions. Additionally, cannabis has been used quite frequently within traditional Thai medicine for centuries. Further the unique strategic position as a strong exporting country within the ASEAN Free Trade Area with a widely known medical and touristic sector, leaves room for ambition.

In this publication, we aim to convey an impression of the current state of legalization and the potential risks, as well as the prospects within the country's developing cannabis sector.



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MEDICAL GRADE



**FULL
TRANSPARENCY**

CONTEXT

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INTRODUCTION

After taking the first steps towards the liberalization of hemp cultivation through the last few years Thailand's government decided to legalize medical cannabis at the end of 2018. This made them the first Southeast Asian country to do so. Now Thailand is on track to become one of the relevant players in the upcoming Asian cannabis and hemp markets, if not worldwide. This is, not least, due to its exceptional cultivation conditions and central position within the Southeast Asian trading zone. This paper will give a condensed overview of the status quo in Thailand and the potential emerging markets and their segments.

HISTORY & CULTURAL FRAMEWORK

To entirely understand the course of the legalization, we must put the key players' efforts into the context of current legal and economic developments. To see the bigger picture it's worth taking a brief look at Thailand's history with cannabis and hemp. Thailand, like many countries within the Southeast Asian regions, exhibits a long tradition with, and close cultural relations to cannabis sativa. The golden north of the country is part of the golden triangle, a region where the plant originates from. Hence it is home to famous strains, called the Thai landraces. In earlier times, cannabis was grown all throughout the country, with no constraints. It was integrated into people's lives in many forms, and used as traditional Thai medicine to treat asthma, parasites, migraine headaches, post-childbirth pain and other medical conditions it was sold in apothecaries in the form of various preparations until the 1930s. In addition, the plant was used in the traditional kitchen, most famously as a spice in the traditional Thai boat noodle soup. The hemp fibers served,

among other things, as hand protection in early Muay Thai fights, before Western-style gloves came into fashion in the 1920s. But even recreational use was common, especially among farmers and field hands, who would grow it themselves to relax. Strongly fueled by the U.S. and by international pressure, prohibition slowly came into place in the 1930s and started to push cannabis back.

Nevertheless, during the time of prohibition the plant remained significant for the population in various ways. From the 1970s up until the end of the 1980s, Thailand was famous all around the world for its high-class recreational cannabis circulating on the black markets, which was mostly found in the form of the "Thai stick." According to the Drug Enforcement Administration's Intelligence Division's report from 2001, Thailand was the major cultivator of cannabis in Southeast Asia during this period. Between the late 1960s and until 1988 hundreds of tons of "Thai stick" were shipped globally by one of the most successful drug cartels worldwide, which operated out of Bangkok. Ironically, next to kickstarting the Thailand's prohibition in the 1930s the U.S. further played a key role in the rise of the black market. During the Vietnam war, thousands of U.S. soldiers were stationed in Thailand. After being introduced to cannabis in Vietnam they returned to their bases in Thailand and generated a high demand for the substance, which was soon met by Thai supply.

Even during prohibition the significance of cannabis within traditional Thai medicine never totally faded. Although prohibited, the cannabis preparations, which could be traced back to ancient traditional Thai formulas, remained popular. Cannabis was utilized especially in the north, close to the country's borders to Myanmar and Laos, and generally in rural areas where regular healthcare wasn't widespread

CONTEXT

or affordable. Since the government announced the legalization of cannabis for medical reasons and legitimized traditional Thai practitioners to prescribe it, many have spoken up to support the development or share their experiences. Hence, cannabis was - and still is - an appreciated method of treatment for many traditional doctors and patients around the country.

Interestingly, and in contrast to international perception, compared to the U.S. - or even the UN's Single Convention on Narcotic Drugs - Thailand never had an extremely strict stance on cannabis. Just like the U.S., they classified the controlled substances into five categories, while the UN's Convention used only four. Yet, unlike the U.S.-lead Controlled Substances Act of 1970 as well as the UN's Single Convention on Narcotic Drugs, which both classify cannabis as the hardest category available, Thailand classified cannabis, kratom (a mildly psychoactive and addictive indigenous plant, which was traditionally used as medicine) and magic mushrooms into the least serious category five. In 2002, Abhisit Vejjajiv,

who was Thailand's prime minister from 2008 to 2011, apparently even proposed legalizing less-dangerous drugs like cannabis, to lure addicts away from the more harmful ones. It appears that wasn't implemented back then, but it's an insight into the country's rather unique approach towards drugs.

- *Thailand has a long tradition with cannabis*
- *Prohibition started in the 1930s, strongly fueled by international pressure*
- *Thailand was famous for its high class black market cannabis ("Thai Stick")*
- *Cannabis plays an essential part in Thai Traditional Medicine*
- *Thai law differentiates between "mild" drugs like cannabis or kratom and "hard" drugs*

2

**Narcotics Act
B.E. 2465**



By the early 20th century international pressure started a process of prohibition. Thailand, named Siam back then, as one of the signatories to the League of Nations International Opium Convention of 1912 introduced its first anti-drug laws in 1922, called the Narcotics Act B.E. 2465, to comply with the international convention. Not doing so would have meant missing out on international benefits and grants.

**Marijuana Act
B.E. 2477**



In 1928 a U.S.-sponsored amendment to the Convention was made, which required the signatories to ban the export of Indian hemp to countries which had prohibited it. Thailand had to adhere it. Finally, in 1934 under the second prime minister General Phahonyothin, Thailand criminalized cannabis in particular by passing the first law targeting cannabis, the so-called "Marijuana Act B.E. 2477".

**Commodities Control Act
B.E. 2495**



The Marijuana Act B.E. 2477 didn't specify the amounts of product that were necessary for each offence though. In 1952, the Commodities Control Act B.E. 2495 then enabled the government to regulate all items and quantities of items that could be held by citizens and was amended in 1999 to include forfeiture of assets, which were obtained as result of criminal activity.

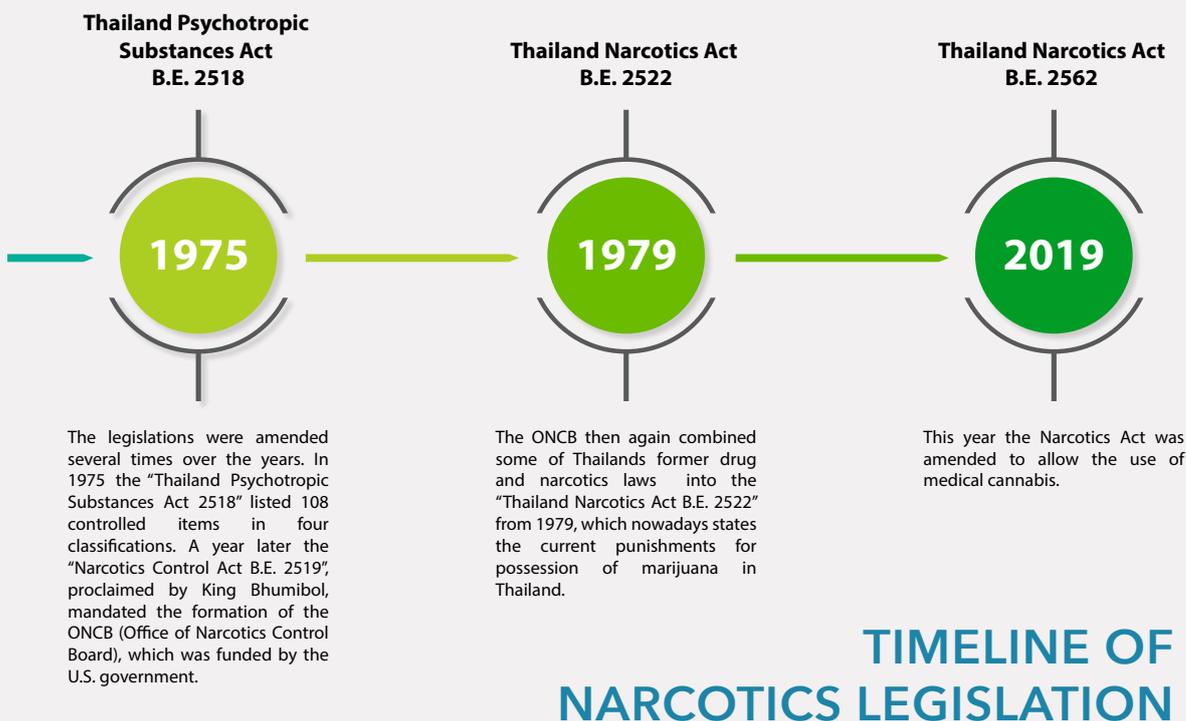
PROCESS OF LEGALIZATION

Following the international trend, the Thai government started the debate about the reevaluation and potential legalization of medical use of cannabis and kratom in the beginning of 2017. A first enactment draft to allow more research on medical cannabis was approved by Thailand’s cabinet in May 2018. This empowered the Government Pharmaceutical Organization (GPO) (state-owned pharmaceutical company) to start clinical trials on the application of cannabis for certain conditions like pain and nausea in cancer patients, Parkinson’s disease, multiple sclerosis or epilepsy. On **DECEMBER 26TH 2018** the government, then still solely run by the Thai military party “Junta”, finally **VOTED IN FAVOR OF MEDICAL CANNABIS** with 166 to 0 votes and 13 abstentions. Thereby, Thailand became the first Southeast Asian country to allow medical cannabis treatments.

With the publication of the royal decree in the Royal Gazette on **18 FEBRUARY**

2019, MEDICAL CANNABIS WAS OFFICIALLY LEGALIZED. The so-called “Narcotics Act of 2019” is a modification of the Narcotics Act of 1979, whereby cannabis was still classified as a class-5-narcotic, which changed in the process. While the recreational use of the substance remains illegal Thai citizens are now allowed to apply for cannabis treatment following the new legislation. However, they have to exhibit one or more of **38 REGISTERED MEDICAL CONDITIONS** which are subjected to cannabis therapy.

Moreover, **RESEARCH, CULTIVATION AND PROCESSING, IMPORT AND EXPORT** are now permitted. So far, however, several months after the legalization, this is only a vision. Currently, only a few dozen patients are in therapy, and to gain approval seems challenging. While the basic framework of the cannabis legislation was published soon after the resolution, there is a lack of regulatory specifications up until now. Many aspects of the legal procedures are just not defined yet, while others were brought on the way. This delays the formation of suitable supply infrastructure.



Contrary to the currently insufficient supply of cannabis for medical applications, the demand for therapy is quite high. In a pre-registration phase within the amnesty period of three months, more than [30,000 PEOPLE REGISTERED ONLINE](#), to apply for therapy. For the upcoming production, Thailand is aiming for rather high standards in cultivation, not least because of failed experiments with seized plants from the Narcotics Control Board in 2018. When attempting to produce medical-grade cannabis oil from the seized product, many toxins like cadmium, pesticides and mold were found in the raw material, which complicated the experiment.

The Health Minister, [ANUTINCHARNVIRAKUL](#) is endeavored to make the utilization of cannabis have a positive impact on the country's citizens. Not only did he draft an amendment, which will be voted on soon, which would allow public health pioneers to grow up to six plants at home for their private use. Additionally, he removed CBD-derived substances from the list of narcotics. Furthermore, he explained that people who are enrolled in the universal health program "gold card," social security fund or civil service healthcare scheme are permitted to receive the oil free of charge. By his decision to classify medical cannabis as an "essential drug" he made it, at least in theory, widely available to citizens across the kingdom. The cannabis-advocate-turned-health-minister, and his Bumjaya party are seen as the big winners of the recent election, in which they made cannabis an important campaign topic.

As to economic strategy, Thailand has decided on a [PROTECTIVE APPROACH](#). The involvement of (foreign) private companies will be quite restrained for the next few years since they are not yet explicitly among the seven groups permissible for license holding. Therefore, private entities can only work in cooperation and under the license

of a state-controlled institution. That includes ministries, state agencies, universities and hospitals. Moreover, only companies that are registered in Thailand and owned by Thai citizens to an extent of at least 2/3 are qualified to cooperate with a license holder. So, even when the requirements are met they are not permitted to apply for a cannabis cultivation license for themselves, only in cooperation. Yet, this specific requirement could be subjected to change soon. According to the foreign economy council, the government could allow private companies to apply for a license without the cooperation of an official state-controlled institution within the foreseeable future.

The extent of protectionism can also be observed in the discussion around foreign cannabis patent applications in Thailand, in early 2019. After an intense debate, the Thai government decided not to allow foreign cannabis plant-related patents either at this point or in the near future, thereby protecting the local innovators and entrepreneurs against strong competition from overseas.

Medical cannabis was legalized but some aspects remain rather vague.

Medical cannabis can be prescribed to patients showing symptoms of some 38 conditions.

Currently, oil is the most popular form of application, with pills and drops as alternatives.

Import and export should be allowed in future, but especially big-scale import will not be allowed the next few years.

Currently there is not sufficient supply to meet the high demand.

MEDICAL CANNABIS IN THAILAND

The term “medical cannabis” in Thailand relates to the utilization of the cannabis plant for medical application. It’s an active ingredient in TTM.

The definition that is popular in Europe only refers to the flower or bud produced according to certain standards as “medical cannabis”. Thailand’s definition of medical cannabis is diverging, since it isn’t limited to a certain part of the plant or (necessarily) a certain method of production. Its limited only to the intended purpose of use.

Nevertheless, currently the production of full-spectrum cannabis oil is the most common practice, while smoking is not considered a medical therapy.



LEGISLATION

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JURISDICTION & LICENSING

Jurisdiction and licensing for medical cannabis are not fully in place yet. Nevertheless, a rough framework has been published, stating essential aspects. In general, **SEVEN GROUPS** were identified and granted licenses, including governmental and research organizations, doctors and practitioners as well as patients.

Each of these groups has to follow particular guidelines to obtain permission to either consume, possess, research or produce and trade in cannabis.

To develop the respective guidelines, granting licenses and reviewing them are shared duties of the **ONCB** (Office of Narcotics Control Board), the **Thai FDA** (Food and Drug Administration) and the **MINISTRY OF PUBLIC HEALTH**. The **GPO** (Government Pharmaceutical Agency) further plays a significant role as the state-owned research agency. Detailed regulations on cultivation and manufacturing will most likely be based on the findings of their research and

their assessment of suitable methods. Together with the new legislation allowing for medical cannabis an **EVALUATION PERIOD OF 5 YEARS** was determined. Within this period the legislation can be altered or even revoked if it turns out to have negative impacts on the country. With regard to private businesses entering the market, it is not yet the favored strategy since it poses risks to any early-stage investment into this market.

THAI FDA

examines state organizations applying for research activities

MINISTRY OF PUBLIC HEALTH

grants licenses to applicants

OFFICE OF NARCOTICS CONTROL BOARD

supervises and carries out evaluations of licenses which have been issued for production, import/export or possession twice a year. Within the first three years after legalization they can request changes to current licensing of the ministry.



HEALTH MINISTER ANUTIN CHARNVIRAKUL

Source: Bhum Jai Thai Party / Twitter

PERMISSIBLE GROUPS FOR MEDICAL CANNABIS LICENSING

- 1 Governmental authorities who have duties in relation to research or arrangement of teaching concerning medical, pharmaceutical, science and agriculture, or providing services relating to medical, pharmaceutical, science and agriculture for medical or pharmaceutical benefits, or governmental authorities whose responsibility is related to protection, suppression and solving narcotic problems, or the Thai red cross;
- 2 Persons of professions relating to medicine, pharmaceuticals, dentistry, first-class veterinarians, traditional medicine, applied traditional medicine, folk medicine under the laws concerning traditional medical profession;
- 3 Institutions of higher education under the law of private institution of higher education whose duties are researching and arranging the teaching relating to medicine or pharmaceuticals;
- 4 Persons of agricultural profession who collectively join into the registered community enterprise under the laws relating to community enterprise promotion, social enterprise, or agricultural cooperatives registered under the laws of cooperatives, whose operation is under the cooperation and supervision of the applicants in items (1) or (3), provided that such agricultural professionals are eligible to jointly produce and develop medicinal formularies for traditional medicines or herbal medicines for medical purposes under the cooperation and supervision of the applicants in items (1) or (3) above;
- 5 Persons engaging in the business of international public transportation;
- 6 Patients who are required to bring category 5 narcotics into or out of the Kingdom for treatment of personal disease upon international travel; or
- 7 Other applicants as announced by the Minister in ministerial regulations under the approval of the Committee.

Moreover, **PRIVATE COMPANIES** are not yet explicitly among the seven groups permitted to hold licenses. This does not necessarily mean that private enterprises are excluded from the market. Nevertheless, at this point, it determines that private companies who want to cultivate cannabis must work in cooperation and under license of one of the authorized groups. The company further must be registered under Thai law, have an office registered in Thailand, and at least two-thirds of directors, partners or shareholders must be Thai nationals. A protective measure by the Thai government which protects state-owned investments against big players from overseas.

These limitations are specified in the “Guideline for approval of a request for plantation of cannabis B.E. 2562”, which defines **FOUR GROUPS** which qualify for approval **FOR CULTIVATION**:

- ▶ **GOVERNMENTAL AUTHORITIES** with duties in relation to research, teaching or provision of public services,
- ▶ **INSTITUTIONS OF HIGHER EDUCATION** under the law of private institution of higher education,
- ▶ **PERSONS OF AGRICULTURAL PROFESSION** who collectively join the registered community enterprise
- ▶ **OTHER APPLICANTS AS ANNOUNCED** by the Minister in ministerial regulations under the approval of the Committee.

LICENSES ISSUED (FEBRUARY 2020)

18
CULTIVATION

20
PROCESSING
EXTRACTION

LATEST DEVELOPMENTS: CBD AND HEMP

The Ministry of Public Health published a notification in August 2019, stating exceptions from category 5 narcotics classification of hemp & CBD. This new legal foundation is paving the way to develop a promising domestic and in future internationally-competitive hemp and CBD market. The notification states that:

- 1 Cannabis or hemp stalks, stem cores, and fibers are excepted if dried.
- 2 CBD extracts with 99% purity containing less than 0.01% THC are excepted (meaning CBD crystals).
- 3 Extracts of cannabis or hemp having CBD as major constituents and less than 0.2% THC are excepted, as identified in the Herbal Products Act.
- 4 Hemp seeds or hemp seed oil are to be considered as food, as identified in the Food Act.
- 5 Hemp seed oil or hemp seed extracts, are to be considered as cosmetics, as identified in the Cosmetics Acts.

During the first five years products in categories 3-5 are only excepted when they are domestically produced though, whereas products from foreign markets are still going to be regulated by the Narcotics Act.

However, according to these notifications products in categories 1 and 2 are not explicitly forbidden from being imported from foreign markets. Additional regulations on imports must be provided to further clarify the situation for private companies. Further new regulations on industrial hemp are on their way, which should allow for licensing for non-public entities.

The latter two have to cooperate with at least one of the first two groups. Cultivation is only eligible for one of two reasons, either for "governmental benefit or medical purpose" or for "research purposes".

An "OPERATIVE GUIDELINE" gives more detail about the minimum standards that have to be kept up for production. It defines regulations concerning the premise, security, preservation and usage control, and its guidelines are meant to be flexible for the applicant. Therefore they don't set clear requirements but give an idea of the results expected to let the applicants decide themselves on the form of execution.

The Cannabis market is highly regulated; only governmental authorities and educational institutions are permitted - others have to cooperate.

Permissions and monitoring are carried out by the FDA, health ministry, and the ONBC.

The government remains flexible enough to grant actors freedom in approach. They try to find compromise between security and protectionism vs. embracing economic benefits and liberality.

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DISTRIBUTION

STAKEHOLDERS

4

STAKEHOLDERS

To clarify the current situation and the actors moving within the industry, the most important stakeholders from the governmental sectors, private companies, NGOs and health will be introduced.

GOVERNMENTAL

- ▶ **THE HEALTH MINISTRY OF THAILAND**, with Anutin Charnvirakul as its Health Minister and Deputy Prime Minister, is a driving force of the cannabis sector in Thailand. The Minister of the Bhumjaithai Party won a major share of votes in the recent election of 2019 with his promise to liberalize access to legal cannabis. He seems to exhibit the intention to keep his promises as he has started various pilot projects and is a major advocate of legal cannabis.

Additionally, he promised to allow for Thai households to grow up to six cannabis plants for personal use. He proposes that propose those households with a comprehensive government purchasing offer of \$2.200 per kilo. This endeavor is a promise the minister made in the election campaign, which he obviously intends to keep, if possible. The amendment for these regulations will be discussed in parliament hearings this year.

In addition he ordered a ministerial regulation to help 3,000 traditional Thai Medicine practitioners, including pundit activist Decha Siripat, prescribe cannabis without violating narcotics laws. To include these practitioners in the Thai Traditional Medical Professions Act was a popular move as a recent study of the National Institute of Development Administration (NIDA) shows. It remains to be seen whether the steep increase in demand expected as a result of this decision can be met in the near future by the still insufficient supply.

- ▶ The main role of **THE THAI FOOD AND DRUG ADMINISTRATION** is to protect consumer's wellbeing by ensuring the safety, quality and efficacy of consumable products. Certain issues are decided by committees, whose members are appointed by the Minister of Public Health.

Currently, there are six committees: Drugs, Foods, Cosmetics, Narcotics, Psychotropic Substances and Medical Devices. The FDA further conducts the licensing of products and formulas as well as controlling cultivation, processing and packaging facilities.

- ▶ **THE DRUG ENFORCEMENT ADMINISTRATION** represents a licensing authority that grants permission to companies selling equipment to a licensed government organization as well as farmers, pharmacies, information technology providers etc.

- ▶ **THE GOVERNMENT PHARMACEUTICAL ORGANIZATION (GPO)** is a state-owned research agency central to the government's cannabis production goals and the first to produce cannabis for medical use. They laid out a three-phase plan from February 2019 - January 2021 and set up the first indoor cannabis growing facility in Bangkok in the first phase.

Its indoor aeroponic growing system stretches on 100sqm and reports in various international magazines like "The Economist" stated, that it's equipped with a costly security system



FIRST PRODUCTS BY GPO

Source: Sopon Mekthon / Facebook

that accounts for one-third of the \$3.1million expenditures. Yet, when we met an actor involved in the project, we were informed that the expenses for the facility were way lower. Further, there has been no biometrical security or other claimed safety devices what so ever have been installed.

The GPO will further conduct the first clinical trials examining the effects of cannabis on humans at this stage. The second phase of the project will take place in a 1.000sqm facility and, in a more distant future, industrial-scale production is intended.

Additional goals of the GPO are the conducting of research on strains and breeding, as well as applicability. Further, they provide training and seminars for prospective cannabis doctors, practitioners and other experts.

▶ Another actor involved is **THE DEPARTMENT OF THAI TRADITIONAL AND ALTERNATIVE MEDICINE (DTAM)**, which plans to work with universities to grow cannabis and produce 16 formulations of cannabis oil. The director of DTAM, Kwanchai Wisithanon, states that these formulations should mainly help people manage deteriorating health conditions. He is a pioneer within the cannabis business, who acknowledges that outdoor growth could be of substantial use, compared to the governmental projects which tend to be overly regulative indoor growing methods.

In the future, he plans to cooperate with the Kasetsart University's Sakon Nakhon campus and Rajamangala University of Technology's Isans Sakon Nakhon campus to develop outdoor plantation. Further, he discovered that roughly 554 acres of land are qualified, adding that there are plans to cultivate the "Hang Karok," strain, a local Thai cannabis strain. Further, plans are to partner up with Pra Arjan Phun Ajaro Hospital, which has been certified by the WHO for

good manufacturing practices of herbal products, to produce an array of medical cannabis oils according to traditional Thai medicine formulas.

▶ **THE TOBACCO AUTHORITY OF THAILAND (TOT)** wants to utilize the potential of 20.000-plus farmers that used to cooperate with them on tobacco plantations. Shifting to cannabis farms is a logical step for many of them, due to declining tobacco sales. The TOT had a market share in the cigarette market of 79% in 2011 and its revenue was more than \$2.1billion in 2016. Yet, at the moment, they are not holding any kind of licenses related to medical cannabis.

▶ **THE ROYAL PROJECT FOUNDATION** was established by King Bhumibol Adulyadej in 1969; it's goal of the Royal Project Foundation was to research and develop ways to improve Thailand's highland communities and lead them into a sustainable future.

On 15 October 2005, the Government of Thailand passed a Royal Decree to establish the Highland Research and Development Institute (Public Organization), HRDI. It is meant to be responsible for the development of new processes and mechanisms to support and strengthen the Royal Project's research and development activities.

Due to the long tradition of utilizing hemp, one of the first issues HRDI started to work on was the potential of hemp for the highland communities. Thus they were the first organization that got involved in research on hemp.

Government stakeholders like the GPO, FDA and DEA all play the regulative roles

The DTAM, RPF and GPO try to build infrastructure and distribution

STAKEHOLDERS

4

NGOS AND PRIVATE COMPANIES

▶ **DECHASIRIPAT**, a person deeply involved in the cannabis business and the chairman of the Rice Kwan Foundation, is a famous agricultural activist. He invented a medical cannabis oil formula which he made freely available for everyone to use. In April 2019, during the 90-day amnesty period, the military police, and officers of the Narcotics Control Board (NCC/ONCB) raided the Foundation, seized 200 cannabis plants and products, and arrested Foundation staff in Suphan Buri on suspicion of cannabis possession. Decha himself wasn't in the country at that time, because he was on a study tour in Laos, but subpoenas have been issued for Mr. Decha. This required him to report to the police in Suphan Buri to acknowledge a charge of illegal possession. He was eventually bailed out and is currently waiting for the FDA to approve his cannabis oil formula. His case is a showcase for concerns raised from various sides about the fairness and openness of licensing authorities' practices. Nevertheless, he has gained momentum since the Health Minister signed an amendment to expand licenses to Traditional Thai Medicine practitioners, with Mr. Decha amongst them. This means that the 3.000 Traditional Thai Medicine practitioners will have easier access to the prescription license, which previously took over one year to acquire.

▶ **HIGHLAND NETWORK'S CMO CHOKWAN "KITTY" CHOPAKA** describes her organization as follows: "We are a cannabis advocacy organization, a non-governmental group who want to legalize recreational cannabis in Thailand. We see it as our role to spread knowledge about cannabis because people are scared of it. Highland Network makes sure that we are always in the public sphere, raising awareness and knowledge about cannabis. We are

also pushing think tanks and innovation, patents and various solutions for cannabis products. Thailand needs an infrastructure consisting of these elements for a cannabis market to exist."

▶ **APINYA MEDICAL CO., LTD.** is the first international joint-venture to form a public-private partnership for medical cannabis research and cultivation, together with the University of Phayao in the North of Thailand. The company will cooperate with and assist the University in the licensing process and on a research facility through funding and provision of expertise. Subsequently, they will be the exclusive partner in commercial-scale production. The goal of the pilot phase is to build up a fully operational cannabis cultivation, including research and extraction facility. The construction will commence by 2020.

▶ **THAI CANNABIS CORPORATION**, is a company that is deeply rooted within the strife for legal cannabis. The mission of the Thai Cannabis Corporation said CEO Timothy Luton, "is to provide an excellent return to shareholders by partnering with Thailand's farmers and scientific researchers to make, at high volumes and affordable prices, cannabis products that are above reproach."

NGOs like Highland Network and the Rice Kwan Foundation started lobbying for (medical) cannabis even before the new legislation

Companies can only get involved in medical cannabis by partnering up with universities, hospitals, doctors or state institutions

UNIVERSITIES

In Thailand, public and private universities constitute 170 institutions of higher education (26 of which are public universities) which are available for students to enroll. There is a wide array of 4.100 curricula for the students to specialize in. In the 2015 academic year, all universities together could gain 156.216 new students, yet no more than 105.046 passed the entrance exams.

The universities of Thailand may be compared to other countries of the Asian region like Malaysia, Hong-Kong, Singapore, South-Korea and China. Only a few universities in Thailand are within the international leading universities from the region though.

Nevertheless, research of medical cannabis is a high-priority state goal and the government, as well as the universities, see great advantages in intensifying research on cannabis. Many are focusing efforts on cannabis research and cultivation within their technical/ agricultural and respectively health/ medical departments. Therefore, the Thai universities so far have obtained 10 licenses for research, and cultivation.



MAEJO UNIVERSITY PROJECT

Source: Sapon Mekthon / Facebook

- ▶ The **RANGSIT UNIVERSITY**, a middle-sized private university with about 9.000 students was the first of it's kind to seek permission for cannabis research as early as 2016. They founded a medical cannabis research institute in April 2019 in order to grow cannabis, improve strains, and develop new products. About 50 plants will be grown indoors in the university's Agricultural Innovation Biotechnology and Food department. They also provide advanced training on cannabis research for fellow scholars.
- ▶ Chiang Mai-based **MAEJO UNIVERSITY** (approximately 10.000 students enrolled) is the oldest agricultural faculty, dating back to 1934. The university takes part in a cannabis program in cooperation with the GPO, cultivating in 3.000 sqm greenhouses. They are one of the few universities which underwent a successful licensing procedure for cultivation and research. In a smaller facility, only holding a handful of plants, Dr. Preeda Nathewet coordinates the university's cannabis research program. They are currently embarking on an ambitious task to create a national cannabis strain. Symbolically, the name of the strain will be Issara 01, meaning "independence."
- ▶ Further, **KASETSART UNIVERSITY** (86.000 students enrolled) & **RAJAMANGALA UNIVERSITY** (27.000 students enrolled) are permitted to research medical cannabis. The two universities have teamed up to build a cultivation facility for cannabis together with the Department of Thai Traditional and Alternative Medicine (DTAM).

■ *Thai Universities see big potential in medical cannabis research.*

■ *Six universities are actively involved in research and cultivation holding 10 licenses.*

UNIVERSITY PHAYAO & APINYA MEDICAL

THE UNIVERSITY OF PHAYAO, an institution tutoring around 20.000 students in the Phayao region, is currently within the license application process for research and cultivation together with its private partner APINYA MEDICAL LTD. The University has ideal preconditions for cultivation in the mountainous high-north region of Thailand and in their own university hospital.



Samur Thanoi, PhD
Vice President
for Research and Innovation

The University of Phayao, established 2010, is located at Phayao. With its campus design and scenery, the University of Phayao has been named as one of the most beautiful campuses in Thailand. We aim to provide our graduates with good opportunities to become successful alumni, therefore, our students come from around the whole country. The university consists of 18 faculties and one "Research and Innovation Institute," where to students can receive high quality academic education. We want them to serve Thailand as valuable human resources as well as to produce good research and innovation in order to develop our society and economy.

Regarding cannabis research, our university has started a our collaborative project with Apinya Medical Ltd. Thailand in order to



develop our research facilities and planting areas for cannabis. We aim to develop our own research, as well as cannabis products for medical use in Thailand.

This could allow Thai people to get effective treatments through cannabis and cannabinoid products, and to create low-threshold and affordable access to therapy. Alongside with our Thai partnership, we are also seeking out international partnerships to assist in developing our cannabis project globally in the future.



Amorn Srichawla & Dietmar Schweninger
Co-Founders & Directors
of Apinya medical Ltd.

Apinya medical Ltd. is very much looking forward to the R&D project with our strong partner University of Phayao. Thailand offers great preconditions to position ourselves as leading producers of high-quality medical cannabinoid products for domestic as well as international markets. The common project explores the local conditions for cultivation and domestic cannabis strains and therefore provides the base for the subsequent high-end commercial production. An elaborate research facility including in-house laboratory, processing, and Thai traditional medicine-making for applied research will be established within the upcoming year together with the University. Our international team will combine domestic know-how with European expertise on cultivation and research to guarantee highest levels of innovation.



HEALTHCARE, HOSPITALS AND DOCTORS

The growing healthcare sector is one of the most dynamic in the region with more than **25,000 MEDICAL FACILITIES**, among which there are 1000 public and 300 private hospitals. Currently 31,000 physicians and around 12,000 pharmaceutical personnel work in healthcare. The rising importance of the health sector can be seen by the following arguments.

- ▶ First, the **PUBLIC EXPENDITURE FOR HEALTHCARE** currently accounts for \$18.7 billion (4% of GDP). The figure is projected to rise to \$50 billion (7% of GDP) in 2026, due to a high percentage of elderly people, and a growing average income.
- ▶ Second, Thailand's doctors, dentists and physicians are internationally renowned, which makes the country the **WORLD'S FORTH-MOST-TRAVELLED-TO DESTINATION FOR MEDICAL TOURSIM**.

The ONCB stated that the distribution licenses for medical cannabis are limited to professionals of medicine, pharmacy, dentistry, veterinary, and traditional Thai medicine. According to the Bangkok Post, there are currently about **390 DOCTORS, PHARMACISTS AND DENTISTS** permitted to prescribe cannabis oil (which represents approximately 1% of medical professionals). In addition, permanent secretary for public health Sukhum Karnchanapima stated that around **100 HOSPITALS HAVE ISSUED REQUESTS** to the ministry to use medical cannabis. As far as it's currently known, 12 of these have passed a substantial part of the application process to acquire a license. Nevertheless, the Government Pharmaceutical Organization (GPO) delivered 4,500 5ml bottles of cannabis oil to the Health Ministry to be distributed to 12 licensed hospitals in August 2019.

About 4,000 registered patients should benefit from the treatment, GPO executive managing director, Withoon Danwiboon, told Reuters. The remaining 5,500 bottles will be gradually distributed later and used for research. The GPO has plans to expand their own production to industrial scale, aiming to prepare 150.000-200.000 bottles of cannabis oil per month. The Health Minister stated that the Thais will have access to 1 million bottles of cannabis oil within several months, although not specifying the kind of oil that will be available.

The Hospital best known for its efforts in the medical cannabis treatment, as well as for applying TTM methods, **CHAO PHRAYA ABHAIBHUBEJHR**, produced 23'000 CBD oil bottles for treatment last summer. For the first time since the legalization, raw material for cannabis oil was produced, partly by the Chao Phraya Abhaibhubejhr Hospital and GPO. Both of these were given a license to grow medical cannabis by the Narcotics Board of Control, with the Chao Phraya Abhaibhubejhr Hospital being the first Thai hospital to be approved. However, the first batch was still deemed insufficient to meet the soaring demand, the reason being strict guidelines for distribution and access and the fact that only two entities were given the license to produce oils, with 100 hospitals pending approval. As a result the demand of only a few patients, diagnosed with severe Parkinson's and Epilepsy, can be met while 30.000 patients who have applied have to wait.

PRA ARJARN PHUN AJARO HOSPITAL, which has been certified for good manufacturing practices in making herbal products (GMP) by the WHO, will also produce five formulas of Thai traditional medicines using cannabis confiscated by the police in drug crackdowns. They further completed a deal with the Department for Thai Traditional and Alternative Medicine (DTAM) to supply

an amount of 16 separate cannabis formulas. The production will take place in cooperation with DTAM and Kasertart University.

- *Healthcare expenditure is projected to grow to \$50 billion by 2026.*
- *Thailand is the world's third most visited medical tourism destination.*
- *The sector has 25,000 medical facilities.*
- *416 licensees are permitted to distribute medical cannabis.*

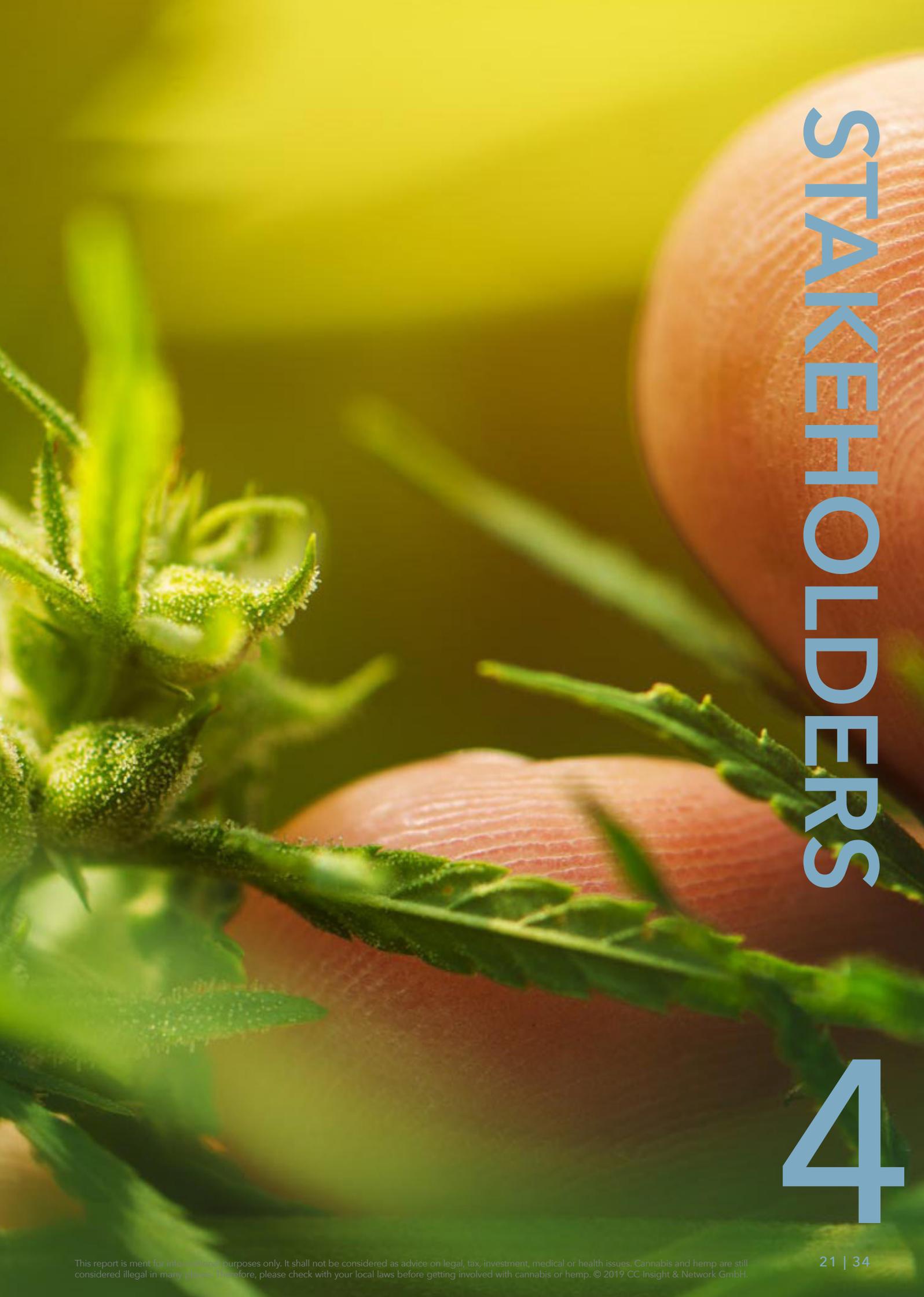
THAI TRADITIONAL MEDICINE (TTM)

Thai Traditional Medicine is a system of methods, such as herbal medicine which can be seen as devised from the Southeast Asian region, and especially in Thailand. TTM is considered a Buddhist medicinal practice. TTM knowledge was gradually developed, systematized, revised, recorded, and passed on from generation to generation throughout the country's history, from 1238. According to the WHO in 2008 \$85m of revenue was created by TTM products.

Alongside the FDA and the DMS, there are the [DEPARTMENT OF THAI TRADITIONAL AND ALTERNATIVE MEDICINE \(DTAM\)](#), the [THAI TRADITIONAL MEDICINE COUNCIL](#), the [THAI TRADITIONAL MEDICINE PROFESSIONAL BOARD \(TTMPD\)](#), and the [DEPARTMENT OF HEALTH SERVICE SUPPORT \(HSS\)](#). This year they provided two introductory workshops for over 250 interested doctors, dentists and pharmacists, on the state of legal cannabis as medicine. A third was announced to be held in July for staff working in palliative care units.

Not to be outdone by their modern medical colleagues, traditional Thai medical practitioners, and folk doctors, licensed by the Thai Traditional Medicine Professional Board and promoted by DTAM, can also be trained in separate cannabis courses after being hand-picked by the Thai Traditional Medicine Council. The traditional practitioners must work for and be associated with a Thai traditional clinic certified by HSS. Currently, application demands for TTM practitioners (with a working license from DTAM but no membership of the TTMPD) are very high and the process of being licensed by the Ministry of Public Health can take up to one year, which the concerned practitioners and patients publicly condemned. This competitive disadvantage affected up to 3,000 professionals. Subsequently, the designated Health & Deputy Prime Minister Anutin Charnvirakul announced an amendment that includes these 3,000 practitioners under the Thai Traditional Medical Professions Act, which he signed by August 2019. He stated: "The amendment is an attempt to help users of cannabis taking the drug for medical reasons. We want to make sure patients and medical practitioners of cannabis medical treatments will be free from legal problems."

- *In 2008 TTM products generated \$85 million in revenue.*
- *Great potential can be seen for Cannabis-infused TTM products like massage oils.*
- *TTM hospitals and doctors are pioneers in the application of medical cannabis*



STAKEHOLDERS

4

MARKET

MARKET

The Thai medical cannabis market is characterized by high potential, fast juridical developments and a considerable degree of protectionism. Yet, for businesses interested in the Asian cannabis market, there are sound arguments to expand into Thailand. Its liberal laws, good working conditions, export orientation and good economic indicators have been a catalyst for entrepreneurs ever since. Since Thailand is the first country to legalized medical cannabis in the Asian region. Many see it as a gateway to what is expected to be the biggest cannabis market in the world.

GENERAL FRAMEWORK

With a population of nearly 70 million, in terms of inhabitants, Thailand can be compared to Germany. In Europe, Germany is currently considered one of the most promising medical cannabis

markets. Yet, although it has raised its GDP per capita by more than 350% since the year 2000, Thailand can't keep up with the German purchasing power. Nevertheless, with a long tradition of cannabis in TTM, an aging population and steeply rising healthcare expenditures, medical cannabis holds a high economical potential within Thailand's medical sector. The country's strategic value also lies in the easy commercial access to Asia, which is projected to become one of the biggest cannabis markets worldwide. With even more potential customers than North-America, it is considered one of the most promising future markets. This opens up tremendous opportunities for FDI within the Asian region, provided that the national markets will be accessible for import.

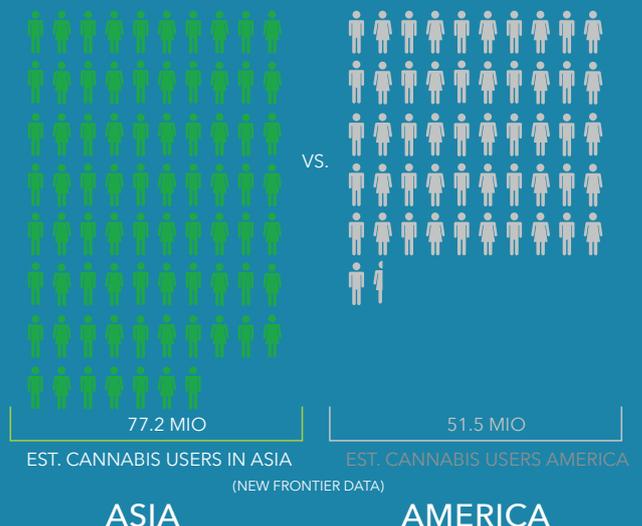
Nevertheless, to estimate the emerging Thai market at this early stage is a delicate matter. Undefined regulatory framework and uncertainties about the country's pace of progress are some of the crucial obstacles.

ASIA CANNABIS KEY FIGURES



- 1: PROHIBITION PARTNERS
- 2: NEW FRONTIER DATA

MARKET ESTIMATES 2024



ASIA

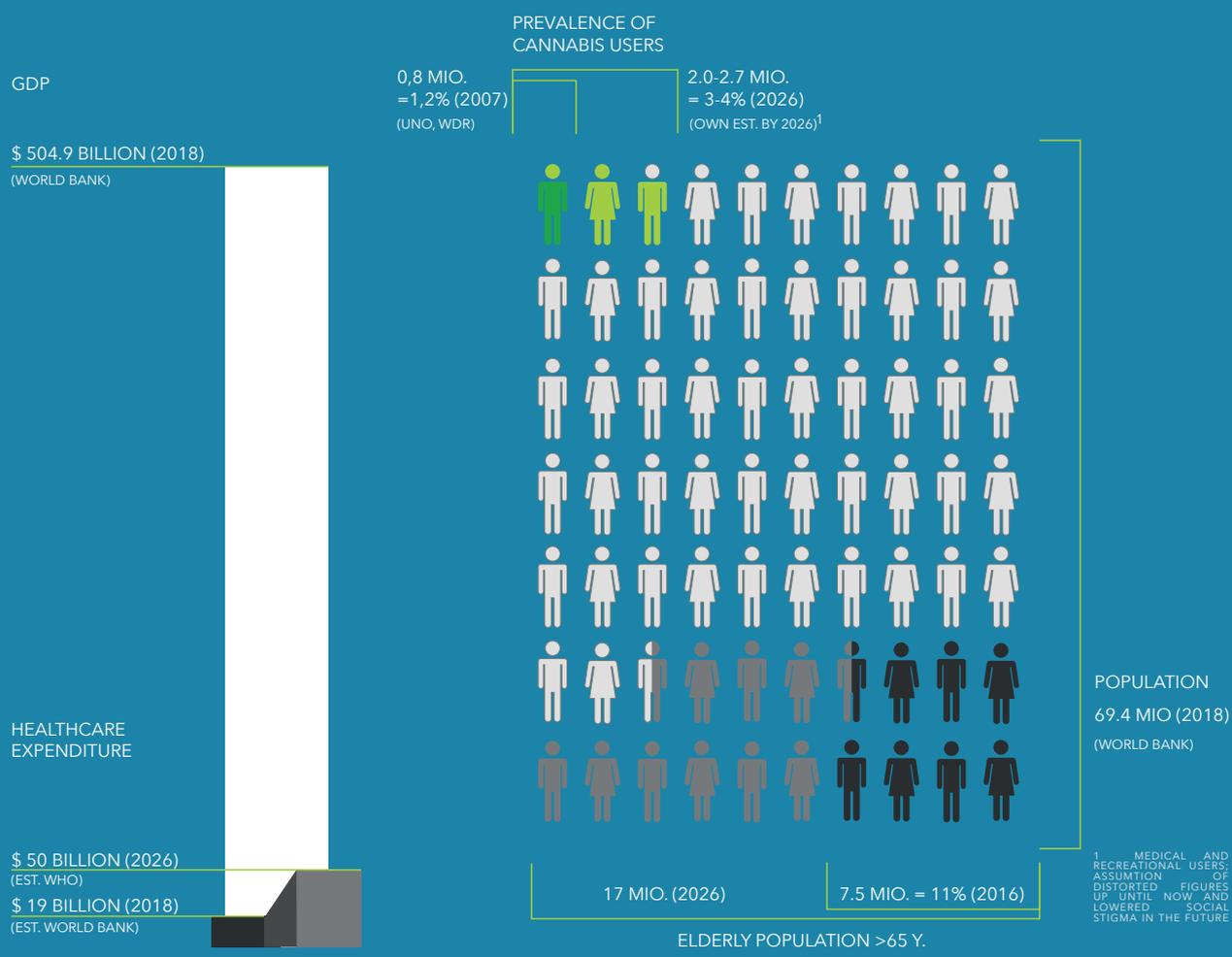
AMERICA

CANNABIS USERS



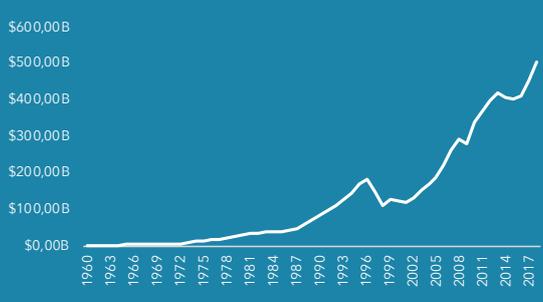
MARKET

THAILAND KEY FIGURES

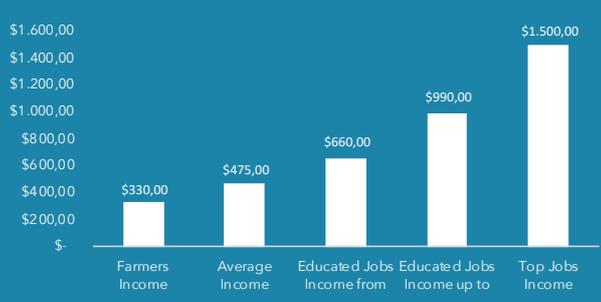


GDP & HEALTH

POPULATION, AGE & CANNABIS CONSUMPTION



GDP GROWTH 1960-2017



AVERAGE INCOME



CANNABIS MARKET VALUE THAILAND 2024 ESTIMATE (MILLION USD)



TOTAL NATIONAL ECONOMIC VALUE
1.8 - 2.0 BILLION

MED. CANNABIS PRODUCTS DOMESTIC MARKET VALUE

- *1: PATIENTS-CONSUMPTION-MODEL PRODUCT WHOLESAL VALUE
- *2: PHARMACEUTICAL-SALES-MODEL MARKET SHARE VALUE



MED. CANNABIS TOURISM



ANCILLIARY MARKETS POTENTIAL



MEDICAL CANNABIS MARKET ESTIMATES: METHODOLOGY

To publish valid and reliable predictions, our researchers gathered data from various sources. Additionally, we conducted qualitative research through multiple field visits in Thailand and included findings from interviews with local experts like universities, businesses, and public bodies. Using that data, we created two independent models to calculate the future market size. Based on this model, we used various approaches and combinations of factors. Further, we created ranges of predictions, which include optimistical and rather pessimistical estimations.

First, the expected market size is calculated by considering of the potential patients, the demand created by them, and the price of the medical products. The model is called the patients-consumption model. Due to the uncertain volume of patients and their consumption, we calculate a range for the expected market size, from the worst case to optimal conditions.

Second, the growth of the healthcare budget and the amount of prescription drug sales, respectively its share of medical cannabis sales, constitutes the pharmaceutical sales model. It is further supplemented by additional factors, which diversify the model to deliver an aggregated national demand. Those factors include the size of the ancillary market, medical tourism revenue, and exports.

1. PATIENTS-CONSUMPTION-MODEL

This model includes three factors:

- volume of medical cannabis production
- industrial purchasing price of medical cannabis
- number of patients

PRICE AND VOLUME

The first batches of cannabis oil, although distributed to patients free of charge (as a social-insurance benefit) are estimated to carry a price tag of 500 Baht (\$16) per 5ml bottle. The cannabis oil on the black market is sold for approximately 1,000 Baht (\$32) per bottle. Findings from other legal markets suggest that it is crucial to the campaign's maximum success, to keep the price of medical cannabis beneath the black market price. The oils currently supplied are produced by Thai GPO, and vary from 10-30ml CBD to 5ml THC. Reportedly, the government plans to buy cannabis in medical quality from regular citizens for \$ 2.200 per kilo, once the regulations are in place. Arguably, following the trend on the international wholesale price and the fact that industrial cultivation will lower the production costs, this price will drop for commercial productions. Therefore, we calculate with \$1.200 average wholesale price for 1kg of medical cannabis in Thailand. This corresponds with the wholesale price on the world market, currently being around \$4000 per kg (according to the latest purchasing of Germany with Aurora) but expected to drop further. Yet, we expect Thailand to be capable of producing at lower costs than Canada soon.

The health minister plans to distribute 1.000.000 bottles of medical cannabis to patients within six months. Assuming a bottle size of 5ml of full extract oil,

this could lead to a demand of over 5 tons of medical-grade cannabis within six months. With an estimated price of \$1.200 per kilo, this would add up to \$6 million in wholesale expenses, as opposed to \$16 million in sales for the next 6 months. The GPO even estimated 2000 grams of medical-grade cannabis necessary to supply cannabis oil per patient (over one year) which is quite high. When compared, for example to Germany, where the government calculates an amount of 104gram per patient the figure of 2000grams seems enormous. In Canada, in the fourth quarter of 2015, patients consumed 240grams per person. Further, in Uruguay, people consumed on average 170 grams per person in one year. Therefore, we anticipate 200 grams per patient and year in our calculation.

PATIENTS

Regarding the number of patients, the three most severe conditions for which therapy with medical cannabis is permitted are chemotherapy-related side effects, epilepsy and multiple sclerosis. Nationwide, 586.000 patients have been diagnosed with cancer, according to the WHO. Further, 473.249 people have experienced episodes of convulsion, a symptom of epilepsy, according to the Thai Ministry of the Interior. In addition, there are 1,300 Multiple Sclerosis patients currently known of. These constitute a group of 1.06 million potential patients, showing the most severe conditions treated. Additionally, minor conditions like back pain, glaucoma, depression, and muscle problems qualify for cannabis therapy, which would lead to a much larger group of potential patients. In total, adding the prevalence of these minor conditions, this constitutes a group of 13 million patients. Considering the obstacles for patients and other emerging difficulties, at least 10% of the patients could embrace medical cannabis. Therefore, in total numbers, at least 1.3 million

patients could gain the right for a medical cannabis license, depending on the issuing practice of patients licenses, their supply, and their quality. Not all patients will trust the effects of medical cannabis. Only the practice of licensing will show how strict the requirements for treatment will be in the end. Moreover, the country's productive capacities are currently unfit to meet the soaring demand of over 30.000 patients, who have already applied. Therefore, to conduct realistic estimates we ran calculations with various numbers of patients, from 106.000 to 1.3 million.

MODEL LIMITATIONS

Practice of licensing not foreseeable yet. Demand depends strongly on the barriers for Patients applying for license and the conditions that qualify for medical cannabis use.

Governmental pricing policies are not fully in place yet. Price per gram / bottle will depend highly on pricing strategy as well as supply and demand.

Patients' average consumption not clear yet. Average gram of cannabis can only be assumed from other states experiences.

Average wholesale price will highly depend on the cultivation and processing standards that will prevail. Greenhouse cultivation and processing according to EU GMP will differ greatly from outdoor cultivation.

2. PHARMACEUTICAL-SALES MODEL

To compare and predict the share of medical cannabis sales within the Thai pharmaceutical market, we analyzed the developments, which were generated by legalization in other markets. To accomplish comparability, only countries with a similar pharmaceutical-sales structure were taken into account.

Since medical cannabis requires a prescription/license, it will be accounted for as pharmaceutical sales. Pharmaceutical-sales currently constitute 29% of the domestic healthcare expenditure. Thailand spends \$18.7 billion on the domestic healthcare system, which is not very little compared to countries like Canada, or Germany. Yet, the healthcare expenditure is expected to increase due to factors like the rising GDP, an increasing elderly population, and medical tourism. Various data-sources predict Thailand's healthcare expenditure for 2024. According to the market research company Fitch, Thailand will have spent \$26.3 billion on healthcare by 2024. An even more progressive estimate, made by the WHO, stated that healthcare expenditure will accumulate to \$30 billion by 2024.

Due to the importance of state-operated actors in Thailand, the proportion of government and private share of health expenditure is significant. In Thailand, the ratio of government to private health expenditure is around 76% to 24%.

Domestic pharmaceutical sales constitute 12% of the general healthcare expenditure or \$5 billion. Further, 80% of the pharmaceutical sales consist of prescription drug sales while over-the-counter sales make up 20%. In countries that have legalized medical cannabis, cannabis sales represented around 5% of the overall prescription drug sales 5 years after legalization. Those factors are put to use in the model to constitute a range of predictions, and the size of medical cannabis's share of pharmaceutical sales could be.

MODEL

LIMITATIONS

- *Cannabis's share on pharmaceutical sales value depends strongly on the pricing of cannabinoid based products. The big share in comparable economies will most likely be associated with a high pricing of cannabis at the time. In Thailand, cannabis will become an affordable alternative to other drugs. Therefore, the price must be expected to be kept low, which could result in a smaller total share.*
- *The share depends highly on public acceptance of cannabis medicines and the implemented practice of licensing, which is not foreseeable yet (although it looks promising).*

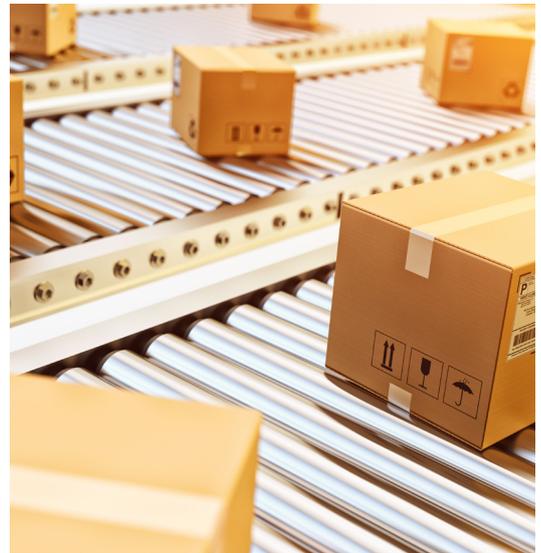


ADDITIONAL MARKET FACTORS

The boost for the Thai economy emerging from the legalization of medical cannabis is not limited to the mere production of medicines for the domestic market. The new legislation opens the door to additional added domestic value. To capture the total national economic value for Thailand created by cannabis factors like the global export potential, medical cannabis tourism and the divers upcoming ancilliary markets have to be considered.

EXPORTS:

Countries in the region, like Hong-Kong, South-Korea, Singapore and Malaysia, have already stated their interest in importing high-quality medical cannabis, once Thailand can export its their products. With the new regulations concerning CBD, new emerging markets could potentially outperform medical cannabis by far in the near future. Additionally, Thailand is a declared export country.



MEDICAL TOURISM:

Thailand is currently the third-most-visited country by medical tourists in the world. Further, the tourism minister plans to integrate cannabis into a new tourism strategy.



ANCILLIARY MARKET:

In many countries, this market segment receives a greater share than the plant-touching segment. The segment includes consulting, cultivation products and sales, extraction equipment, lab testing, legal, media, packaging, security, software, etc.



INSIGHTS

Despite the careful approach in creating cannabis-based products, many Thais are fully aware of their market potential. The new government has stepped up the pace, proclaiming the constitution of a thriving cannabis market as a top goal of the administration. But it is not without delicate caution and protectionism, which only recently seemed to decrease somewhat due to loosening the CBD and hemp regulations, that the development proceeds.

After the first trials and pilot-projects, industrial-scale production will be the aim of the government enterprises by 2021 at the latest. Nevertheless, private companies aiming to cultivate or trade medicinal cannabis in Thailand have to exhibit at least two-thirds Thai ownership and register under Thai law, which challenges the ambitions of foreign stakeholders. Yet, even though the regulations are strict, they are not prohibitive to foreign investors, which can be seen in some early joint ventures together with companies like Apinya Medical, CBD Med Card, and others.

Under the stewardship of the designated deputy Prime Minister and Health Minister Anutin Charnvirakul, who acts to utilize the benefits of the plant to the advantage of Thai people, the cannabis community is growing by the day. By 2024 the market should be further opened and foreign investors, despite mandatory Thai involvement still necessary, introduced to the great potential of the industry. Still, the desperately high-security standard could make things more complicated, which in terms of cultivation facilities, storing and other areas, could be a threat to innovation and entrepreneurs. The way the country puts its natural advantages into play will be pivotal.

Thailand has multiple prominent features, like strong export orientation, good climate conditions, high medical standards, and recreational as well as medical tourism, that makes the country a potential leading player within the Asian cannabis market. The question is whether it will succeed in implementing cannabis-related products and services through innovative industrial operations, and at the pace at which it will expand its operations.

Exports of cannabis products to countries in the region, as well as to the West, in the long run, will be most promising. Thailand is the 23rd largest export economy in the world and the 32nd most complex economy according to the Economic Complexity Index (ECI). It has distinct trade relations with many countries – among them, many that exhibit great interest in Thai cannabis products, which may be beneficial to the development of the cannabis. In 2017, Thailand exported goods worth \$215b. and imported \$160b., resulting in a positive trade balance of \$54.8b. Thailand exports 286 products with revealed comparative advantage (meaning that its share of global exports is larger than what would be expected from the size of its export economy and the size of a product's global market).

There are many important trade partners of Thailand, which already have a high demand for medical-grade cannabis or other cannabis-derived products, as well as some which could legalize it in the next few years. The top export destinations of Thailand are China (\$40.7b.), the United States (\$28.2b.), Japan (\$22b.), Malaysia (\$10.9b.), Hong Kong (\$10.7b.) and Germany (\$6.8b.). Additional, trading partners are Hong-Kong, Australia and Germany which already allow imports of medical cannabis or cannabis-derived products and exhibit a growing cannabis sector. Further, at the time of writing, Malaysia and the USA are considering legalization

at the state level, which could lead to growing demands on imports. Japan, on the other side developed an enormous CBD market, which could become one of the most interesting export markets for Thailand in the future.

- *The Thai government's strategy is protective, to keep prices low and create independent supply*
- *The country is export orientated and could focus on cannabis export, maybe as soon as 2024*
- *The pace, transparency and implementation of the private sector will be crucial*

KEY SEGMENTS

While the business opportunities are various we will focus on the areas of applications of healthcare, tourism, export, ancillary market and sustainability.

▶ **HEALTHCARE** is amongst the fastest growing market segments of Thailand's economy and is expected to reach \$50 billion by 2026 (according to WHO). Recent figures show that in 2018, approximately 3.7% (\$18 billion) of the country's GDP was designated to healthcare. This figure will grow further, due to the life expectancy rising to 72 years for males – 76 years for females. According to the WHO, in 2026 the healthcare spending will make up 7.5% of the country's GDP (\$ 50 billion). In 2016, 7 million people (10% of the population) were above 65 years of age, in 2026 they are predicted to make up expectably 17 million (or 25% of the population). The fact that the elderly population will more than double, will substantially affect pharma spending. Currently, pharmaceutical sales in

Thailand are \$5.4 billion. By 2024 this number could grow to \$11.5 billion, which would add up to 29% of the country's healthcare spendings. Considering factors in Thailand like, the relative price difference, the high demand due to traditional medicine, exports, medical tourism, and adding the value of ancillary markets, we predict a total national economic value of \$2.5 billion for 2024. With anticipated pharma spending of \$11.5 billion, the health sector is designated to comprehensive investments, which includes the medical cannabis market. The prediction for Thailand 2024 medical cannabis pharmaceutical sales ranges between \$311 and \$511 million. Further, the Health Minister added cannabis-derived products, to the list of essential drugs. This lays the foundation for the medicine to be widely available, being subsidized as social insurance deliverables. Thailand provided its citizens with a general healthcare system in 2002, since then, Thailand's pharmaceutical and healthcare market has ascended to the top ten markets within Asia.

▶ The blossoming healthcare sector also makes the country a destination for **HEALTHTOURISM**. Thai dentists, especially, are amongst the best-attended in Asia. Accordingly, they are highly frequented by individuals from nearby countries, but also from Europe. This makes Thailand the third most frequented medical tourism country worldwide. The fact that Thailand can already provide excellent personnel as well as therapies and has the chance to utilize medical cannabis research, the country could become a medical cannabis hub. Patients from Asia and other parts of the world could come to Thailand for legal medical cannabis in combination with other various qualities the country possesses. The government is well aware of the potential that health tourism holds for their country. This became very clear when the new government put medical cannabis

tourism up on its agenda. The Minister of Tourism has declared that there will be immediate measures, which should already be showing effects by 2020. This can be seen as a move to counter the decreasing tourism rates, which dropped in the summer of 2019 by nearly 30% compared to the same period in 2018. The country's tourism economy requires stimulation and the Tourism Minister said he wants to promote the countries quality cannabis profile in association with massage and other renowned Thai services like traditional Thai medicine. The Minister stated that these services should be promoted for one year and by summer 2020 the numbers of tourists, especially from Europe and the USA should be increasing again.

▶ Following the latest easing of regulations on **CBD AND HEMP**, the introduction of new products could lead to a disruptive development within the market. In many countries, with respective regulation, we can observe a very high demand for CBD products. Further, an increase of innovative beauty, health and edible products – for which there is sufficient demand in Asia – can be of significance. Additionally, the trend of rising acceptance towards cannabis through the introduction of legal CBD and the rising demands that results, has been observed in other countries already. Since the loosened regulations on highly concentrated, pure CBD and various hemp products are not only referring to the domestic production. The possibility of import/export persists, if corresponding regulations will clarify the matter.

▶ Another segment which is subjected to change is the Thai **HEMP INDUSTRY**. Due to the prohibition Thailand lost its successful hemp production. Nevertheless, since the legalization of hemp in Thailand, which came in early 2017, the situation has started to change again. Thailand again started to export (even if only 2,300kg) hemp in the same

year the legalization took place. Even though China's and Canada's positions as the biggest hemp exporters can hardly be challenged, Thailand is well aware of its strategic advantages.

▶ **SUSTAINABILITY** is also a promising element in the future cannabis and hemp market. Not only is cannabis in all its forms a very promising and versatile compound, which we slowly start to discover again – it's also a very environmentally friendly plant. Some of the fast developing industrial countries in Asia have significant problems with the effects of climate change. Thailand's CO2 output has grown by 30% since 2008 and is not showing any signs of decreasing. For many industries and countries, which are already or potentially struggling with vast financial penalties for ecological reasons, investments in or deployment of CO2-binding substances could prove healthy. Hemp exhibits very promising properties, up-taking three times more Co2 than other crops like corn, soy or rice. It could prove more sustainable and economically productive for a farmer to plant hemp/cannabis than rice.

■ *Healthcare spendings will double in the next 4 years.*

■ *Pharma spendings will reach \$14 billion by 2024, of which \$311-\$647 million could be medical cannabis sales.*

■ *Thailand shows great potential for medical tourism, as the World's number 3 country for med. tourism.*

■ *Hemp and CBD industries will be further deregulated and show great potential.*

■ *Cannabis will be implemented for tourist convenience.*

OUTLOOK

The pace of the juridical practice proves the Thai governments serious interest in medical cannabis legalization, making it a top priority to establish a leading position in the Asian cannabis market. The voters elevated the Bhumjaithai Party into second place because of their cannabis liberalization campaign. Their frontrunner, Anutin Charnvirakul, was elected health minister as well as deputy prime minister. He recently drafted further amendments regarding cannabis, hemp, and CBD, to advance the legalization of cannabis in various sectors.

According to the FDA, there have been 442 medical cannabis licenses have been granted so far, with 470 of them, dedicated to distribution, 18 to cultivation and 20 in processing and extraction. The distribution licenses were granted to hospitals, with the rest to be distributed by medical facilities, doctors, pharmacists, and TTM practitioners. Research and cultivation, on the other hand, are operated mainly by a handful of universities and state-operated institutions. At the time of writing 18 licenses for cultivation have been granted. Yet, since the demand for medical cannabis is higher than the supply, a further increase in licenses in cultivation is expected. Nevertheless, the full commercialization of the sector and liberal access for private companies to the market are not likely to be implemented before 2024.

It seems to be crucial for Thailand to counter the problem of a rapidly growing population which leads to rising healthcare expenditure. Additionally, the declining share of the working-age population will affect economic growth. As of 2016, 11% of the Thai population (about 7.5million) were aged 65 years or older – more than double the 1995 figure of 5%. By 2024, it is projected

that more than 25% of the population (17million) will be aged over 65 years. Together with China, Thailand has the highest share of elderly people of any developing country in East Asia and the Pacific. Simultaneously, the healthcare spending will rise from the current \$18.7 billion, to until \$30billion by 2024. The Pharmaceutical sales will make up between \$6.9 billion to \$8.7 billion. Medical cannabis sales could make up 5% of pharmaceutical sales, which would accumulate be \$311 - \$388 million in 2024. In addition, there will be a demand of between 106.000 to 1.3million patients, who could consume 200grams per person per year.

Due to comparable high medical standards, good infrastructure and a first-mover advantage in the R&D of cannabis products regionally, Thailand could develop into a cannabis hub in South-East Asia. That is, if a balance can be established between protectionism, to keep the profits circulating in the country, and competitiveness, to create a dynamic market. Of course, additional income from taxes on cannabis and the booming health-tourism ancillary markets and exports, could boost the Thai economy substantially. The Thai administration expects to curb the country's weakening tourism-rates, especially regarding tourists from Europe and the USA, by suggesting cannabis use for tourists, together with massages for example, as the new national tourist's strategy.

A rather uncertain role is played by the military junta as a major part of the government. Due to high-security guidelines as conditions for positive applications, some argue, the military could try to gain advantages out of legalization in the form of investment in security equipment. However, there is also sentiment within parts of the Thai society, after many years of criminalization and penalties; some associate crime and abuse with cannabis.

Furthermore, the International Narcotic Control Board has issued several warnings to Thailand's legalization movement, stating that the international narcotics contracts must not be violated. Otherwise, there could be penalties in the form of a boycott of certain medications. Therefore, the government stated its main concern is the health and safety of the population as well as living up to international standards of production in terms of security and quality control.

As the legalization proceeds, the regulations for CBD as well as for hemp have been further liberalized, and therefore possess the capacity to be a disruptive catalyst for the market. Not only can they amplify the public's interest in and acceptance of cannabis, as well as building infrastructure, and commencing research and development, they can also constitute a significant market for CBD and hemp products themselves. The industry's dynamics could result in the acceptance of outdoor cultivation, whereas currently indoors and greenhouses are the preferred options, mainly due to high security standards. If the Thai cannabis market advances further and utilizes the genuine growing premises, also relying on outdoor cultivation, Thailand can be not only regional but also internationally very competitive.

Even though complete legalization of recreational use can be expected in the future, it will not be until the end of the trial period that we will see the recreational market in Thailand consolidate. Nevertheless, the recreational market is estimated to grow faster than the medical market, not least due to the long tradition of cannabis in Thailand, as one of the originators of the plant and home to the most sublime cannabis Landraces. Nevertheless, the next three years will be marked by innovations and investments within the medical cannabis market, which could

lay the foundation for the recreational market, leading to quick-rising profits once liberalized.

With the country's cannabis market in full-extent, features like the complex and export-focused economy, cheap industrial production capacity, and beneficial climate will lead to an increased amount of foreign interest, investments, innovations and new companies forming within the Thai market.

From this point on, the way how the government attempts to further liberalize the market will prove crucial, as well as the way they circumvent conflicting interests through common jurisdiction practice. The easy-to-grow conditions could further intensify the cultivation of CBD and lead to a diversified medical

- *Pace is crucial, the government has already liberalized laws on CBD and hemp products. Further liberalizations are expected, in terms of import/export, and foreign direct investment.*
- *A rising elderly population, GDP, and health expenditure could increase shares of medical cannabis sales up to \$311 - \$388 million by 2024. Total national economic benefits could be \$1.8 - \$2.0 billion.*
- *High medical standards, top 3 medical tourism destination worldwide. Access to cannabis research and products could turn the country into a medical cannabis hub in the region.*
- *Currently there are 18 licensees in cultivation, 470 in distribution, and 20 in processing and extraction; mainly universities, hospitals, doctors and state-operated actors.*



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