

LA FILIÈRE OLÉAGINEUSE EN ASIE OIL CROPS AND SUPPLY CHAIN IN ASIA

Oilseeds and vegetable oils in asia: a world of diversity

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Received 30 June 2016 – Accepted 31 August 2016

Abstract – Out of the two dozen countries that constitute what is generally called “Asia”, some are the largest in the world while others are islands with smaller populations. When looking at oilseeds and vegetable oils in the region, one is faced with the same huge diversity which makes it complex to analyze, all the more that statistics are not easily available for many countries. Aside from the large differences in size, the region covers a wide spectrum of diversified climate environments. Asia is also mainly characterized by its huge population which has become largely urban, a key factor leading to the impressive growth of vegetable oil demand in the past 30 years. At an average of 23.2 kg/year, Asian per capita consumption of oils and fats still remains slightly below the world average of 28.3 kg/capita/year. Therefore, although 53% of the world population is located in Asia, only 45% of world oils and fats is consumed in the region. As detailed in the paper, the world of Asian oilseeds and vegetable oils is highly concentrated on soybeans and palm oil. In spite of a large domestic production in China (12.3 MnT), soybeans are imported in huge quantities, mostly by China (78 MnT, 84% of the region’s imports) where more than 28% of world soybeans production is being crushed. Palm oil, the second large commodity consumed in the region, is mainly produced within the region, mostly in Indonesia and Malaysia. So where is the “world of diversity”? Hidden behind those two dominant commodities, practically all of the ten oilseeds constituting the core of the world production are grown in significant quantities in the region while, for vegetable oils, all those of significant importance are produced within the region with the exception of olive oil. The main question that should be kept in mind when reviewing this large regional demand is under what condition will future vegetable oil production be able to meet the expected rise of per capita oils and fats demand within the region, particularly from the three largest populated countries that are China, India and Indonesia.

Keywords: Oilseeds / vegetable oil / palm oil / soybean oil / China / India

Résumé – Sur les deux douzaines de pays qui constituent ce qu’on appelle généralement « l’Asie », certains sont parmi les plus vastes du monde tandis que d’autres ne sont que des îles. Dans le monde des graines oléagineuses et des huiles végétales, la même grande diversité existe rendant ces secteurs complexes à analyser, d’autant plus que la région couvre un large éventail d’environnements climatiques et que les statistiques ne sont pas aisément disponibles pour de nombreux pays. L’Asie est également caractérisée par sa population devenue majoritairement urbaine, un facteur clé conduisant à la croissance impressionnante de la demande d’huile végétale au cours des 30 dernières années. Avec une moyenne de 23,2 kg/an, la consommation par habitant d’huiles et de graisses reste légèrement inférieure à la moyenne mondiale de 28,3 kg/habitant/an. Bien que 53 % de la population mondiale se trouve en Asie, seulement 45 % des huiles et graisses est consommée dans la région. Comme indiqué dans le document, le monde des oléagineux asiatiques et des huiles végétales est fortement concentré sur le soja et l’huile de palme. En dépit d’une importante production nationale en Chine (12,3 MnT), le soja est importé en quantités considérables, principalement par la Chine (78 MnT, 84 % des importations de la région) où plus de 28 % de la production mondiale de soja est trituré. L’huile de palme, la deuxième grande denrée consommée dans la région, est essentiellement produite dans la région, en Indonésie et en Malaisie. Où est, alors le « monde de la diversité » ? Caché derrière ces deux produits dominants, la quasi-totalité des dix graines oléagineuses constituant le noyau de la production mondiale sont cultivés en quantités importantes dans la région, tandis que, pour les huiles végétales, toutes celles d’importance sont produites dans la région à l’exception de l’huile d’olive. La principale question qui doit être gardée à l’esprit lors de l’examen de cette forte demande régionale est de savoir si la future production d’huile végétale sera en mesure de répondre à l’augmentation attendue de la demande régionale, en particulier parmi les trois pays les plus peuplés que sont la Chine, l’Inde et l’Indonésie.

Mots clés : Oléagineux / huile végétale / huile de palme / huile de soja / Chine / Inde

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Considering Asia as an homogeneous region does not reflect the reality. Out of the two dozen countries that constitute what is generally called “Asia”, some are the largest in the world while others are islands with smaller populations. When looking at oilseeds and vegetable oils in the region, one is faced with the same huge diversity which makes it very complex to analyze. In addition, for many of these countries, statistics are not easily available. As a consequence, this paper concerns 17 major oilseed and vegetable oil selected countries on the Asian scene¹ and is looking at this “world of diversity” on the basis of the data drawn from “Oil World” data base².

1 Asia: a complex environment

(1) Asia constitutes a complex region characterized by the following:

- a. Aside from the large differences in size, the countries cover a wide spectrum of diversified climate environments. From the northern provinces of China, basically grain and rapeseed producers, to Indonesia, sitting right on each side of the equator line and basically a palm oil producer, these 17 Asian countries encompass the full spectrum of what is commonly called the oilseeds and vegetable oil productions.
- b. Of course, Asia is mainly characterized by its huge population which, for the 17 selected countries, represents more than half of the world population, i.e. 3.9 billion people out of a total of 7.35 billion as per July 2015.
- c. Historically mostly rural, the rapid modernization of some key regional economies has transformed Asia into a huge urban environment comprising the largest cities in the world. Such a development is clearly a key factor that led to the impressive growth of vegetable oil demand in the past 30 years.
- d. Aside from Japan, a traditional industrial country, most Asian countries have witnessed a very rapid economic development in terms of GDP (Growth Domestic Product). Within 30 years, China has grown from a “small size” economic country to the number two economic power in the world thanks to double digit annual GDP growth for many years. This growth pattern has also been experienced in many other Asian countries including India, the second most populated country of the world as well as Indonesia, Pakistan and the Philippines, all with populations of more than 100 million people each. The smallest countries still account for over 5 million inhabitants.

(2) The Asian farming sector has been changing rapidly although leaving much diversity in the production pattern:

- a. The traditional farming pattern of small “family size” production units declined sharply in importance in

some key regions but remains very important in other regions such as China, India and Vietnam for example.

- b. Asian farming structure also counts on large industrial farming units such as, for example, the palm oil plantations in both Malaysia and Indonesia partly developed on new lands from the transformation of primary rain forest into industrial plantations as well as cultivation of former hevea plantations.
 - c. Against the general view that the region is essentially a rice producing country, Asia also became a key vegetable oil production area. Actually, Asia accounts for about half of world oils and fats production, mainly on account of the large palm oil production in both Malaysia and Indonesia but also thanks to a large variety of other vegetable oils.
 - d. Thanks to the monsoon rain system, the South Eastern part of the region was able to intensify its farm production while other regions are facing dryer climate patterns. However, it is known that this vital monsoon rain system can be affected by “El-Niño”, a “warm event” which develops irregularly in the equatorial Pacific ocean region. This climatic variability has had huge impact in the past on Asian populations. It is still a factor which one has to take into account when looking at the farming potential in Asia.
- (3) It is known that the consumption of oils and fats is directly linked to the size of the population combined with its economic development level. At an average of 23.2 kg/year, Asian per capita consumption of oils and fats³ has grown considerably in the past 30 years but still remains slightly below the world average of 28 kg/capita/year. Therefore, although 53% of the world population is located in Asia, only 45% of world oils and fats is consumed in the region. In addition non-food uses are also fast developing in the region for producing biodiesel, as well as bulk and specialty oleo-chemicals. Reflecting this large diversity of the region, per capita consumption of oils and fats (not only for food) shows large variations from one country to another from a low of 6 kg/year in North Korea to a high of 158 kg/year in Malaysia (Fig. 1). This exceptionally high per capita consumption in Malaysia is mostly constituted of bio-fuel (roughly 136 kg/c). However, the largest countries, those which do impact markets by their large demand, show per capita consumption ranging from 13 kg/year in the Philippines to 36 kg/year in Indonesia. The large per capita consumption figures in countries such as Malaysia, Indonesia and Singapore are due to non-food uses.

As many of these countries were experiencing a high level of development, per capita consumption rose sharply in the past 10 years (Fig. 2). China alone shows a 28% rise while India increased by 40%. Thailand, Indonesia (primarily through rising biodiesel usage) even show the largest rises of more than 80%.

¹ The 17 entities are : Bangladesh, China, Hong Kong, India, Indonesia, Japan, North and South Korea, Malaysia, Myanmar, Pakistan, Philippines, Singapore, Sri Lanka, Taiwan, Thailand and Vietnam.

² All data used in this report are issued from the recently released “Oil World Annual 2016”. For inquiries go to www.oilworld.de or contact info@oilworld.de

³ This per capita analysis refers to the following 17 oils and fats: soya oil, cottonseed oil, groundnut oil, sunflower oil, rapeseed oil, sesame oil, corn oil, palm oil, palm kernel oil, coconut oil, butter, lard, fish oil, lin seed oil, castor oil and tallow and greases.

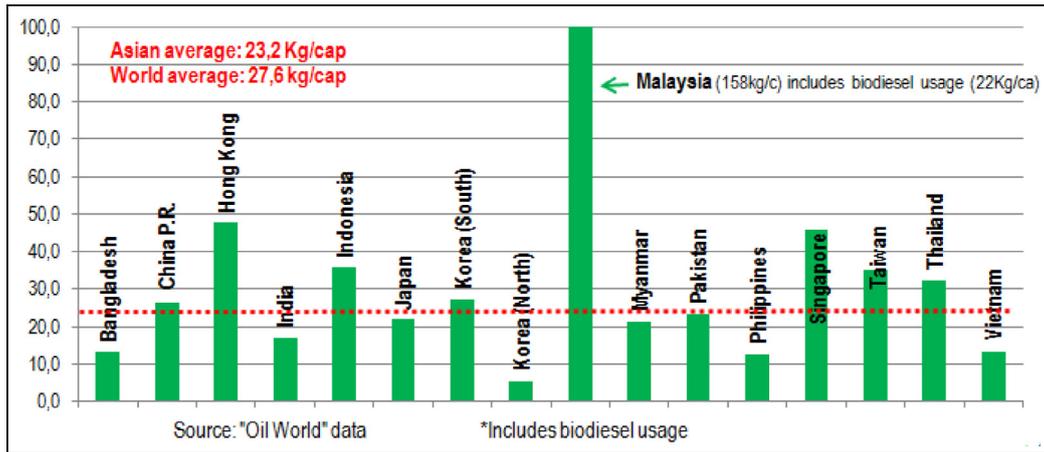


Fig. 1. Selected Asian countries – per capita vegetable oil disappearance year 2015 (in kg/capita).

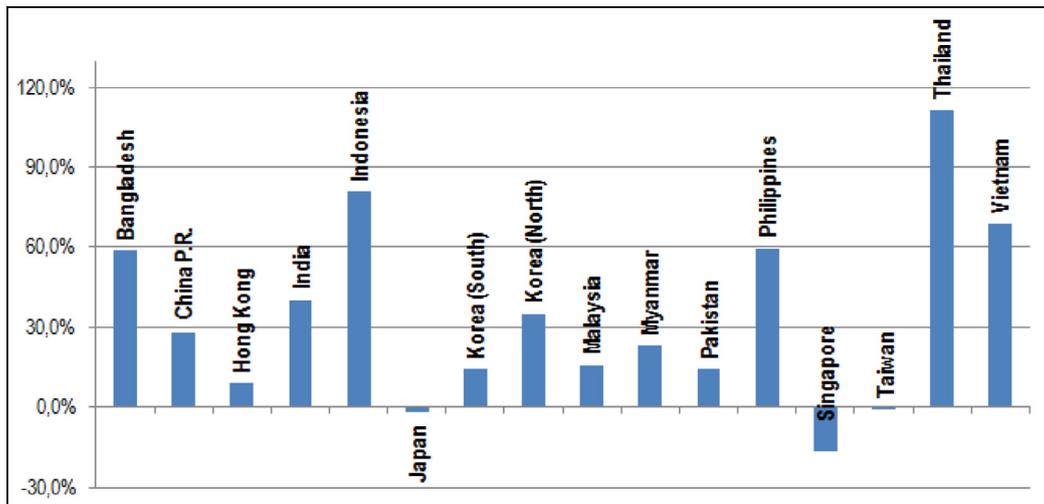


Fig. 2. Selected Asian countries – per capita vegetable oil disappearance – change 2015/2005 in %.

2 Asian production of oilseeds⁴

With more than 20% of world oilseeds production, Asia constitutes the second largest production region in the world at 109 MnT (million tons) although quite far behind the American continent which grows 61% of all oilseeds harvested in the world. But Asia is a dominant world producer in a variety of oilseeds such as palm kernel (88% of 2014/2015 world production), copra (84%), cottonseed (61%) and groundnut (60%).

Reaching more than 28 MnT in the last 2014/2015 season, cottonseed still constitute the largest oilseeds production of the region accounting for 61% of world production (Fig. 3). At 23 MnT, soybean production is the second largest oilseeds crop in Asia although representing only 7% of total world production. These two crops account for 47% of all Asian oilseeds crop production of which 86% are grown in both China and India. The eight other oilseeds crops include tropical crops such as groundnuts, copra, palm kernel for which Asia is the largest

producer with more than 60% and up to 87% of world production but also crop from non-tropical climates such as rapeseed (16.0 MnT, 24% of world production), some sunflower seed (3.4 MnT, 7.9% of world production) and even the relatively small production of linseed (470 Td T thousand tons), 18% of world production). Finally, Asia, actually India is practically the sole producer of castor seed (1.3 MnT, 91% of world production).

It is not surprising that the relative importance of the largest four oilseed producing countries are ranked more or less in proportion of their size with China and India dominating the production scene with 74% of total Asian oilseeds production (Fig. 4), followed by Indonesia and Pakistan. Malaysia is in the top ten of the oilseeds producers only because it is the number two palm kernel producer not only in Asia but also globally after Indonesia. Otherwise, the entry of Myanmar in this group of ten “major” countries gives an idea of its future importance as the country is progressively opening on the world markets.

When looking at the crushing activity, one is struck by its large size as it processes about 160 MnT of the 10 major oilseeds, corresponding to more than a third of total world

⁴ The 10 oilseeds considered are: soybeans, cotton seed, rapeseed, sunflower seed, groundnuts (shelled), sesame seed, palm kernel, copra, linseed and castor seed.

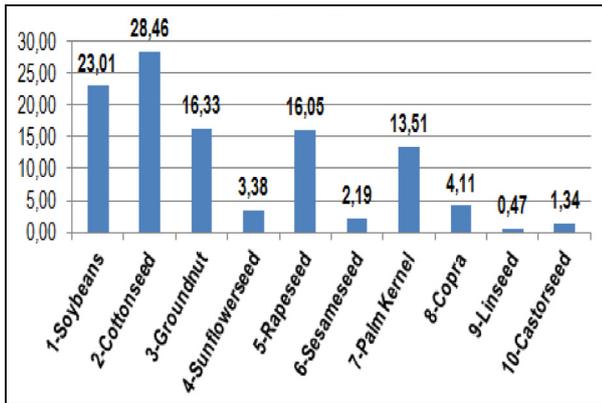


Fig. 3. Asian oilseeds production by type of oilseed (in MnT).

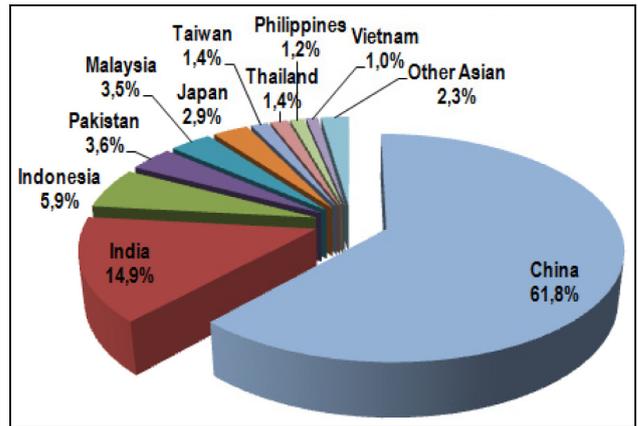


Fig. 6. Asian oilseeds crushings by major countries in 2014/2015 (% of total 160,02 MnT).

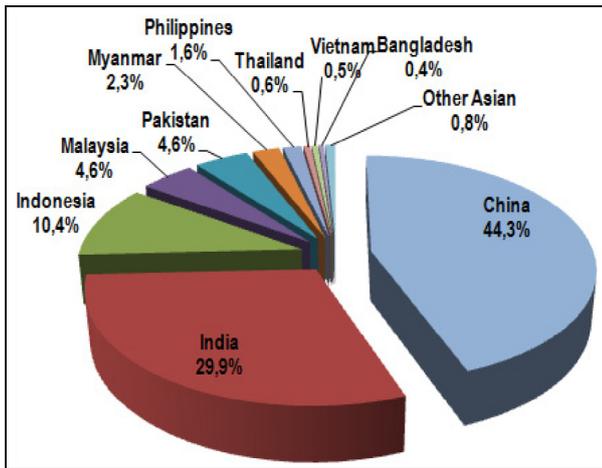


Fig. 4. Asian oilseeds production by major countries in 2014/2015 (% of total 108,85 MnT).

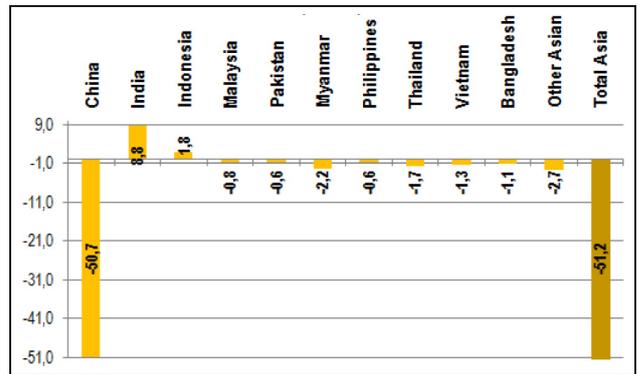


Fig. 7. Asian oilseeds surplus/deficit of local production viz crushings by country (in MnT).

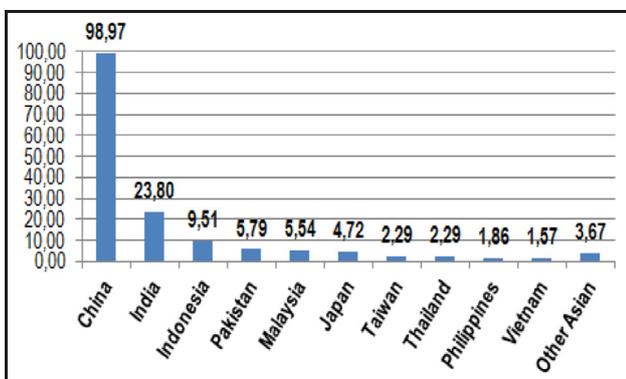


Fig. 5. Asian oilseeds crushings by major countries (in MnT).

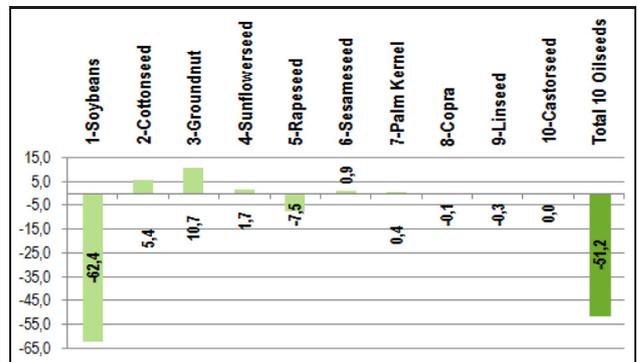


Fig. 8. Asian oilseeds surplus/deficit of local production viz crushings by type of oilseeds.

crushing activity. At 99 MnT (Fig. 5), China dominates the crushing scene as, alone, this country represents close to two third of total Asian crushing activity (Fig. 6). Actually, this large crushing industry was built very rapidly during the 90's/early 2000's when China progressively became the dominant soybean importer with 78 Mt in 2014/2015, up from only 28.3 MnT in 2005/2006. India, the second largest crushing industry, at 23.8 MnT, is far behind, its size being a quarter of

the Chinese one. All other Asian countries process less than 10 MnT oilseeds per year.

The main result of this large crushing industry is that it is partly dependent upon imports. Indeed, the region processed 160 MnT of oilseeds in 2014/2015 against total domestic oilseeds production of 109 MnT, generating large import requirements of 51 MnT (38% of total crushing in Asia), mostly located in China (Fig. 7) and associated with soybeans (Fig. 8).

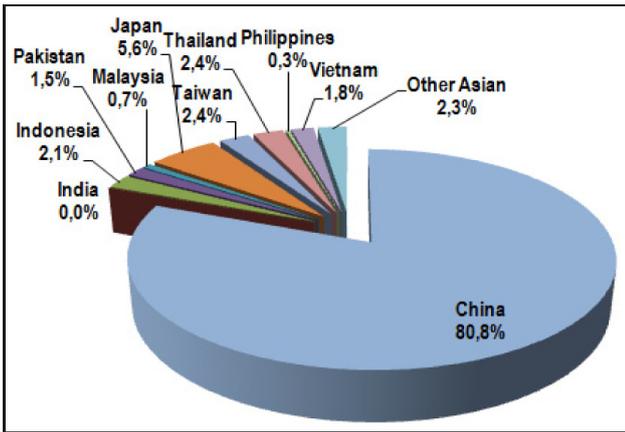


Fig. 9. Asian oilseeds imports by major countries in 2014/2015 (% of total 104,49 MnT).

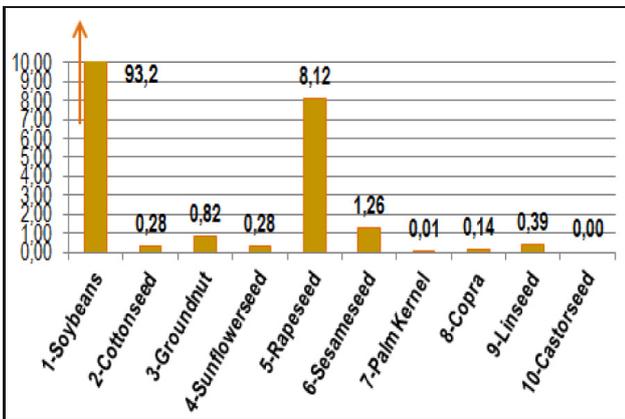


Fig. 10. Asian oilseeds imports by type of oilseeds (in MnT).

Although, globally, the region is in deficit between local production and demand, the picture is a bit different when getting into details:

- All oilseeds imports into the region reached 104.5 MnT in 2014/2015, up 7.4% from the previous year and about 18% above the average 2010–2015. In 2005/2006, total oilseeds imports into the region had reached only 78.8 MnT. So, in nine years, oilseeds imports rose by 25.7 MnT!!
- China has been and still is the key importing country with more than 80% of all imports (Fig. 9). Aside from Japan, none of the other countries show any such massive imports.
- When looking at the type of oilseeds import flows, soybeans constitute by far the largest with 93.2 MnT in 2014/2015 (Fig. 10), corresponding to 74% of world soybeans imports. Although far lower, rapeseed imports reached 8.2 MnT in our reference year corresponding to 57% of world imports. Other imports of some importance are those of sesame seed (1.3 MnT, 65% of world imports) but this flow is in large part originated from within the region.

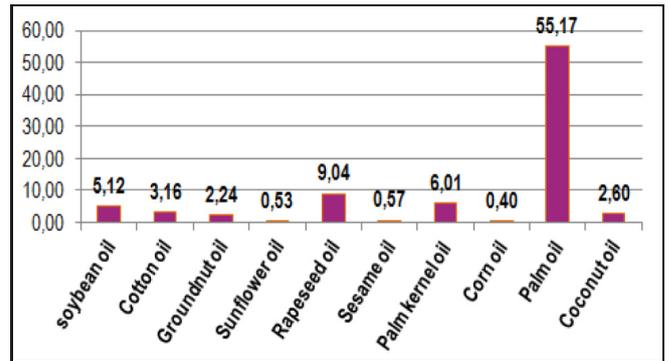


Fig. 11. Asian 10 vegetable oils production by type of oils (in MnT).

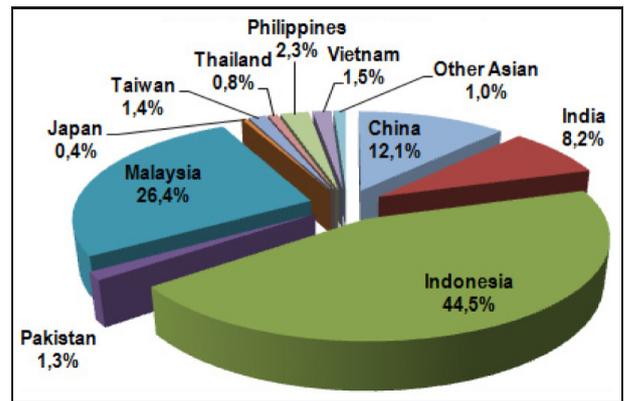


Fig. 12. Asian oil production by major countries in 2014/2015 (% of total 84,84 MnT)

3 Asian vegetable oils production and demand⁵

3.1 Asian production of vegetable oils

Although only 20% of world oilseeds are grown in Asia, the region is producing nearly half of all world vegetable oils at 84.8 MnT (49%) and the two largest producers, Indonesia and Malaysia, which represent together only 11% of Asian oilseeds production, account for 71% of all Asian vegetable oil production! (Fig. 12) These simple numbers give an idea of the importance of palm oil production in the entire Asian environment. Indeed these two countries are by far the largest producers of this key vegetable oil not originated from oilseeds. Both countries produced 53.1 MnT of palm oil in 2014/2015, 86% of world production. When including the three other smaller producers of the region (Thailand, India and the Philippines), palm oil production in the region reached 55.2 MnT in 2014/2015, 64% of all vegetable oils produced in Asia! Palm oil production in both countries experienced a rapid growth as palm tree plantations rose sharply in the past two decades including since the mid-2000 when palm oil production in both countries rose from 31.0 MnT to the current 53.1 MnT, a 71% rise.

⁵ 10 vegetable oils: soya oil, cotton oil, groundnut oil, rapeseed oil, sunflower oil, sesame oil, palm kernel oil, corn oil, palm oil, coconut oil.

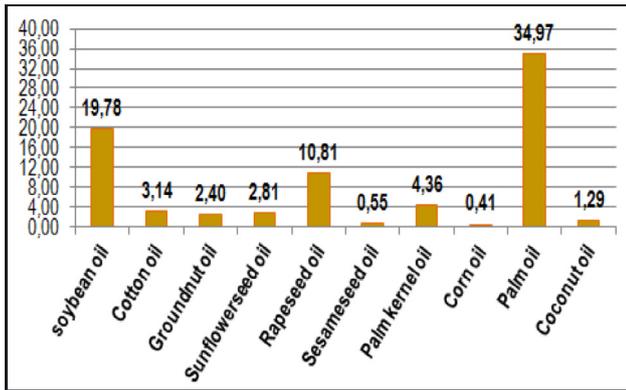


Fig. 13. Asian 10 vegetable oils disappearance by type of oils (in MnT).

Indeed, when looking at the distribution of vegetable oil production by type of oil, the massive participation of palm oil is very clear (Fig. 11). The second oil produced in the region, rapeseed oil, reached only 9 MnT in 2014/2015, 10.6%, followed by palm kernel oil (6.0 MnT) and soya oil (5.12 MnT).

Aside from Indonesia and Malaysia, China is the largest producer of vegetable oils at 10.3 MnT, a majority of which (53 %) is constituted of rape oil, the two other significant productions being groundnut oil and cotton oil. In India, about 41% of the production is soya oil (2.8 MnT), followed by cotton (16% at 1.1 MnT). Among the other Asian producers, the only countries producing more than one MnT are Thailand (2.0 MnT), Philippines (1.3 MnT), Japan (1.2 MnT) and Pakistan (1.1 MnT).

3.2 Asian disappearance of vegetable oil

As the most populous region of the world, it is no surprise to note that Asia plays a very important role in the dynamics of the vegetable oil markets. The region is by far, the largest consumer of all the 17 types of oils and fats, at 91.4 MnT in 2014/2015 (45% of world total) of which 80.5 MnT (Fig. 14 – 47% of world total) were constituted of the 10 vegetable oils reviewed in this paper, the latter growing at about 5% per year in the last 4 years. This regional usage includes both direct human consumption and non-food uses., the latter representing about 4.0 MnT per year, mostly but not exclusively located in the two major palm oil producers for producing biodiesel and oleochemical usage.

Palm oil is the dominant vegetable oil used in Asia at 35.0 MnT (Fig. 13), up from 28.6 MnT four years ago (+23%), representing about 43% of regional vegetable usage and 58% of world consumption. Slightly more than 25% of this regional palm oil usage is located in India while Indonesia comes second (21%) on account of usage in both direct human consumption and biodiesel, the latter representing about 19% of the country consumption. China, Malaysia and Pakistan follow in terms of palm oil consumption, each with more than 2 MnT per year.

The second largest vegetable oil used in Asia is soya oil, just under 20 MnT (Fig. 13), 25% of total regional usage and 42% of world consumption. Therefore more than two third of

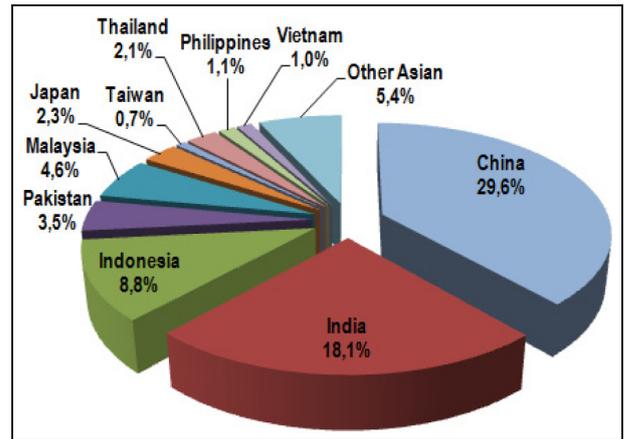


Fig. 14. Asian oil disappearance by major countries in 2014/2015 (% of total 80,51 MnT).

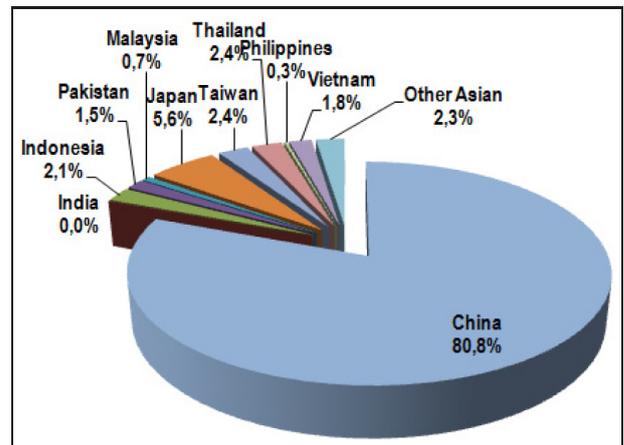


Fig. 15. Asian oilseeds imports by major countries in 2014/2015 (% of total 104,49 MnT).

the regional consumption of vegetable oils is dependent upon the supply of only two oils.

At only 10.5 MnT 40% of total world consumption, rapeseed oil comes third in terms of usage, China being the largest consumer (61% of total regional usage). As shown on Figure 13, all other vegetable oils show much lower usage representing only 18.6% of the total.

3.3 Asian trade of oilseeds and vegetable oils in Asia

As highly dependent upon imports for both oilseeds and vegetable oils, these Asian countries show two different patterns regarding their import requirements: oilseeds imports are in majority originated from outside the region, mostly concerning soybeans and rapeseed, while vegetable oils imports, of which palm oil is the largest, are mostly originated from within this group of countries.

Oilseeds imports into the region reached 104.5 MnT in 2014/2015 (71% of total world imports). China was by far the largest oilseeds importer at 84.5 MnT (81% of total Asian oilseeds imports Fig. 15) and Japan was second, far behind at 5.8 MnT (6% of the total) Soybeans imports into the region

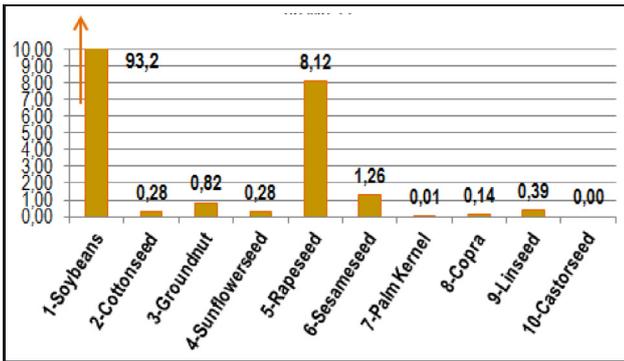


Fig. 16. Asian oilseeds imports by type of oilseeds (in MnT).

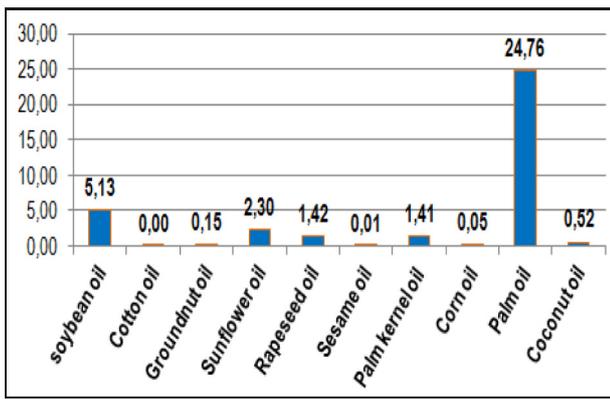


Fig. 17. Asian 10 vegetable oils imports by type of oils (in MnT).

reached 93.2 MnT, 74% of world imports while the second largest imported oilseed was rapeseed at 8.12 MnT (57% of world imports), all the other oilseeds at less than 1.3 MnT each (Fig. 16).

Vegetable oil imports reached 35.8 MnT in 2014/2015 representing, as a whole, 47% of world imports of which palm oil imports reached 24.8 MnT, 69% of all vegetable oil imports into the region and 52.3% of total world imports. Soya oil is the second largest oil imported at 5.13 MnT (46% of world imports) and sunflower oil is third ranked (Fig. 17). At respectively 14.3 MnT and 8.7 MnT, India and China were the largest oil importers, totaling together 64% of all oils traded in the region (Fig. 18). Pakistan followed with 2.8 MnT, 7.9% of the total for the region.

4 Conclusion: the key characteristics to keep in mind

The world of Asian oilseeds and vegetable oils is highly concentrated on soybeans and palm oil on account of the large populations to which these two commodities are intended to.

In spite of a large domestic production in China (12.3 MnT), soybeans are imported in huge quantities, mostly by China (78 MnT, 84% of the region’s imports) where more than 28% of world soybeans production is being crushed.

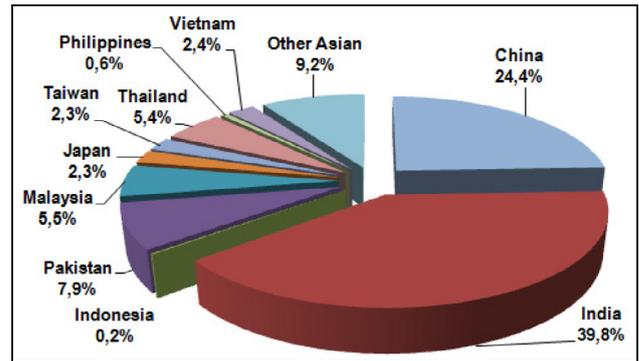


Fig. 18. Asian oil imports by major countries in 2014/2015 (% of total 35,75 MnT).

Palm oil, the second large commodity consumed in the region, is mainly produced within the region, mostly in Indonesia and Malaysia.

So where is the “world of diversity”? Hidden behind those two dominant commodities enabling the region to meet the demand of its large population, practically all of the ten oilseeds constituting the core of the world production are grown in significant quantities in the region while, for vegetable oils, all those of significant importance are produced within the region with the exception of olive oil.

Asian large population combined with its rising income has led to an exceptional rise of vegetable oil demand. This huge consumption base is compounded for some of these countries (Indonesia, Thailand, Malaysia and Singapore) with the development of a significant biodiesel and oleo-chemical usage demand of about 4.0 MnT per year. Actually, the bio-diesel demand is largely dependent upon the government mandates and the oleo-chemical demand is based on the need to substitute petroleum products with vegetable oil, mostly palm oil, in a vision of improved sustainability and biodegradability.

The main question that should be kept in mind when reviewing this large regional demand is under what condition will future vegetable oil production be able to meet the expected rise of per capita oils and fats demand within the region, particularly from the three largest populated countries that are China, India and Indonesia. With its current 26.4 kg/capita/year consumption of oils and fats, China is approaching the world average of 27.6 kg/capita but could very well exceed it in a few years. At 16.7 kg/capita/year, India’s average consumption is still far below the world average. Assuming that it will reach the world average in the coming 10 years, the need for additional vegetable oil supply is estimated at 14 MnT of oils and fats, and this only for India! Aside from the analysis of the current situation, this review actually raises the question of where, in the future, will be found the additional supply of oils and fats required to meet the rising demand of the Asian region with the additional question: Will a world shortage of vegetable oils come from these Asian countries?