

I feel grateful to be given the opportunity and experience of the program “The International Joint Seminar & Company Visit to Shin-Koto Incineration Plant” organized by Magister Management Padjadjaran University in cooperation with Rikkyo University, Tokyo.

Japan is a country that has high technology and science achievements. Many emergences of new technologies and knowledge have been pioneered by Japan. However, behind the development of all those advancements, the Japanese people uphold their belief in religion and culture. Both Shinto and Buddhist can be still very thin due to the turmoil of youth. But along with the increasing maturity and age, they require a glimmer peace of heart and soul that cannot be provided by technology and science. So they began to yearn and seek for God. The more mature the human mind, the more religious they are.

Tokyo is a symbol of sophistication and progress of human civilization. Skycrapers, Wide and Clean Streets, the power train system Shinkansen that serves thousands of human activities, as well as millions of secrets behind a city bearing the title of mega, Tokyo didn't abandon Asakusa.

Asakusa is located Nakamise Dori street, east side of Tokyo. Asakusa can be regarded as a religious site that is still left in the middle of the swift modernization of the city. Within this area there is very large temple complex. Buddhist and Shinto are united in one location adjoining full harmony. Asakusa is a proof that we cannot be separated just because of different beliefs.

On the right side of the main gate, there is stout wooden gate where Shinto's shrine stands. Shinto is the adoption and acculturation of Buddhism that came from India through China with local beliefs of the ancestors of Japan. Shinto religion and belief belong to most people in Tokyo today. Before entering the temple to perform the ritual of worship, on the left side of the temple there is a place of purification. Water from small shower was caught by a small scoop of coconut shells, and is used to wash hands and wiping our mouth. Soon after achieving physical sanctity, prayer is ready to be said.

Marketing Analysis

One of the major tourist spots in Tokyo, supported by human kindness and stores unique to the downtown as well as the picture scrolls of Asakusa. Nakamise Dori is bustling with visitors day-in, day-out. The street was founded during either the kyoho era (1716-1736), making it one of Japan's oldest shopping arcades. Around 250m long and lined with almost a hundred stores and eateries, Nakamise Dori houses several souvenir shops. About 50 on the east side and 30 on the west side, all of them are old and historical.

A tourist spot with such variety of Japanese accessories that can only be found in Nakamise Dori, and as a result it is always packed with visitors. The lively pedestrian street is lined on both sides by stalls displaying colorful Japanese-style goods. Fans, ukiyo-e (woodblock prints), kimonos, Buddhist scrolls and traditional sweets are among the items attracting both locals and tourists to the street. The row of shutters at the front of its stores functions as well as large canvas murals depicting traditional holidays and local scenes.

The business itself is not different with Indonesia's souvenir stores, but it's more attractive than others shopping sites that I have been attended. The beautiful art on display, even when stores are shut combined with temples among them, transforms the street into a unique cultural landmark. Served by the Ginza, Asakusa and Tobu subway lines, the street is easily accessible at all times from various parts of Tokyo. The opening hours depend on the individual shops, typically daily from 9:00 to 19:00. Some of the residents opened stores within the premises of Senso-ji temple and on the approach, which is said to be the origin of Nakamise Dori. The row of shutters at the front of stores is used as a single large canvas on which the traditional events and characteristic scenes for each season are drawn, resembling a large picture roll of Asakusa, so that people can enjoy visiting the place even after the stores are closed at night. It is said that Nakamise Dori is also worth visiting at night, the visitors will be amused by gorgeous mural painting on the store shutters.

Next, we did Marketing Analysis by observing the way the vendors in Asakusa selling their merchandises. It can be seen how the vendors show the uniqueness of the products, as well as the prices offered that are competing among the stores. In the food sides, hawking Small and Medium Enterprises put a picture of each food product, which is a way to inform consumers so that the tourists are able to know clearly what food will be purchased. The description of the product being sold is also made very interesting in many

ways, such as images and miniatures that resemble products. Although we had a little difficulty in knowing what products are being displayed by operators of SMEs in Asakusa, we were helped a little by the price listed on each product. Because the traders there mostly do not speak English very well, so the price tag in the form of nominal price written in Japanese and Latin inscription is very helpful for potential buyers.

With all the options available, it is easy to get lost in the nearly a hundred stores that compose Nakamise-dori. We don't need to go to a certain Japanese restaurant in Asakusa, instead munch on some of the tourists and local favorites along Nakamise Dori. It's impossible to make it down this street without getting something to eat.

Most of the stores do the packaging with a pretty paper bag, you can use it as a wrap of a gift after you unpacked it. The thing I really like about Japanese snack packaging is that the picture of the food on the pack is pretty much the exact same thing you will find inside. Such as matcha sticks, toppo matcha (pretzel sticks filled with matcha and white chocolate inside), matcha kit-kat, pocky matcha.

There are many "eating while walking" snacks in Asakusa, but the Japanese really don't do the "eating while walking" they just eat it right in the stores, but you are free to eat the snack while walking, just be careful for the crumble and litter. The smell of delicious food stimulates visitors' appetites on the crowded street, like manju, age manju (deep fried manju), dango (Japanese dumplings) ningyo yaki (cake filled with sweet red bean paste), and cold matcha.

For the ningyo yaki, you will often see it in the shape of various buildings or animals, if you're lucky (not too crowded) you will see it being made fresh, either with an iron mold pan by hand, or by an automated machine. When I purchased this, the man made it so detailed with an iron mold pan, and then give me a fresh still warm one.



There are a lot of souvenir stores in Nakamise Dori, there are awesome souvenirs that always draw my attention, The Chopsticks. We may know that chopsticks are necessary for Japanese cuisine. A chopstick maker in Nakamise Dori decorates their chopsticks with elegant images so that you will be easily attracted by it, and you can write your name on it. There are a lot of popular Japanese souvenirs in Nakamise Dori beside the chopsticks such as mini lanterns, mini bells, wind chime, pretty designed socks, and kimonos and yukatas.

With an increasing number of tourists visiting each year, Japan has begun adjusting its attitude and becoming more prepared for their needs. For example showing consideration for the subject of "halal". I don't have much time to find one. But it is said that there is a Muslim-friendly store in Asakusa, it's called Don Quijote. Don Quijote is popular for its low prices and services in the store full of entertainment, and many foreigners shop here as well as Japanese people. They provide services in many languages, and many travelers

that visit Japan Shop at Don Quijote. Of course, they offer tax-free prices for travelers. They took this approach in order to answer to the many inquiries on halal products due to increasing customers from South West Asia. The company is planning to strengthen their preparations for accepting Muslim people including the establishment of prayer spaces.

Tsukiji Market is a large wholesale market for fish, fruits and vegetables in central Tokyo. It is the most famous of over ten wholesale markets that handle the distribution of food and flowers in Tokyo. Tsukiji Market is best known as one of the world's largest fish markets, handling over 2000 tons of marine products per day. The sight of the many kinds of fresh seafood and the busy atmosphere of bicycles, trucks, sellers and buyers hurrying around, make Tsukiji Market a major tourist attraction. It is said, the numbers of visitors have increased so much over recent years, that they have become a problem to the course of business, as the aging market's infrastructure was not anticipated to serve as a tourist spot.

Tsukiji Market consists of an inner market where most of the wholesale business and the famous tuna auctions are taking place, and an outer market whose retail shops and restaurants cater to the public. A few restaurants are also found in the inner market. In order to avoid interference with business, different rules should be followed when visiting different areas of the market.

Instead of visiting the inner market, tourists are encouraged to visit Tsukiji's outer market, which is located just adjacent to the inner market and caters to the public. The outer market consists of a few blocks of small retail shops and restaurants crowded along narrow lanes. Here we can find all sorts of food-related goods, and fresh seafood and produce for sale in smaller portions than wholesale. A sashimi and sushi breakfast is a must at Tsukiji. Imagine how fresh the fish would be since this is the market where all the best sashimi comes from.

Despite its huge scale and incredible busyness, Tsukiji is a model of efficiency. But it is a very fast-paced market. Tsukiji's outer market is a fantastic place to buy top quality Japanese knives. Make sure to bring cash as few stores accept credit cards.



Cultural Analysis

Asakusa is located at Taito district on the west side of Sumida river. Asakusa was a temple town with Sensoji the main temple. According to the legend, the temple was built by fishermen brothers who said that they found the figure Kan'on (The Goddess of fertility) and followed the figure up to the headwaters of the Sumida river in year of 628, and built a temple in the place where the goddess disappeared. Sensoji Temple has three gates.

Kaminari-mon is the main door guarded by Furai-jin. Therefore, if we use subway to Asakusa, the signposts installed at subway stations Chikatetsu direct us to Kaminari-mon. In the big gate, which is made of wood there is a giant red lantern hung. On the left side there is a statue of God of the wind, while on the right is the statue of the God of the storms. Passing the Kaminari-mon, we will soon find a row of stalls selling a variety of well-known souvenirs.

The shopping area along approximately 100 meters which is called Nakamise, sell various souvenirs from keychains, fans, bookmarks, katana swords, T-Shirt, to kimono. The typical food and Japanese pastries are also available there. Although generally speaking the sellers speak only Japanese, we won't have trouble since a price tag has already been attached on each item, so we just choose which one we want to buy; then the sign language plays a role.

Not only is the temple as its main tourist destination, but Asakusa is also a home to a variety of cultural festivals such as Sanja festival and lantern festival with big lanterns are paraded around town. Nowadays we can find a diversity of religions and beliefs in Japan, starting from Shinto, Buddhism, Confucianism, to Taoism, there are also various religious groups that are often referred to as the new religion, folk religion, Christianity, and Islam. New denominations are religious movements, which have emerged in Japan since 1945, since the Japanese government has given equal treatment to all religions and beliefs that have been existed.

Religion in Japan is a wonderful mish-mash of ideas from Shintoism and Buddhism. Unlike in the West, religion in Japan is rarely preached, nor is it a doctrine. Instead it is a moral code, a way of living, almost indistinguishable from Japanese social and cultural values.

Until World War Two, Japanese religion focused around the figure of the Emperor as a living God. Subjects saw themselves as part of a huge family of which all Japanese people were members. The crushing war defeat however, shattered many people's beliefs, as the frail voice of the Emperor was broadcast to the nation renouncing his deity. The period since has seen a secularisation of Japanese society almost as dramatic as the economic miracle which saw Japan's post-war economy go into overdrive.

However, much of the ritual has survived the collapse of religious belief. Today, religion defines Japanese identity more than spirituality, and it helps strengthen family and community ties. Japanese religion is also a private, family affair. It is separate from the state; there are no religious prayers or symbols in a school graduation ceremony, for example. Religion is rarely discussed in every day life and the majority of Japanese do not worship regularly or claim to be religious.

The topic of ideological conflicts between Japanese religious belief and its modern lifestyle is one that has rarely been examined in detail. While numerous documentations are available of incidents and protests related to the desire to return to a more traditional lifestyle, these typically exclude any discussion of a broader cultural perspective. When the subject has been touched upon, it is generally paired with a belief in the inevitability of change.

In Japan today, religion is freely practiced and, at least in small numbers, a multitude of religions are present. The religious beliefs of Japan's populace breakdown to 91% Shinto, 72% Buddhist, and 13% other (less than 1% is Christian). Although in the West religious faiths are viewed as mutually exclusive, in Japan it is common for a person to adopt beliefs from more than one theology. The majority of the population therefore is *both* Buddhist and Shinto. Both of these faiths center upon nonmaterial, group values. Buddhism stresses oneness; people are not isolated, but are instead part of a network of souls. Buddhists traditionally eschew material possessions and strive to reach nirvana, becoming one with the universal spirit and thus throwing off the yoke of their individual identities.

Japan is a nation widely associated with the practice of “cultural borrowing.” The Japanese have liberally borrowed culture traits from their geographic neighbors (particularly China) over the course of their history, adapting the traits that suited them while always altering them to make them distinctly Japanese. In this way, the Japanese have acquired many of their defining culture traits, including one of their major religions. Buddhism arrived in Japan in the sixth century. Although it originated in India, Buddhism came to Japan via China and Korea, so much of the religion retained a distinctive Chinese flair (as evidenced still today in the architecture, decoration, and the style of the representations of Buddha and the bodhisattvas found of in many Pure Land temples throughout Japan). The Japanese embraced Buddhism and, by the eighth century, had absorbed the religion so readily into their own culture that it took on a national character and its far-flung roots were all but forgotten.

In its development, the indigenous faith of Japanese, Shinto was confronted with the Buddhist religion, which was finally resulted in the emergence of great competition between Japanese Shinto’s priests and Buddha’s priests so that to maintain the viability of Shinto, the Shinto’s priests received and incorporated elements of Buddha to their religious system. As a result, the religion is almost lost most of its original nature.

Shintoism is Japan's indigenous spirituality. It is believed that every living thing in nature (trees, rocks, flowers, animals, even sounds) contains *kami*, or gods. Shinto is the native religion of Japan; early Shinto mythology indicated that the Japanese were descended from divine beings; this civil religion helped fuel nationalistic fervor during World War II. After World War II, the state religion was abolished and Shinto became a matter of personal choice. Today, many Japanese may not necessarily practice Shinto as a religion, but still, often almost unconsciously, incorporate its customs and traditions into their daily lives.

Consequently Shinto principles can be seen throughout Japanese culture, where nature and the turning of the seasons are cherished. This is reflected in arts such as *ikebana* (flower arranging) and bonsai, Japanese garden design and the annual celebration of *sakura* - or cherry blossom.

Shinto only got its name when Buddhism came to Japan by way of China, Tibet, Vietnam, and ultimately Korea. Buddhism arrived in the sixth century, establishing itself in Nara. Over time Buddhism divided into several sects, the most popular being Zen Buddhism.

In essence, Shintoism is the spirituality of this world and this life, whereas Buddhism is concerned with the soul and the afterlife. This explains why for the Japanese the two religions exist so successfully together, without contradiction. To celebrate a birth or marriage, or to pray for a good harvest, the Japanese turn to Shintoism. Funerals, on the other hand, are usually Buddhist ceremonies.

As a general rule of thumb, shrines are Shinto and temples are Buddhist. Shrines can be identified by the huge entrance gate or *torii*, often painted vermilion red. However you'll often find both shrines and temple buildings in the same complex so it is sometimes difficult to identify and separate the two.

To appreciate a shrine, do as the Japanese do. Just inside the red *torii* gate you'll find a water fountain or trough. Here you must use a bamboo ladle to wash your hands and mouth to purify your spirit before entering.

Next, look for a long thick rope hanging from a bell in front of an altar. Here you may pray: first ring the bell, throw a coin before the altar as an offering (five yen coins are considered lucky), clap three times to summon the *kami*, then clasp your hands together to pray. At a temple, you'll need to take your shoes off before entering the main building and kneeling on the *tatami*-mat floor before an altar or icon to pray.

Luck, fate and superstition are important to the Japanese. Many people buy small charms at temples or shrines, which are then attached to handbags, key chains, mobile phones or hung in cars to bring good luck. Different charms grant different luck, such as exam success or fertility.

Prayers are often written on votive tablets: wooden boards called *ema* that are hung in their hundreds around temple grounds. At famous temples such as Kyoto's Kiyomizu-dera, you'll see votive tablets written in a variety of languages.

A final way to learn your destiny is to take a fortune slip. Sometimes available in English, a fortune slip rates your future in different areas: success, money, love, marriage, travel and more. If your fortune is poor, tie your slip to a tree branch in the temple grounds; leaving the slip at the temple should improve your luck.

One of Japanese's famous temple located in Asakusa. Asakusa is located on the east side of Tokyo approaching Tokyo bay. Asakusa can be regarded as a religious site that is still left in the middle of the swift modernization of the city. Within this area there is very large temple complex. Two beliefs are united in one location adjoining full harmony. Neither Buddhist nor Shinto alone, but both biting peacefully. Asakusa has become a symbol and witness that different beliefs cannot separate the humans from a value of truth and unity of life.

Entering the main gate, visitors will be escorted to the mood and feeling full of reverence. In prayer and mantra, every hope of the coming world peace, Asakusa offers two main stream media of beliefs held by Tokyo's people, which are Buddhism and Shinto. In the middle of Asakusa temple complex, there is the building which becomes the place of worship for Buddhists. Buddhist temples are not marked with a wooden gate, but more like a temple building for the Kong Hu Chu. Bright red color dominates ornaments and each detail in the Buddhist temple. In the centre of the altar toward the main door, there is giant lantern lighting hanged as the symbol of life. It is under the light that every prayer and petition being said.

Japan's modern contradiction was born in this era. Although the Japanese embraced the modern, they did so without any real conception of what it meant to be part of a modern nation. Japan's citizens dutifully accepted their new role. Today, for many Japanese, there is an increasing sense of isolation and ambivalence toward belonging to the group. Particularly within the past decade, the conflict between person freedom and community identity has increased markedly.

The increasing isolation in Japanese society can also be observed in a more extreme form in the phenomenon of otaku. "Otaku" is a Japanese word for a new cultural group which emerged in the 1970s. The otaku are widely regarded by Japanese society as alienated, anti-social, introverted and selfish young people who stick to computers, comics, and anime imagery without any real communication or social activities. They are generally considered by their elders to be demented outsiders who border upon the sociopathic. As Japanese society grows increasingly more advanced and postmodern in its outlook, the rift between its old-world Buddhist and Shinto traditions and the fast-paced, materialistic, and often disaffected lifestyle of its citizens grows alarmingly wider.



Company Visit Shin-Koto Incineration plant

Tokyo is Japan's capital and the center of Japanese politics, economy, and culture. Core management institutions, such as head offices of companies, administrative agencies, and foreign corporations, are all concentrated in the metropolitan area, while a web of road and transportation networks converge in the city. This polarized concentration is generating more waste which shall be managed more efficiently. Japan in total has 47 prefectures. Tokyo is one of its prefecture. The 23 cities and Tokyo Metropolitan Government has designed an institutional frameworks that the duties of municipal waste management were transferred to 23 cities from viewpoints of stronger autonomy of 23 cities promotion of mega-city administration by Tokyo Metropolitan Government on extensive scale.

Waste management in the 23 cities is performed collaboratively, dividing roles among the respective municipal governments, the Clean Authority of TOKYO, and the Tokyo Metropolitan Government. It was decided that 23 cities would independently manage its own waste collection and transfer, while management of intermediate processing (incineration, pulverization, etc.) was determined to be handled jointly. This was due to fact of some cities that had no incineration plant within them, and also for the purpose of optimizing the processing of waste. Each of 23 cities collects waste and transfer and looks after recovery resources. Whereas Clean Authority of TOKYO looks after Intermediate waste processing of waste, night soil processing etc. and final disposal (landfill) is managed by the Tokyo Metropolitan Government as consigned by 23 cities and the Clean Authority of TOKYO.

Shin-Koto Incineration Plant was completed in September 1998. It plays an important role of processing combustible waste and recycling energy since the heat generated during the incineration process helps to produce electricity for energy recycling. It has a capacity to process 1,800 ton of waste per day and generates 50000 kW with a steam turbine generator. In addition, the incineration plant is equipped with the state-of-the art air pollution preventive facilities to removes most of the hydrogen chloride contained in exhaust dust sulfur oxides and mercury. It burns combustible waste continuously at high temperature (800 – 900 degree) to ensure complete destruction of dioxins, which successfully maintains the emission of dioxins at much lower level than legally stipulated.

Although recycle has been stressed by the Tokyo Metropolitan Government as the key to deal with waste problem, incineration has still been playing the main role in handling waste in Tokyo, almost 76% of waste was handled by incineration in 2010. Shin-Koto Incineration Plant, as the biggest incineration plant in Tokyo, has played a crucial role in handling waste in the city. First, the incineration plant can minimize the volume of waste, since the volume of waste can be reduced to 0.05% after incineration, and this can reduce the pressure to expand landfills in Tokyo Bay. Second, using incineration to handle waste, especially food waste, can reduce the sting of the waste and this can prevent the outbreak of decease.

Apart from handling waste, Shin-Koto Incineration Plant, as a sustainable incineration plant, provides heat energy for nearby public and community facilities through steam generated from boiling water from waste combustion, an energy recovery process known as WtE (waste to energy). The steam is transported through large pipes to multiple neighbor buildings including a sports center, a swimming pool, and also the tourist spot Yumenoshima Tropical Greenhouse Dome.

Overall, Tokyo has developed their waste management model which is, on the one hand, using incineration to deal with waste in short-term, and on the other hand, promoting the 3Rs (Reuse, Recycle and Reduce) to solve the waste problem in long-term. Shin-Koto Incineration Plant demonstrate how an incineration plant coexist with the local community and it success has make it become the signatory incineration facility in Tokyo, even in the region. Indonesia should learn from their model and try to apply some parts into our local contexts so as to develop a waste management policy which can be able to solve the waste problem.

To solve the waste problems, it is important to reduce the waste generation, reuse waste and to promote recycling waste as resources which is promoted as famous #R by Clean Authority of TOKYO. But no matter how much do these, waste is sure to be discharged and appropriate disposal of waste is necessary. Waste is burnt in the incineration plant and becomes ash of volume of about one twentieth. This process contributes to prolong the limits of disposal sites. Incineration plants are making every effort to prevent

pollution. They also utilize the heat energy produced by the incinerators for generating electric power, supplying steam and hot water to the water front area and nearby public facilities.

Waste management poses a mounting challenge in Indonesia as growing household consumption and accelerated business activity gives rise to higher volumes of organic food waste, plastic packaging and industrial byproducts. The Indonesian government has sought to impose stricter waste management and recycling regulations. Most recently, the Ministry of Environment in cooperation with the Ministry of Industry announced its plans to issue a ministerial mandate that better defines the different types of hazardous waste and puts in place easily understood penalties for non-compliance.

Following on from the previous implementation of laws designed to encourage recycling and other waste limiting practices, the upcoming legislation is indicative of growing momentum in Indonesia to tackle its present shortcomings in waste management infrastructure and facilities. Amid this stricter regulatory climate and increasing demand for comprehensive waste disposal services, foreign investors are presented with new opportunities in Indonesia to enter the waste management and recycling sector.

In Indonesia, due to a lack of waste disposal options, Indonesians still heavily rely on transporting waste to any waste facility in the neighboring regency. The dumpsite is the cause of growing concern, and the embodiment of Indonesia's waste problems. Garbage piles up to form a surreal mountainous landscape where *pemulung* (scavenger) live and sort through the garbage to salvage recyclables. The landfill has to treat 6,700 tons of garbage (Jakarta only) daily from households, offices, industries, and other commercial entities in and around Jakarta. Indonesia's national waste management system is struggling to keep up with the archipelago's increasing population. Waste production, with 175,000 tons of garbage produced per day in the country, amounts to 64 million tons each year.

Almost all of the landfills were originally designed as controlled landfills, some of them even as sanitary landfills. In fact, all of them were operated as "controlled-dumps". This means there is no treatment carried out on incoming waste, soil cover applications are irregular, many scavengers pick the waste on site, there is inadequate leachate treatment and landfill gas emissions are released into the atmosphere without any treatment. Even with current technology development, Indonesia still lags behind developed countries such as those in Japan. The need for a good waste management system is rapidly increasing as is health awareness in Indonesia.

With the increasing growth of population, the volumes of waste to be handled would increase accordingly. Budgetary deficit in waste handling is a common denominator to the extent that it would be difficult for waste managers to adopt a future-oriented view through development efforts. Relying on loans for upgrading or improving facilities would require careful selection and even out-of-date policy. The existing infrastructures would increasingly become older and lose their optimum capacities. In addition, most local governments were still assume a position that waste handling is not an important priority, in the course of difficult economic circumstances. The capacity of waste administrators, therefore, would increasingly become heavier than before, unless the views of waste handling were improved.

In general, the task of the city cleanliness division is to convey the waste from transfer stations to the final disposal, whereas the urban community manages the waste collection from houses to the transfer station themselves. In certain protocol areas and special zones, door-to-door collection is applicable. Since the economic crisis, the income through retribution in the city was decreasing along with the slackening capacities of the people. It is indeed hard to raise the retribution, considering the still limited capacity of the people.

Lack of serious attention over these final disposals tend to be a general practice on the part of city administrators in Indonesia, along with their presupposition that the waste handling over these landfills would run on themselves. In general, the local government would put waste handling at the lowest priority level, and the waste managers would consider a landfill as the last priority. Special officers who are professionals to coordinate and manage the sites are rarely provided. Even when a good design has been made by competent engineers, the plans are never realized, because of lack of money or even more, lack of enforcement by the responsible administration. This problem is worsened also by the incapability of the site managers in coordinating the waste pickers who are competing for the wastes to be handled. Since 2000, failures of landfill

operation all over Indonesia began to show themselves, the most interesting of them are Bantar Gebang Landfill in Jakarta, Keputih Landfill in Surabaya and the latest Leuwigajah landfill in Bandung.

Most of municipal authorities have no other alternative if their existing landfill are in a trouble state, and have no experience in another better and more continuous way of handling waste. In so far, the existing landfills were not been adequately prepared and were not well and professionally operated to the extent that troubled landfill cases would always appear. On the other hand, the consciousness on the part of the surrounding communities of their right to enjoy better environmental quality in their lives is increasing.

To further promote the concept, the Government implemented the *bank sampah* (garbage bank) system in 2011 to reduce the volume of waste at the household level. Under the system, residents would save their non-organic rubbish and deposit it. Participants weigh and record their trash deposits, which are later sold to trash collectors every month. The incentive is that money would then be transferred to participants bank accounts. Ideally, the country should have large-scale recycling centers with incinerators to process the garbage collected from the waste banks, instead, send the garbage to recycling companies. Such a large recycling center would greatly alleviate Indonesia's waste burden.

The potential of Waste to Energy (WtE) technologies as a solution to Indonesia's growing waste and energy challenges, and offers recommendations that address barriers to deployment.

Indonesia's size, rapid pace of development and growing waste challenge make it a market of significant interest for WtE investors and project developers. Indonesia already has in place some of the policy and regulatory drivers to enable WtE, but better information is needed to properly calibrate incentives in coordination with local governments to ensure that WtE facilities are economically attractive investments. An evidence base of expertly reviewed feasibility studies would provide that information, and demonstration projects would help reduce future risks, costs, and negative perceptions of WtE technologies. Together with support for local government capacity building and attention to its social dimensions, Indonesia could become a vibrant market for WtE solutions.

Barriers to Indonesia's WtE (Waste to Energy) market can be further addressed by improving the condition of the waste stream, or assuring its condition remains suitable throughout a WtE project's lifetime. This is essential to attract WtE investors as the unsuitability of waste causes additional pre-treatment costs within WtE plants. Local government should be able to evaluate the cost effectiveness of making upstream systematic changes that improve the conditions of waste before it reaches WtE plants compared to compensating WtE operators for pre-treatment costs through higher tipping fees. Ultimately the cost has to be dealt with by the municipality at some stage. Upstream solutions such as source separation, containerisation, and segregated waste collection and transportation may be less expensive than downstream solutions when considering the full range of benefits of the former. Essentially, upstream solutions create a more healthy urban environment, new job opportunities and enhance the municipality's capacity to recover value from waste, for example, from reuse and recycling.

The underlining principle is that if waste streams are never disposed of together, they do not contaminate each other (e.g. segregated paper and plastic does not get soaked with organic matter and can be directly passed onto recycling or treatment facilities without requiring further separation or pre-treatment). Whether or not waste is source separated, for thermal WtE technologies, it is highly beneficial that is containerised during collection and transport to keep it away from the rain. This considerably reduces the moisture content of the waste streams, avoiding the need for costly drying processes required in incineration facilities. Adequately collecting and transporting Indonesia's waste in containers would require a systematic change to municipal collection systems.

Without proper management, activities in a large city in Indonesia will cause an imbalance to the environment, such as the slow degeneration of green areas and increased waste problems which, in the long run, will impact negatively to the quality of life of the people.

The local capacity and political context challenge is most clearly addressed through local capacity building initiatives, but such initiatives also help to address some elements of the economic and social

challenges. Since WtE projects are relatively new in Indonesia, municipalities only have limited experience in their commissioning and operations.

Having municipal authorities learn about the costs, benefits and contextual suitability of different WtE technologies is useful for all stages of WtE project implementation. With some knowledge, they can better evaluate project concept bids, contribute to project developers' feasibility assessments, develop approximate cost expectations, and communicate these issues to local residents.

To foster WtE markets within a wider waste management strategy, municipalities have to be aware of the benefits of WtE along with further insights into which WtE technology is best for each situation, what is the scale of tipping fees required, and what are the concerns of WtE investors. This should enable municipalities to be able to judge if a WtE solution is appropriate for the local context, which will help them target the right investors.

Public awareness raising and responding to concerns over WtE plants is another potential solution that helps to address many of the social barriers to WtE deployment. These solutions help to create a more informed debate about the costs of waste disposal so that people understand the trade-offs between the options in the waste hierarchy. They also help to correct outdated perceptions about WtE technologies, especially incineration.

This is important in Indonesia, where organised public opposition to waste-to-energy facilities can delay political approval processes and raises risks and costs for developers. It is also important when fostering public debate about waste management solutions, which could include (unpopular) landfill expansion, WtE, or interventions that address waste higher up the waste hierarchy. Systemic changes to waste management, such as source separation, rely on behavior change, and sustained behavior change tends to require consistent and targeted awareness-raising campaigns.

Raising public awareness about the waste hierarchy, and to the fact that waste is a resource, is a basic step to change Indonesia's public perception of WtE. Beyond improving the perception of WtE technologies, a government may seek to explain the negative consequences of a poorly managed waste system and the positive effects if managed according to the hierarchy. It is important that citizens recognise these benefits and see their role in waste management solutions.

Recommendations for public awareness raising:

1. Consider integrating education about Waste to Energy in any national awareness raising campaign about waste management, highlighting the health and environmental improvements of newer technology, and the trade-offs that exist between different waste management options.
2. Involve the local public as the waste management plan is developed for each area leading to greater buy-in and support
3. Use demonstration projects with strict performance standards to show the public that Waste to Energy plants are not harmful to health and the environment