CITY REPORT

PHUKET, THAILAND

## Overview

- Phuket is the 2$^{nd}$ smallest province, but largest island in Thailand
- The population is around 360,905, while the administration is divided into three districts: Phuket municipality, Kathu and Thalang, which further divided into 17 sub-districts and then 103 villages.
- Phuket has three different waste disposal methods: landfill, incineration and composting. Phuket landfill has covered the area of 120-Rai or 0.192 km$^2$ and already in its full capacity. The incinerator at Saphan Hin can hold up to approximately 865 tons daily and about to reach its maximum capacity. The municipality is on the way to upgrade its capacity into 950 tons per day in response to the gradual increase of waste generation at the rate of 7% annually.
- The municipality has foreseen the waste problems and called for the cooperation from the residents, yet encountering a big challenge since Phuket is a one of the most popular destinations that welcomes at least 3 million visitors each year. The revenue from the tourism industry is the second largest in the country; the tourism revenue in 2017 was 2.7 trillion baht while it is expected to grow to 3.1 trillion baht by the end of this year.

## SITES VISIT

**Date:** September 4-6, 2018
**Event:** The Honor Ceremony of Phuket Municipality Environmentally Sustainable Management Learning Centers and Knowledge Sharing on Environmentally Sustainable Cities
**Host:** Department of Environmental Quality Promotion (DEQP)
**Key Participants:** Phuket municipality, Chiang Rai municipality, Koh Samui municipality, Phichit municipality, Song Kha municipality, Trang municipality, Viengteng municipality, Udon Thani municipality, Chiankien municipality, Krabi Municipality, Nong Teng municipality, IGES team
**Key activities:** A Public Forum on Phuket towards SMART city, a grand opening of Multicultural Society of Phuket's Old City Learning Community, Community Waste Bank Learning Source and Environment and Energy Management Learning Source

## Public forum on Phuket towards Smart City

**Key speakers:**
- Ms.Ratanasiri Pimonthai (MC)
  - Professional Environmentalist

The Regional Environment Office 16 (Songkhla)

- Mr. Thavorn Jirapatanasapon
  - o Deputy Mayor of Phuket Municipality
- Associate Professor Agachai Sumalee
  - o Director for the Smart City Research Centre
    Faculty of Engineering, King Mongkut's Institute of Technology Ladkrabang
- Dr. Supakorn Siddhichai
  - o Director of Smart City Promotion Department
    Digital Economy Promotion Agency (DEPA), Ministry of Digital Economy and Society



**Figure 1: The Public Forum on Phuket towards SMART City**
**Source**: DEQP Facebook

- DEQP holds the public forum on the topic "Phuket towards SMART City," inviting environmental experts, city planners, municipalities representatives and Phuket residents to the discussion on the city's ongoing project, Phuket Smart City. Three knowledgeable experts from the key stakeholders, Mr. Thavorn Jirapatanasapon, the Deputy Mayor of Phuket Municipality; Associate Professor Agachai Sumalee , Director for the Smart City Research Centre, Faculty of Engineering, King Mongkut's Institute of Technology Ladkrabang; and Dr. Supakorn Siddhichai, Director of Smart City Promotion Department from the Digital Economy Promotion Agency (DEPA) are sharing their thoughts and perspectives towards Phuket city's current development project. The discussion led by Ms.Ratanasiri Pimonthai, a professional environmentalist from the Regional Environment Office 16 (Songkhla) as the MC.
- Thai government has selected Phuket as the first pilot city for its Smart City project in effort to transform Thailand into innovation-driven society. Since Smart City is still a new concept to most of Thai people and may vary in different context, Dr. Supakorn explains the crowd about the concept of Smart City and the reason why Phuket is selected. He explains that Smart City is actually a "liveable city," a city where people enjoy good quality of lives through a safe and convenient environment with the help of digital tools.

*"Phuket is selected as the first city to implement this project because of its clear purposes and goals to develop the city as the tourist destination. Phuket has definite physical boundary since it is the island, and the economy of the city is very strong. These elements make Phuket as the strong candidate for the Smart City project,"* he added.

- Associate Professor Agachai Sumalee shares his views on the success factors to this project that it requires the technological adjustment (both hardware and software) based on the city context and the actual experiments in order to find good practices that could be replicate elsewhere. Moreover, it always requires collaboration from more than one sector; academies, local government and residents should be cooperative and creating a good environment to encourage the local technological start-ups and researchers to localise those technology to fit the local context. "By encouraging local start-ups, we will have the technology tools which tailored for local usage and most importantly, it will make those tools cheaper," said Associate Professor Agachai Sumalee.

- As a Phuket resident, Mr. Thavorn Jirapatanasapon, the Deputy Mayor of Phuket Municipality shares his concerns on the issue like privacy. *"Talking about the transforming the city towards Smart City, people may concern about their privacy issue. The CCTV, for example, could be used on the street and traffic light to identify those who violate the traffic laws; however, the policy boundary has not been clearly sorted out yet."* He further adds that the human capital is playing an important role here, *"as of now, there is only few people who could analyze the data and turn it into useful information. It will be useless if we cannot make a good use of an increasing amount of data generated by such technological tools"*

- The public forum is fruitful and informative. The other city's representatives are also invited to share their thoughts and comments as well as ask the questions to the key speakers.

**Site 1: The Multicultural Society of Phuket's Old City Learning Community (Phuket Museum, Baan No.92 and Community's waste management area)**

- **Museum Phuket**
  - "Phuketnagara," is the name of the current exhibition held at the newly-opened museum in Phuket city, run by a shared-management of Phuket city municipality and Museum Siam. The building also serves as Phuket Tourist Information Center and as one of the two main buildings of Museum Phuket. This building was a former police station built to provide a security guard to Charter Bank, the 1st bank in Phuket city that situated right across the street. With a 35-million-baht

make-over[1], the old Charter Bank building is now a part of Museum Phuket called "Peranakannitat."

o  Museum Phuket holds at least five big events a year to keep the museum active and attract visitors. The museum also hosts an art public forum with a variation of art related-topics as well as exhibition knowledge sharing on how to run a successful exhibition for any community who would be interested in having their own exhibitions.

o  Due to the time constraints, we only managed to visit Phuketnagara, where Phuket's history has been divided into four eras: Forest, Mine, Town, and Tourism, but all founded by the same industry, Tin mining. Tin mining was the most important industry of Phuket in the old days; such metal was greatly demanded by the people in the West for plating food containers. The tales of tin mining town has been told through a multimedia, interactive exhibition where you can pull, push or stir the mining pan to learn how the industry shapes Phuket's history.
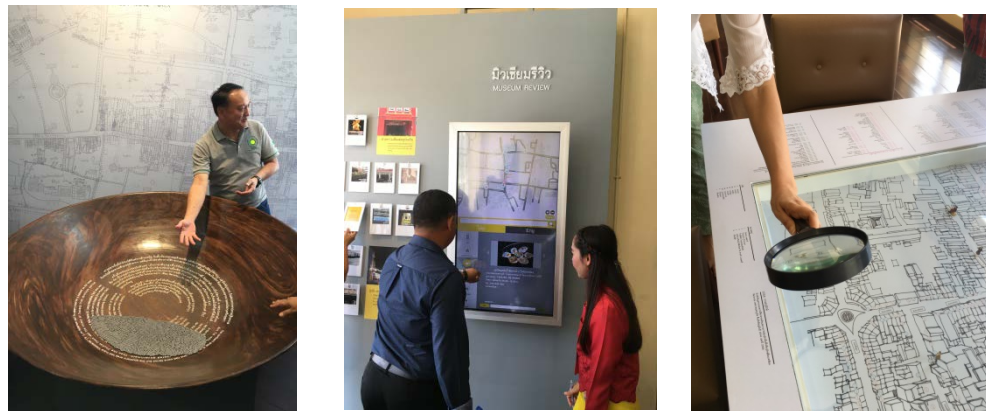


Figure 2: Multimedia and interactive arts in Phuket Museum

o  On the 1st floor, the museum arranges different temporary exhibitions periodically. The current exhibition is "4 a.m. of Phuket," a showcase of the winning photos from the national photo contest that portrays Phuket at 4 a.m. from different perspectives.

• **Phuket Old City Commercial Area and Baan No.92**
  o  With a line-up of the exotic Sino-Portuguese styled buildings, Phuket Old Town is a living museum that depicts the local way of life that has been passed on from generation to generation through local cuisines and unique architectures. This commercial area is probably one of the most photogenic communities in town.

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[1] Read more at https://thethaiger.com/news/35-million-make-over-for-the-charter-bank-building-in-old-phuket-town

o The old construction of the buildings is well-preserved with sophisticated maintenance techniques that helps add the durability of the building's surface such as the avoidance of plastic-based paint since it will dry and crack when exposed to sunlight in longer-term.



Figure 3: Guzheng Angel, the talented visually impaired musician

o Baan No.92 or literally the "House no.92," is one of the most well-preserved old buildings, which is now turned into a coffee shop yet still keep all the richness of the old city's culture and complexity. Inside the house, there is a pleasant traditional Chinese music from "Guzheng" or the Chinese zither to welcome the visitors. What made this so special is the fact that the musical instrument is played by the"Guzheng Angel," the visually impaired musician who represents a group of persons with physical challenges in the community. This reflects the city's initiative of "leaving no one behind;" everyone is well-belonged to the community and in charge of the city development.

o "Tourism for all" is a part of the city's development plan to create safe and accessible tourism for everyone; the municipality has improved the city's infrastructure such as improving the pavement condition, adding tactile paving, grounding the overhead power lines in the Old City area, etc.

- **The Community's Waste Management Area**

    o The community's waste management area is located on the privately-own old printing shop, which is now becoming the parking lot and city's inventory storage such the movable CCTV poles and fire extinguishers. It also stores bikes and wheel chairs for people with special needs as well.

    o Here, the local residents can dispose their hazardous waste e.g. light bulbs, batteries and also recycle waste.

    o At the entrance, there is a sign "no 7-Eleven"which shows affirmation of the standpoint among the locals in the Old Town;



Figure 4: No 7-11 Sign in Phuket Old Town area

the community's leader said he would like to ask the local government to keep out the modern retail stores from the town radius as it will ruin the traditional way of doing business for the retail stores that run by locals.

**Site 2: Community Waste Bank Learning Source (Sitekka 2 Community)**

- Sitekka 2 Community is expanded from Sitekka Community due to the growing number of the residents in the former community. Sitekka 2 now has at least 166 households with 570 populations and expected to grow bigger in the near future. Similar to most of communities with rapid socioeconomic development, the increase of population brings along the waste disposal problems due to poor waste disposal habits.

- The community has set up a group of committees to deal with waste management. The committee comes up with the "Waste Bank Project," where the residents could bring their recycle waste at home to trade with eggs at the center.

- The community committee has been penetrating the awareness raising strategy through the kids in the community by teaching them how to separate waste in their household and



Figure 5: The waste deposit cage in Sitekka 2 Community

collect the recycle wastes to the center. By doing this, not only the kids in the community will recognize the importance of waste separation and develop their good habits in their childhood, but also the parents could absorb and learn how to develop a good waste disposal habits from their kids. This approach is considered as an "Explosion from Within," one of the strategies of the self-sufficiency economy disciplines by the late King Bhumibol Adulyadej on the community development initiatives.

- Besides the recycle waste management, Sitekka 2 Community also a center of hazardous waste disposal for several communities throughout Phuket. People could bring their hazardous wastes to the center for 24/7 or separate them at home and wait until 20th-25th of every for the collection.

- For organic wastes, the center also asks the residents to separate organic waste such as the leftover food at their homes, then collected to the center and disposes them into the Unfillable Bin, the organic waste compost bin where it allows the organic waste to

break down aerobically and generates a rich soil conditioner after 1-2 months composting.

- The community has also integrated waste management with arts. They collaborate with the artist who was a university's lecturer to make a good use of the used plastic bags in the community in a creative way. Now the plastic waste could be used as a substitution of sand for sculpture and brick making; plastic bags are dried and grinded into powder, creating a waterproof and light brick for a multipurpose usage, even for sale.
- The community also has a workshop for drawing and decorating "Pate," a famous local fabric, to add value to the existing products and create unique selling points that standout from the others.

**Site 3: Environment and Energy Management Learning Center**

o The Environment and Energy Learning Center situates in Phuket Solid Waste Disposal Center area, where the waste disposal activity is carried out for the entire Phuket city through landfill and incineration.

o This newly-opened Learning Center contains 6 sub-stations:
   o The oily wastewater treatment: the introduction of a grease trap
   o Scientific research and experiment station: a showcase of local scientific experiments and products on the city's waste disposal projects. Planting pots from the pineapple leaves are one of the successful examples.



Figure 6: A planting pot from the pineapple leaves.



Figure 7: The students are explaining about the aerated composting system

   o Vermicomposting
   o Household Compost Bin: the eco-friendly way to dispose the leftover food from household by mixing the dry leaves with the leftover food and layering them in the compost bin. The composting process takes up to 2 months, and then it will generate the final product that could be used as an organic soil conditioner.

- o Aerated Composting: the introduction of the aerated composting system by using a 200 liters compost bin.
- o The Tree Branch Disposer: the demonstration of a local innovation, a Tree Branch Disposer is a cheap, safe and easy-to-use branches crushing machine designed to shred tree branches and coconut shells into small pieces. The machine requires low-maintenance but provides high output.

**Keynote Lecture: Knowledge Management and Local Learning Sources**

**Speaker:** Assistant Professor Dr.Pornthida Wisetsilapanon, Mahidol University

- o Dr.Pornthida Wisetsilapanon gave the participants a special lecture on Knowledge Management and the Sustainable Cities Development. The core of the lecture is focusing on three main topics: i) Sustainable City and SDGs ii) Knowledge Management (KM) and Learning Center: Theories, Methods and Tools for Sustainable Cities Development, and iii) The Application of KM for Learning Promotion and Participation for the City Development.
- o Dr.Pornthida started by explaining about the definition of SDGs and how the SDGs are related to the national development strategies as well as explaining how the city could make a good use of the existing data and turn the generous amount of data into knowledge and, eventually, the action plans. The diagram as below shows how Thai government is integrating the SDGs in its 20-Year National Strategic Plan.

| SDGs |
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| 20-Year National Strategic Plan |
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| **12th National Economic** and **Social Development Plan** |
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| 1: Strategy for Strengthening and Realizing the Potential of Human Capital | 2: Strategy for Creating a Just Society and Reducing Inequality | 3: Strategy for Strengthening the Economy, and Underpinning Sustainable Competitiveness | 4: Strategy for Environmentally-Friendly Growth for Sustainable Development |
| --- | --- | --- | --- |
| 5:Strategy for Reinforcing National Security for the Country's Progress towards Prosperity and Sustainability | 6: Strategy for Public Administration, Corruption Prevention, and Good Governance in Thai Society | 7: Strategy for Advancing Infrastructure and Logistics | 8: Strategy for the Development of Science, Technology, Research, and Innovation |

| 9: Strategy for Regional, Urban, and Economic Zone Development | 10: Strategy for International Cooperation for Development |
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**Figure 6: The National Development Strategies and SDGs integration**

o The cities' representatives also learned about the knowledge management tools such as Communities of Practice, Lessons Learned and Best Practices, Story Telling, AAR (After, Action, Review), Retrospect, Coaching, Dialogue and etc. By knowing this, the city representatives would have the idea of how to pass on the knowledge to other people in their community so that the indigenous knowledge and local innovations would not be faded away.

o In the second part of the session, the participants were requested to split into groups and sit according to their cities to brainstorm the good practices and identify rooms for improvement for Phuket so the cities could share and learn from each other. The good practices of Phuket that impress the participating municipalities include:

   o Cultural preservation: the representatives from Koh Samui municipality praise on how Phuket municipality can combine its 100-years-old tradition with the rich cultural diversity in Phuket to create the story that captures the heart of the tourists through the local dining, outfits, architecture, and language.

   o Good city management and law enforcement: the renovation of the pedestrian street starting from Phuket Old Town to other part of the city reflects the city's commitment of "leaving no one behind" vision. Phuket Old Town has no illegal kiosk shops along the street because of a good law enforcement and cooperation from the local people.

   o Strong community, strong leader: Phuket city has demonstrated a good collaboration between the public and private sectors by sharing the same goals on steering the city towards safe, prosperous and sustainable city in response to the national strategy.

   o Continuity: Phuket city development plan is comprehensive, including short, medium and long term development strategies that would contribute to the spontaneous city transformation.

o The participating municipalities also mention some of the lesson learned that they could reproduce in their hometown such as the identification of local identity as a part of city development (Nong Teng municipality), infrastructure improvement and the application of local materials and innovations (Chiang Rai municipality), etc. The representatives from Trang municipality also said that Trang and Phuket share the similar culture; about

80% of the architectures in Trang are also Chino-Portuguese styled, but the preservation of these old building in Trang is somewhat neglected, which is totally different from Phuket where all these building are well-preserved.

o The ending session includes DEQP's closing remark that it would like to call for cooperation from every sector to create a pact or a network that shares the same goals to develop the city. Moreover, a good database management, which is a good foundation of city development, is often neglected. By improving this, the city can utilize the data to create the innovative city development tools and strategies better in the future.