Energy Policy and Planning Office
MINISTRY OF ENERGY

AMATA
POSSIBILITIES HAPPEN

Progress and Challenges in Implementing the Smart City Action Plan for Chonburi (AMATA Smart City) Pilot City in Thailand

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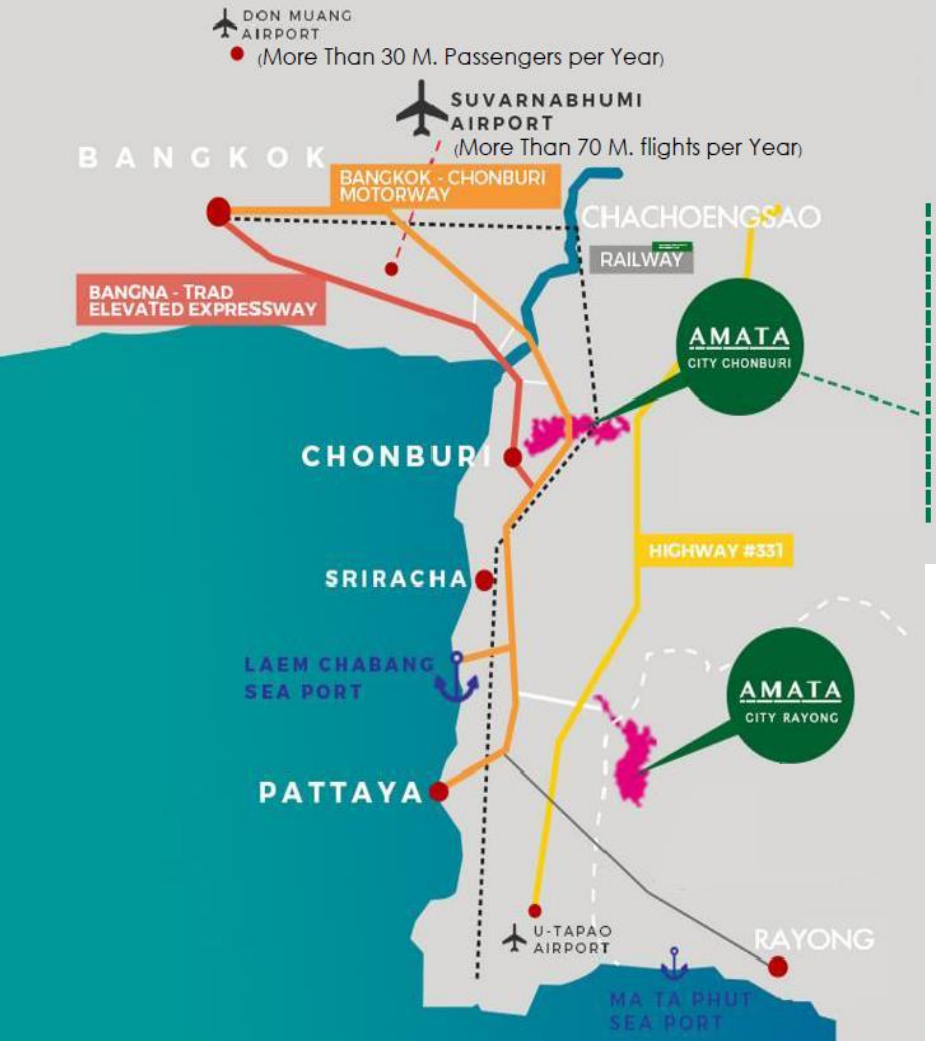
CSCO of Chonburi's Representative

The 2nd ASEAN-Japan Smart Cities Network High Level Meeting
16 December 2020 via video conference

AMATA Smart City, Chonburi, Thailand

Confidential



AMATA

Existing Location in Thailand

CHONBURI

DISTANCE FROM	KM.	TRAVEL TIME:
Bangkok	57	60 min.
Suvarnabhumi Int. Airport	42	35 min.
Laem Chabang Seaport	46	45 min.
Chonburi City	5	10 min.
Sriracha City	33	40 min.

AMATA Smart City Master Plan

Total area: 43.3 km2
Population: ~200,000 people

Vision : **To be a self-reliant, energy-efficient city with renewable energy sources and sustainable environmental management.**

AMATA Smart City, Thailand

AMATA Smart City Development

SMART ENERGY
Energy efficient city with renewable energy source and sustainable environment management

SMART ENVIRONMENT
Use of innovation and technology to enrich sustainable lifestyle and improve people's quality of life environment management

SMART AEROSPACE CITY
A hub of aerospace MRO, original equipment manufacturers (OEM) and ASEAN Aviation Training Center

SMART INNOVATION
An innovation hub bringing the most advanced and leading companies in innovation and High Technology sector, R&D centers, contract research providers and Startups

SMART COMMUNITY
Mixed-use sustainable development consisting of hotel, service apartment, restaurants, commercial facilities, conference & exhibition area

SMART MANUFACTURING
Create a platform to attract factories with Full Value Chain solution combining system and data among logistics, finance, manufacturing, procurement and trade

SMART MOBILITY
Sustainable traffic solution and transport monitoring through an integrated management system

SMART EDUCATION
Develop all levels of education to support Amata Smart City Development

Status of the Selected Focus Areas

Civil and Social

- **Sustainable Smart Living Zone**
  AMATA Smart City collaborated with the Japanese Government entity JOIN and Japanese leading Corporation Fujita to develop "Hotel Nikko Amata City Chonburi" as a state-of-the-art. The construction of the hotel started in August 2019 and we leveraged on Japanese construction guidelines to ensure minimal noise pollution and zero accidents record for the construction.
- **Enhance social and environment sustainability**
  AMATA has zero waste discharge policy since 1990s and incorporated into the Industrial Cities management guidelines and conduct regular workshops to share knowledge with local government and communities on water, waste-water and waste management.

Industry and Innovation

- Hitachi Lumada Center was established since September 2018. AMATA collaborated with Hitachi group to offer IoT solutions, that can facilitate the co-creation of customized digital solutions to different manufacturing needs.
- AMATA is now working with AIS (the biggest telecom operator in Thailand) to find 5G use cases for smart manufacturing.

Health and Well-being

- AMATA and partners developed the 120-beds Vibharam Hospital in Amata Chonburi. The hospital provides workers' health check-up and medical emergency services. Through social security payment link-up, the hospital provided the needed medical care to the local community and workers in the industrial estates.
- AMATA is also in the process of conducting feasibility study for Medi-town together with leading hospital and Mahidol University.

Status of the Selected Strategic Targets

SMART ENERGY
Energy efficient city with renewable energy source and sustainable environment management

Enhance Sustainable Environment

- AMATA is now working on renewable energy projects such as solar rooftop, floating solar, waste to energy
- For floating solar (2.5 MW), COD will be started in December 2020
- For waste to energy, a feasibility study report funded by METI was completed in March 2020

SMART MANUFACTURING
Create a platform to attract factories with Full Value Chain solution combining system and data among logistics, finance, manufacturing, procurement and trade

Facilitate SMEs investment and Innovation

- AMATA collaborated with Hitachi High-tech to provide smart factory as a service for overseas expansion of SMEs. We welcome SMEs which would like to utilize our smart factory for shared office, feasibility studies or Proof of Concept. This will help expedite the SMEs expansion into the ASEAN region.

SMART COMMUNITY
Mixed-use sustainable development consisting of hotel, service apartment, restaurants, commercial facilities, conference & exhibition area

Higher quality of Life

- AMATA collaborated with the City of Yokohama and YUSA to develop the 2nd Yokohama City in Amata. As part of phase 1, our first project “Hotel Nikko Amata City Chonburi” was constructed in August 2019 and will set to open in 2021. The hotel will incorporate renewable energy with solar rooftop and green building facilities on energy management.

- Amata is also working with international partners to develop other sustainable and live-able smart cities. The first project to be constructed is AMATA Chinese Smart City. The AMATA Taipei Smart City is also in good progress.

Smart City Project 1: Waste to Energy

Progress of the Project

- Proposed up to 10MW, Waste-to-Energy Power Plant.
- Feasibility Study from August 2019 to February 2020
- Report submitted in March 2020 to Japan METI, Japanese government agency which funded the project feasibility study
- Project IRR of 14-16% and in progress to look for potential investors in Waste-to-Energy Plant

Challenges to Implementation

- Economy of scale of powerplant to be revised align with waste capacity
- Waste Security and Market price of the Tipping fees
- Announcement of FIT for non-hazardous industrial waste

Support and Partnerships Required

- Investor, partner and stakeholder for the Project
- Legislation support waste treatment, encourage circular economy inside City
- Fund by Government organization, ex. JCM
- Smart Energy policy for Smart City project support which regard to Thailand, Power Development Plan

METI Support and JFE from YUSA collaboration

City to City Collaboration under City Yokohama Road map planning. Waste management is one of element proposed by YUSA

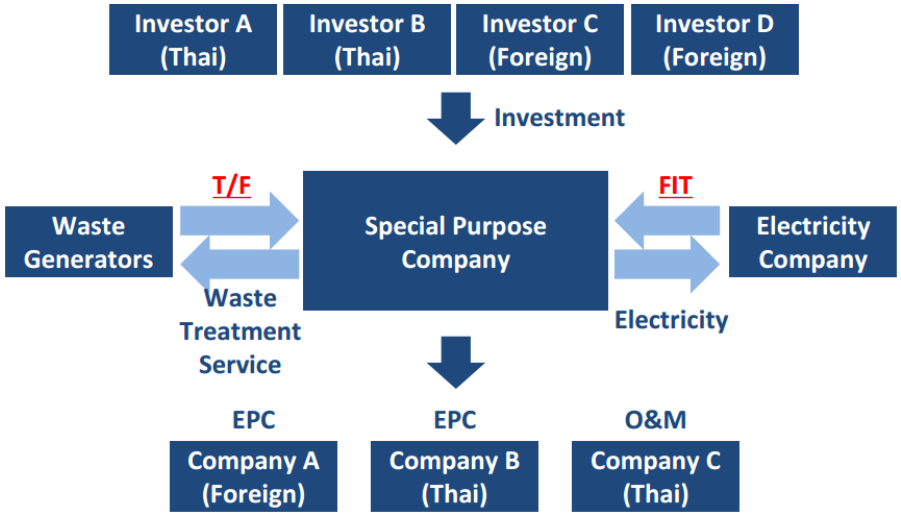
JFE provide technology and information for Waste to Energy model based on AMATA Chonburi condition

Based on proposal approved on August 2019. METI approve budget for feasibility study of Waste to Energy project, working closely with JFE and AMATA

Collaboration with YUSA (Yokohama Urban Solution Alliance)

Signing Ceremony on Jan 19th, 2018

Project model



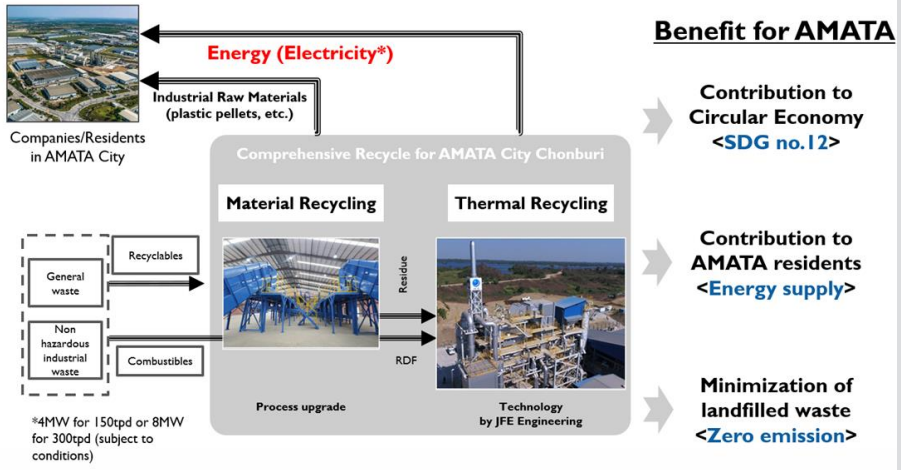
Revenue source

1. Tipping Fees as a waste treatment service fee
2. Electricity sell to the Grid at the FIT price under Power Development Plan

Investor

1. AMATA as a landowner
2. JFE as a technology provider and EPC
3. Other potential investor, can be Thai or International

Concept of Integrated Solid Waste Management in AMATA City, Chonburi



Project utilize waste in EEC area for Energy

- Promote AMATA for Zero land-fill
- Capable of treating industrial waste in AMATA and nearby area
- Potential for expansion according to more activities in EEC area

Smart City Project 2:
Smart Data Utilization for Smart Microgrid Development

Progress of the Project

- Smart meters: Progress 90% and will be finished by the end of this year. The Customer Relation Management (CRM) and Peer to Peer (P2P) trading platforms will be implemented for the next step (Next Year)
- Smart SCADA: support an operation of the power plant, distribution network, load management Progress: finished.
- Intelligent Solar rooftops: Our system can collect the client's data that's required Progress: with in middle of next Year.
- Intelligent Energy Storage Systems (ESS): The ESS pilot project will be started in the middle of next year

Challenges to Implementation

- Smart meters: There are some limitations to our current meters (Industrial type), new applications require high accuracy from the meters
- The balance between stability and distributed generation is very tough and important
- Intelligent ESS: Cost is still too high for commercial use

Support and Partnerships Required

- Data sharing between stakeholders
- New regulations from the government which support our projects is required
- Some incentives from the government are required

Project Concept

Smart Data Utilization for Smart Microgrid Development