Waste Management in Semarang City, Central Java, Indonesia

NASUKA

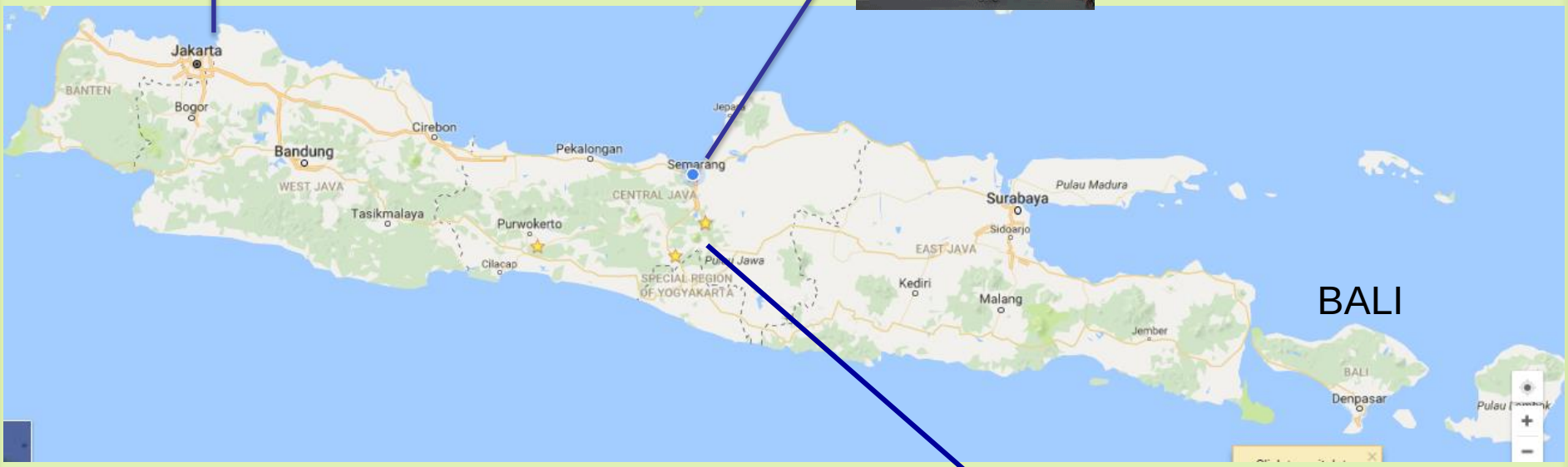
Center of Industrial Pollution Prevention Technology

Semarang , Central Java, Indonesia

MY CITY PROFILE

JAKARTA

SEMARANG



BALI

A port city on the north coast of Java
Total population : 1.765 million (2015)
Total area : 373.7 km^2

Borobudur

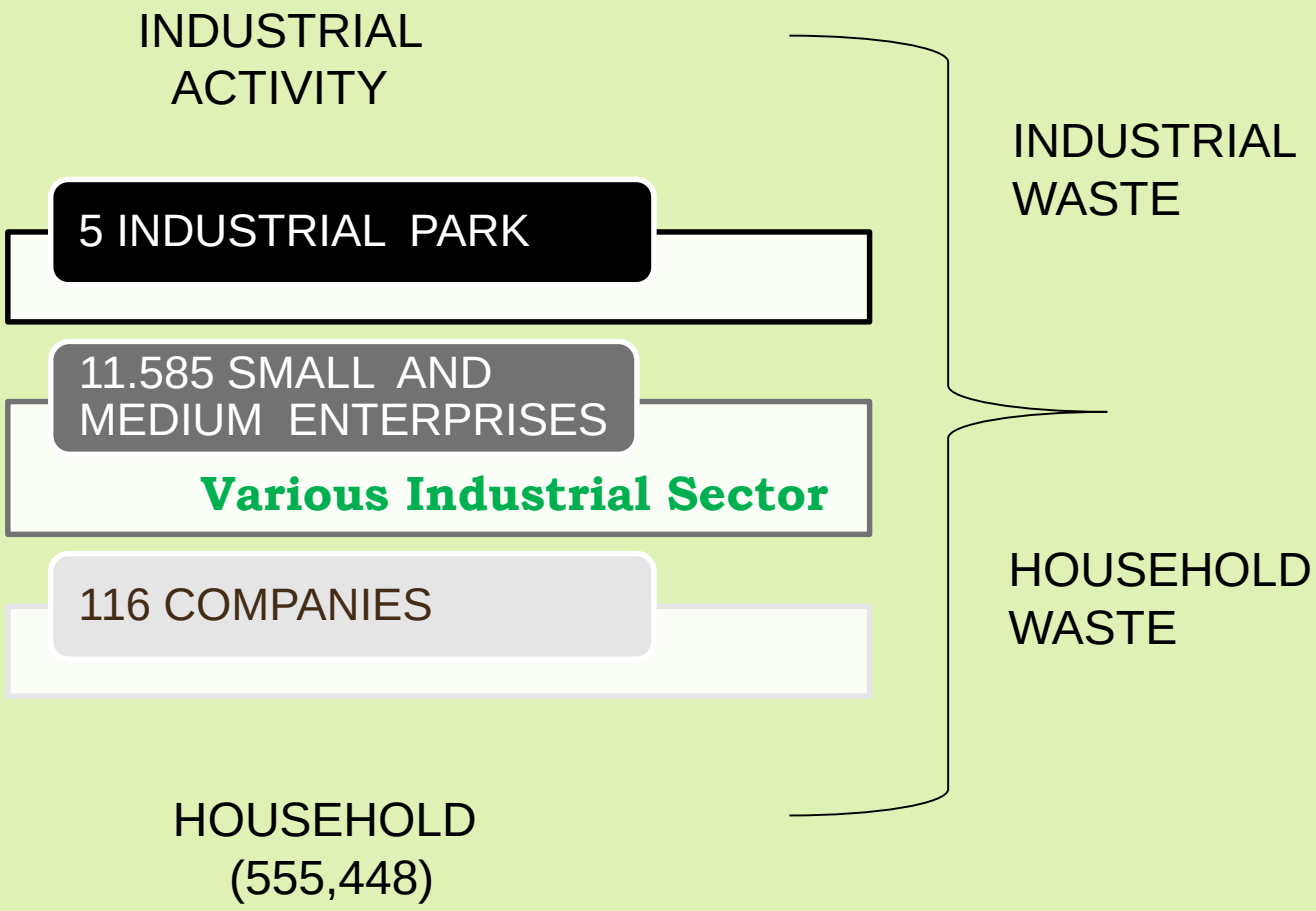
MY COMPANY PROFILE

Center of Industrial Pollution Prevention Technology (CIPPT)

Under Ministry of Industry

1. **Research and development in industrial pollution prevention technology.**
2. **Technical services in environmental field through training, laboratory testing, consultation, standardization, calibration, certification and energy & environment audit.**
3. **Supporting government in executing green industrial policy**

SEMARANG MAIN ACTIVITY



Kementerian Perindustrian
REPUBLIK INDONESIA

HOUSEHOLD WASTE

Wastewater

- 97% Of Waste Water Discharged Without Any Treatment

Solid Waste (Garbage)

- Solid Waste Was Treated Into Dumping On Public Landfill
- (0.45 kg per person-day) or 800,000 kg /day
- PET bottle or plastic (PP) waste are mostly recycled and reused as plastic seed by small and medium enterprises (SMEs) , 40 % total of garbage

Kementerian Perindustrian
REPUBLIK INDONESIA

HOUSEHOLD WASTE

Garbage Landfill

Scavenger

Collectors

Crusher

Scavenger

Plastic Scrap

Household

PLASTIC INDUSTRY

Step of Recycling Process

Alternative Management For Household Waste

- As source of energy using bio-gas technology, still on development
- Composting organic waste household, already applied as pilot project.
- As RDF (*Refuse Derived Fuel*) in Cement Industry, planned at 2017

INDUSTRIAL WASTE

ONLY 10% OF INDUSTRIES APPLY CLEANER PRODUCTION

MOSTLY TREAT THEIR WASTE DUE TO COMPLIANCE TO GOVERNMENT RULES

NO AWARENESS TO ENVIRONMENTAL RESPONSIBILITY

ENVIRONMENTAL Regulation and Rules in Indonesia , such as :

-Laws No.32/ 2009 : Enviromnetal Protection & Management

- Goverment Regulation No. 101/2014 : Hazardouz Waste Management
- Ministry Regulation No.3 /2008 : Utilization Procedure of Hazardous Waste

Kementerian Perindustrian
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Industrial Waste Management

1. **Gas Emission**

   Some industries discharge their waste to environment directly. However other industry apply stack equipped with air pollution control like : scrubber, cyclone, EP.

2. **Waste water**

   There are various charactheristic wastewater depend on typical industry. Wastewater can be treated by physical, chemical, and biology technology.

3. **Solid waste**

   Solid waste are classified as Toxic And Hazardous Waste Managed By Other Specific Company and treated into Dumping, Incineration, and Reuse. Few industries manage their solid waste directly by incineration (Special permission is required).

SMALL AND MEDIUM ENTERPRISES (SMEs)

Waste management is almost neglected, because :

- No awareness to protect the environment
- No competency in WWTP operation
- No space available to construct WWTP
- No knowledge about waste management
- No competency in WWTP operation

Need Technical Guidance and Financial support from Goverment

Environmental issues

There are many kind of SMEs, mainly Batik (textile) and Tofu industries.

Tofu is a famous food for Indonesian

Batik is intangible culture heritage of humanity by UNESCO

Note :

- Total number of Batik and Tofu are 47.750 unit and 115.000 unit, in Indonesia
- Total number of batik and Tofu SMEs in Central Java are 25.500 unit and 5.800 units
- Total number of batik and tofu in Semarang are 25 unit and 67 unit.

Batik and tofu waste water become a problem for environment

Wastewater characteristics of batik and tofu industries

- High pollutant loading : COD, BOD, TSS
- High volume :
  - 20 liter/ kg soy bean
  - 8 liter / meter textile

Still no appropriate technology for wastewater treatment. Existing technologies mainly generate solid waste, need chemicals and spacious land.

Waste Management project of CIPPT

- Batik wastewater treatment using biology processes (anaerob and aerob), still on trial.

  Demonstrated in one of SMEs in Semarang.
- Tofu wastewater treatment is still on progress.
- RECP joint programme with UNIDO Indonesia, will be executed on November 2016 in Semarang.

Waste Management project of CIPPT

Tofu Waste Water Treatment Plant (ON PROGRES)

Flow rate = 3 M3 / day
Product Capacity = 150 kg/day
Biology Technology
(anaerob-wet land)

Batik Waste Water Treatment Plant (ON TRIAL)

Flow Rate = 5 M3 / day
Product Capacity = 1500 M textile /day
Biology Technology
(anaerob-aerob)

Projects done by CIPPT

Plywood Indusry

By Chemical and Biology Technology

Chemical Industry

By Chemical and Biology Technology

Carpet Industry

By Chemical Technology

Bakery Industry

By Biology Technology

Cassava Industry

By Biology Technology

Hospital

By Biology Technology

Thank You