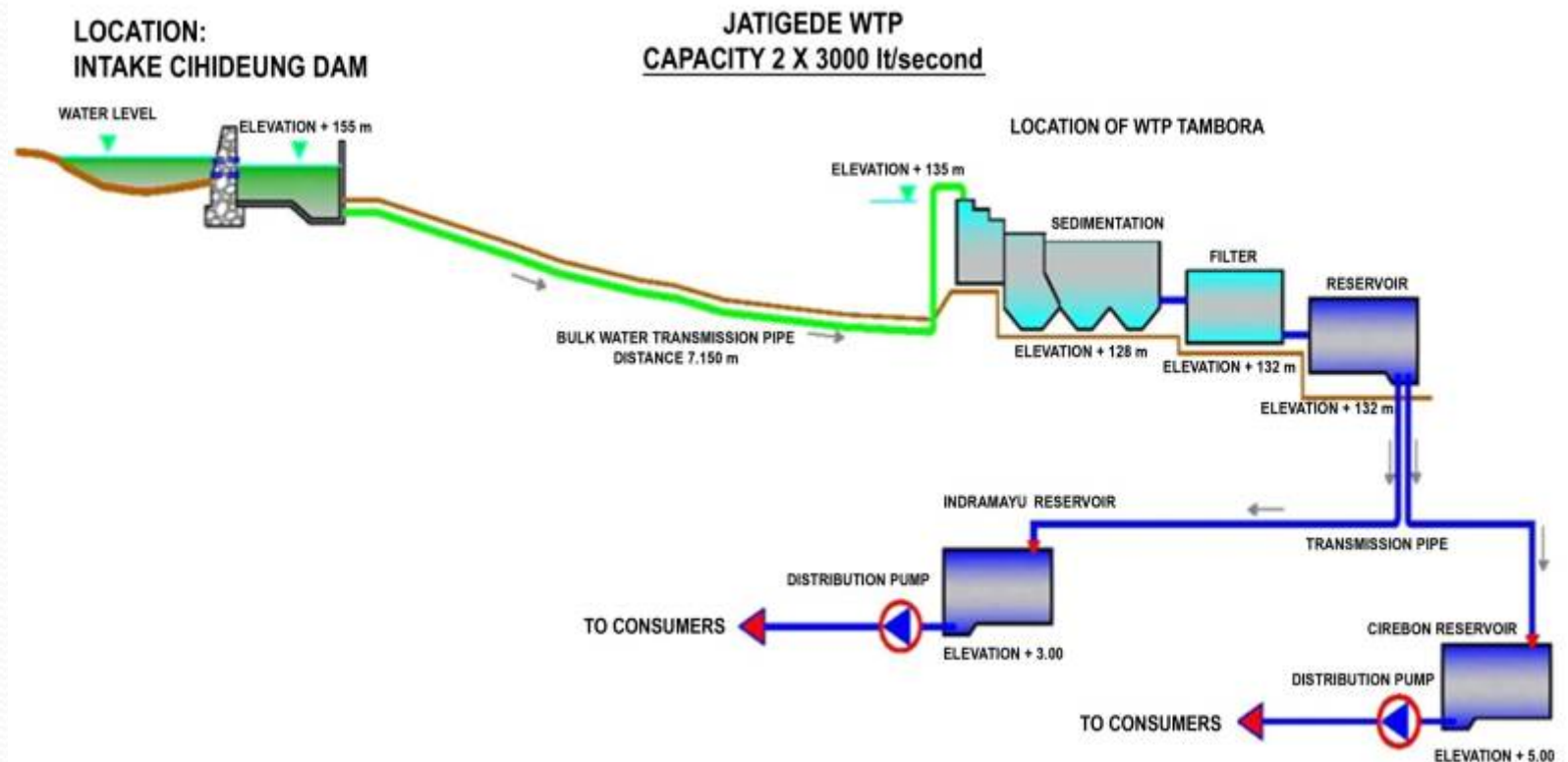


## JATIGEDE WATER SUPPLY

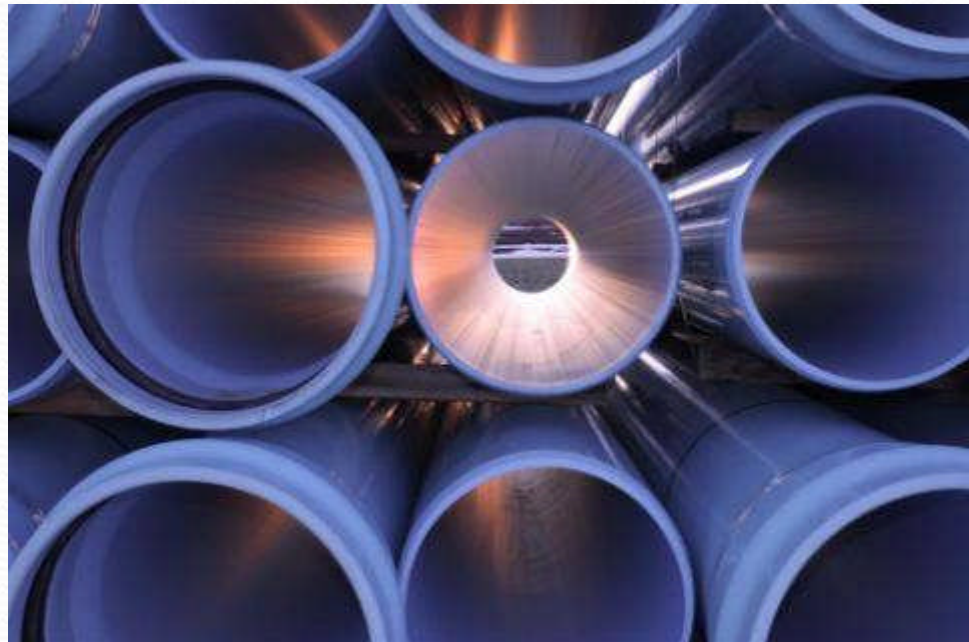
### PROJECT SCOPE :

- Development of Water Treatment Plant (WTP) 2 x 3.000 lps
- Procurement of transmission pipe ND 1,600 mm length 7,150 m
- Development Reservoir 2 x 7000 m<sup>3</sup>



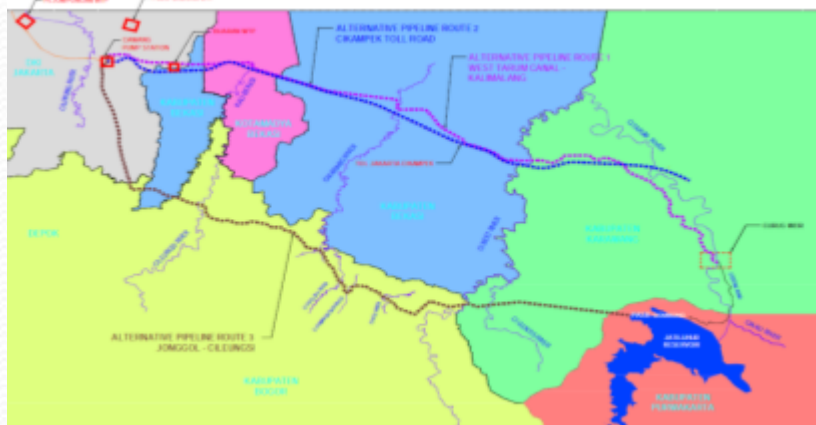
## **ESTIMATED TIME OF IMPLEMENTATION:**

- Project Preparation : 2011
- Tender Process : 2012
- Construction : 2012-2014
- Operation : 2014



# JAKARTA, BEKASI, KARAWANG WATER SUPPLY (JATILUHUR)

- PPP MODALITY : BOT
- CAPACITY PLANNING : 5000 lps
- ESTIMATED PROJECT COST : US\$ 189.3 million
- ESTIMATED IRR : 17.30 %
- BENEFICIARY : Provision for 2 million inhabitants or 400,000 connections
- PROJECT LOCATION : Jakarta



- Bekasi Municipality
- Bekasi Regency
- Karawang Regency

## JAKARTA, BEKASI, KARAWANG WATER SUPPLY (JATILUHUR)

### **PROJECT SCOPE :**

- Development of intake 5,000 lps
- Development of Water Treatment Plant (WTP) 5,000 lps
- Procurement of transmission pipe ND 1,800 mm length 58 km



## JAKARTA, BEKASI, KARAWANG WATER SUPPLY (JATILUHUR)

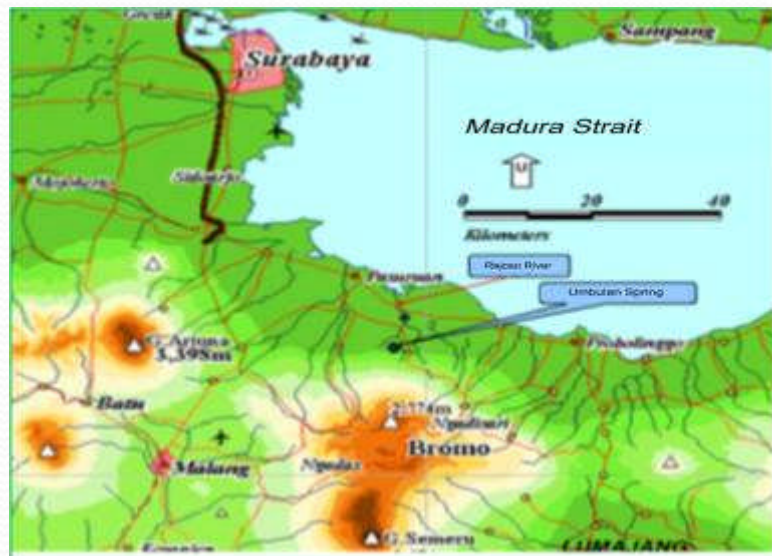
### **ESTIMATED TIME OF IMPLEMENTATION:**

- Project Preparation : 2011
- Tender Process : 2012
- Construction : 2013-2014
- Operation : 2014



# UMBULAN WATER SUPPLY

- PPP MODALITY : BOT
- CAPACITY PLANNING : 4,000 lps
- ESTIMATED PROJECT COST : US\$ 204.2 Million
- ESTIMATED IRR : 14.54 %
- BENEFICIARY : Provision for 1.6 million inhabitants or 320,000 connections
- PROJECT LOCATION : East Java Province

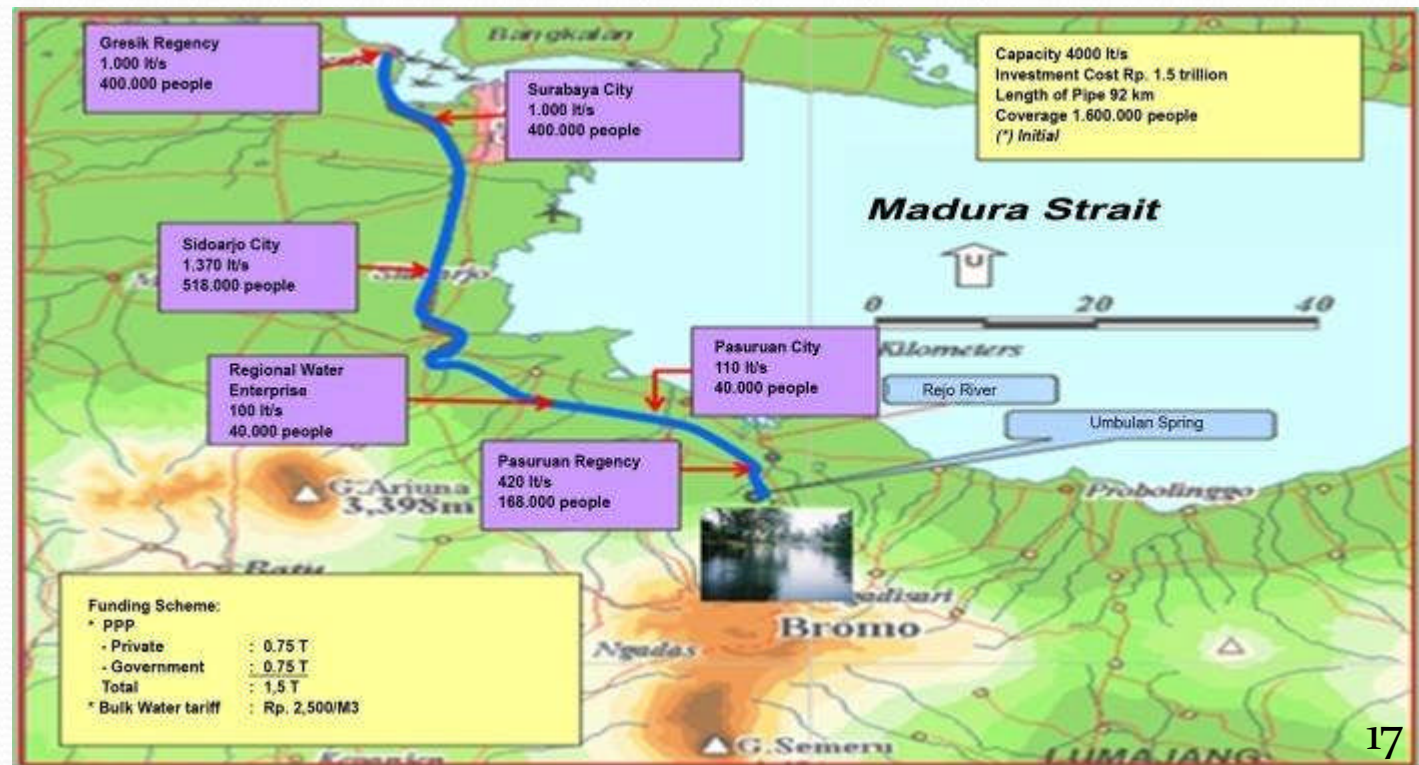


- Pasuruan Regency
- Pasuruan Municipality
- Sidoarjo Regency
- Surabaya Municipality
- Gresik Regency

## UMBULAN WATER SUPPLY

### PROJECT SCOPE :

- Development of intake 4.000 lps
- Provision and pipe transmission of raw water ND 1000-1800 mm length 92 km
- Development of 2 pumping station 4.000 lps.



## **ESTIMATED TIME OF IMPLEMENTATION:**

- Project Preparation : 2011
- Tender Process : 2012
- Construction : 2013-2014
- Operation : 2014



# KARIAN-SERPONG WATER CONVEYANCE

- PPP MODALITY : BOT
- CAPACITY PLANNING : 10,000 lps
- ESTIMATED PROJECT COST : US\$ 690 Million
- ESTIMATED IRR : 16 %
- BENEFICIARY : Provision for 4 million inhabitants or 800,000 connections
- PROJECT LOCATION : Banten Province



- Karian
- Serpong

## **PROJECT SCOPE :**

- Development of Water Treatment Plant (WTP)  
10,000lps
- Procurement of transmission pipe length 90 km



## **ESTIMATED TIME OF IMPLEMENTATION:**

- Project Preparation : 2011
- Tender Process : 2012
- Construction : 2013-2014
- Operation : 2015



# BANDAR LAMPUNG WATER SUPPLY

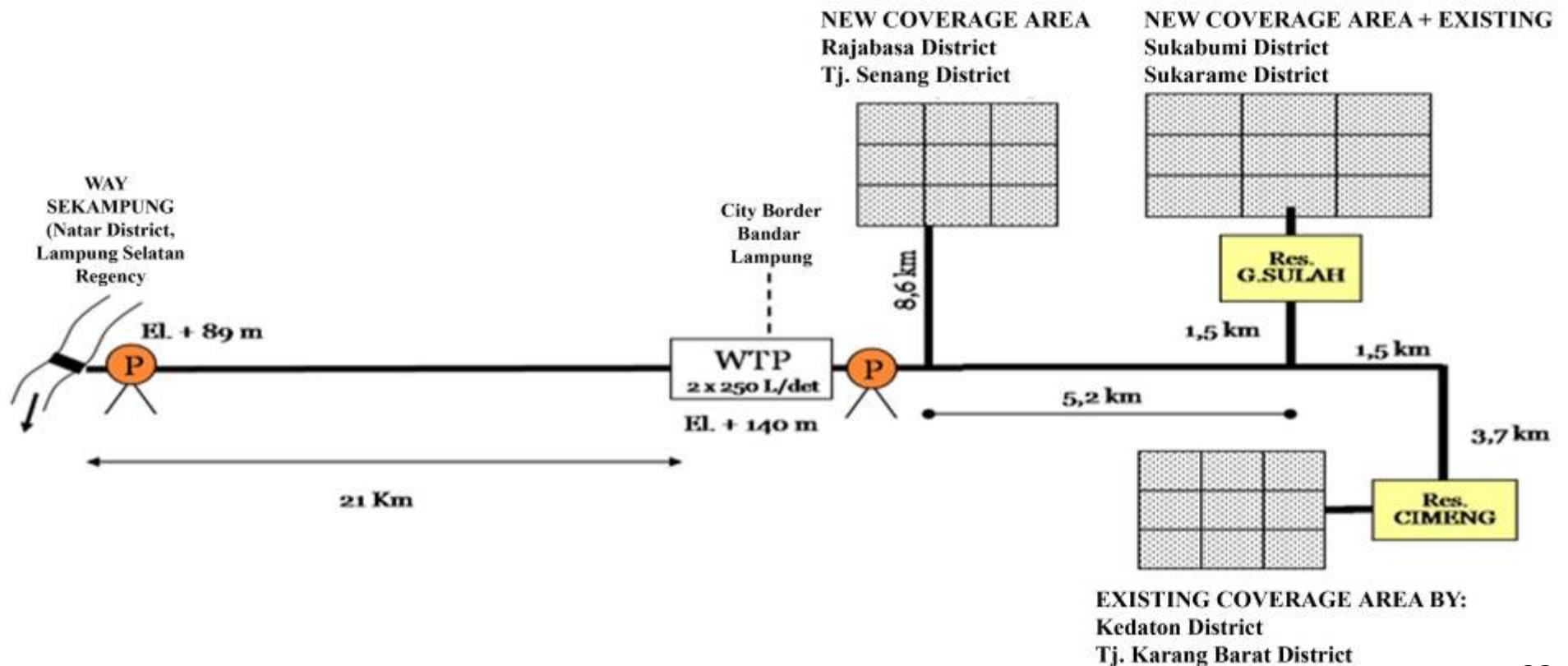
- PPP Modality : BOT/Concession
- Estimated Project Cost : Rp 366,7 Billion (equivalent with 40,74 Million US \$)
- Project Location : Bandar Lampung City

## Scope of Project:

- Development of Intake and WTP 2 x 250 L/sec
- Development of Distribution network and house connections

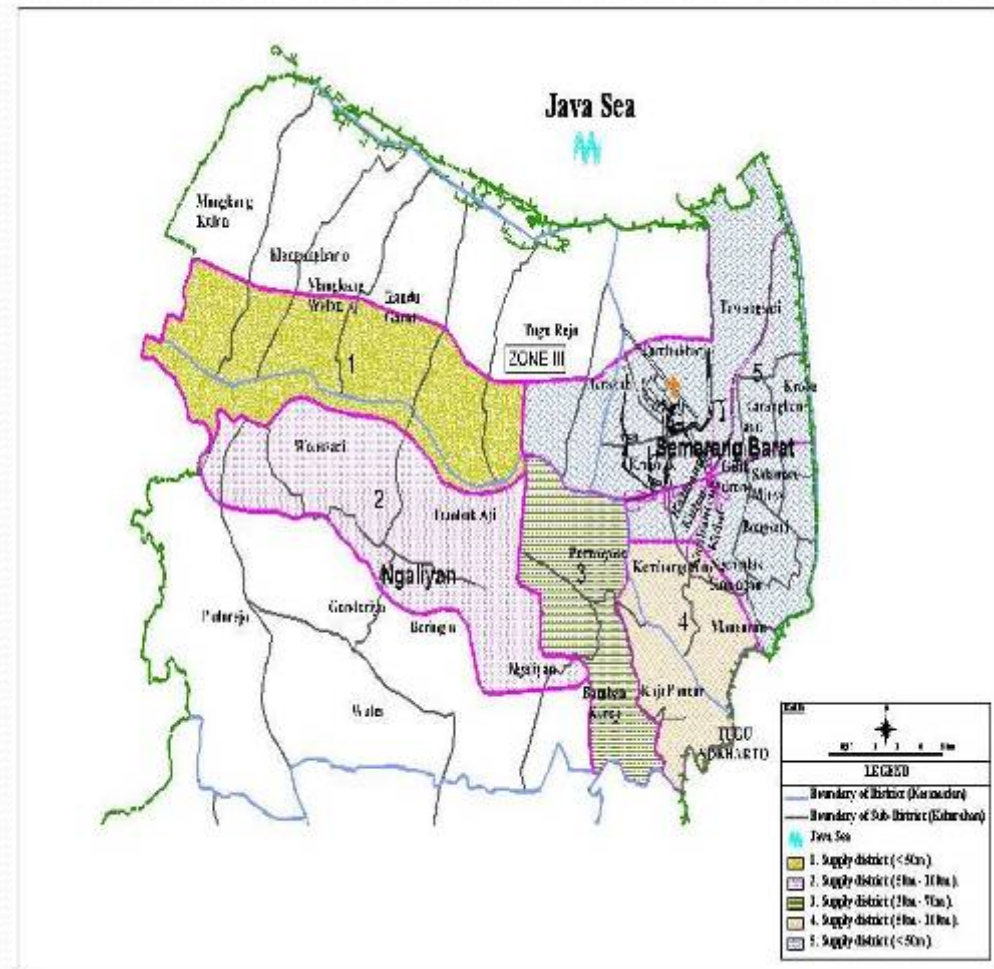


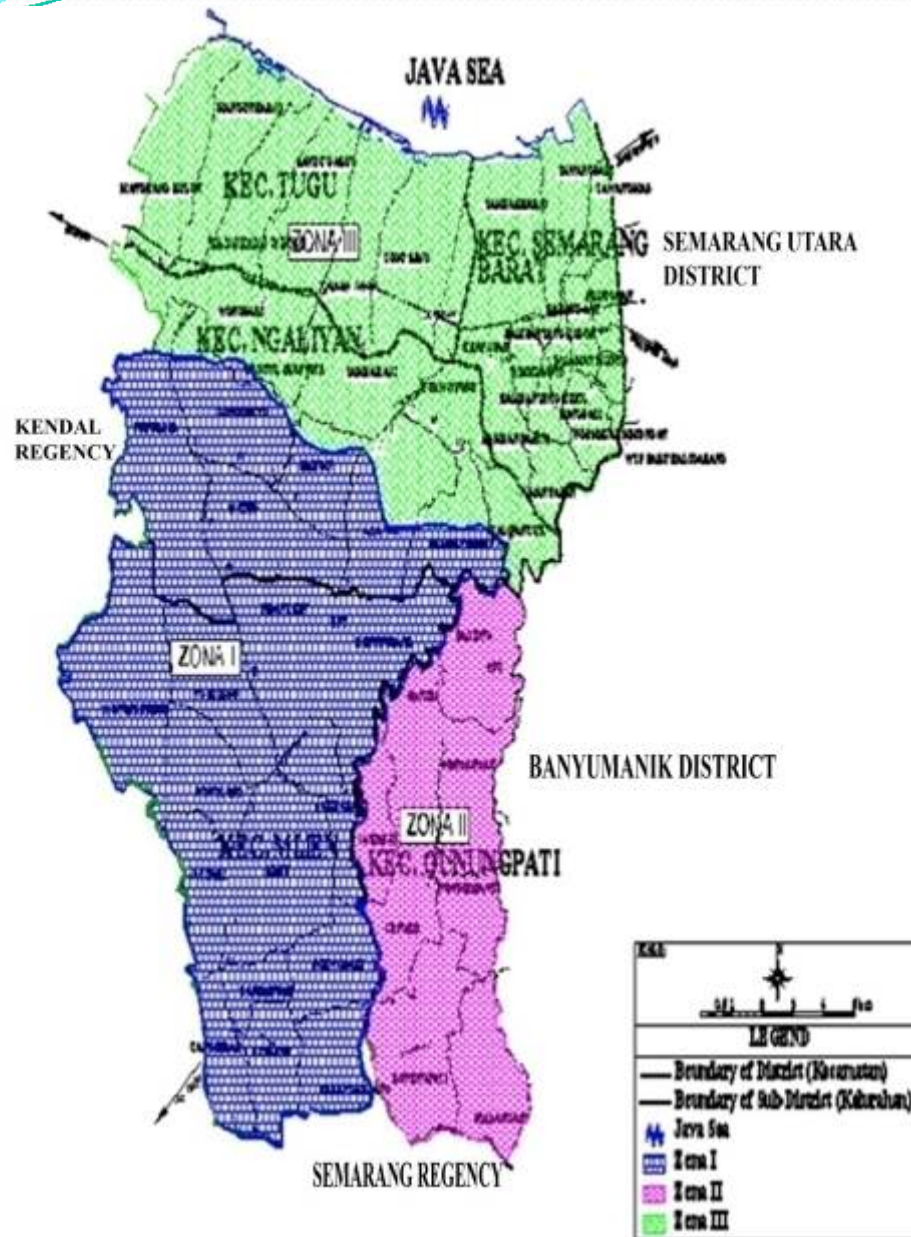
- Existing Tariff : Rp 3,600/m<sup>3</sup>
- average tariff rate projection in 2013 : Rp 5,100/m<sup>3</sup>
- Tariff will be feasible if there is support for raw water :
  - Projected tariff (concession) : Rp 50370/m<sup>3</sup> – Rp 5,100/m<sup>3</sup>
  - Projected tariff (BOT) : Rp 5,670/m<sup>3</sup> > Rp 5,100/m<sup>3</sup> (PDAM efficiency needs to be done)



# WESTERN SEMARANG CITY WATER SUPPLY

- PPP Modality :  
BOT/Concession
- Estimated Project Cost :  
Rp 443 Billion (equivalent  
with 49,22 Million US \$)
- Project Location:  
Western Semarang City





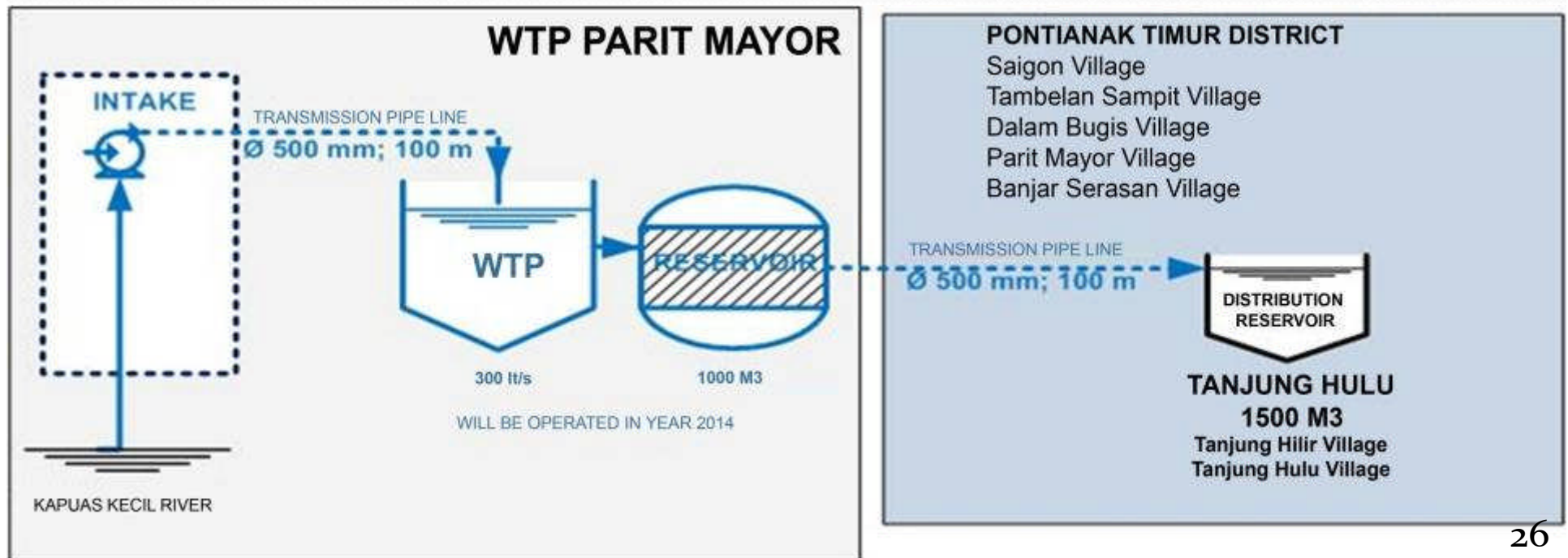
## PROJECT SCOPE :

- Development of Intake 1.050 L/sec
- Transmission pipe of raw water
- WTP 2 x 500 L/sec
- Distribution pipe system
- Reservoir
- Distribution and service unit

Average tariff (2008) :  
Rp. 2.427/ m<sup>3</sup>

# EASTERN PONTIANAK CITY WATER SUPPLY

- PPP Modality : BOT
- Estimated Project Cost
  - Conventional WTP : 6,37 Million US \$
  - Reverse Osmose : 14,17 Million US \$
- Project Location : Eastern Pontianak City



- Average tariff (2010) : Rp. 3.044/m<sup>3</sup>
- Bulk water tariff with RO system (2014) : Rp. 3.959/m<sup>3</sup>
- Bulk water tariff with conventional system : Rp. 2.322/m<sup>3</sup>

Source: Kapuas Kecil River

## PROJECT SCOPE :

- WTP 300 L/sec
- Reservoir 4000 m<sup>3</sup>

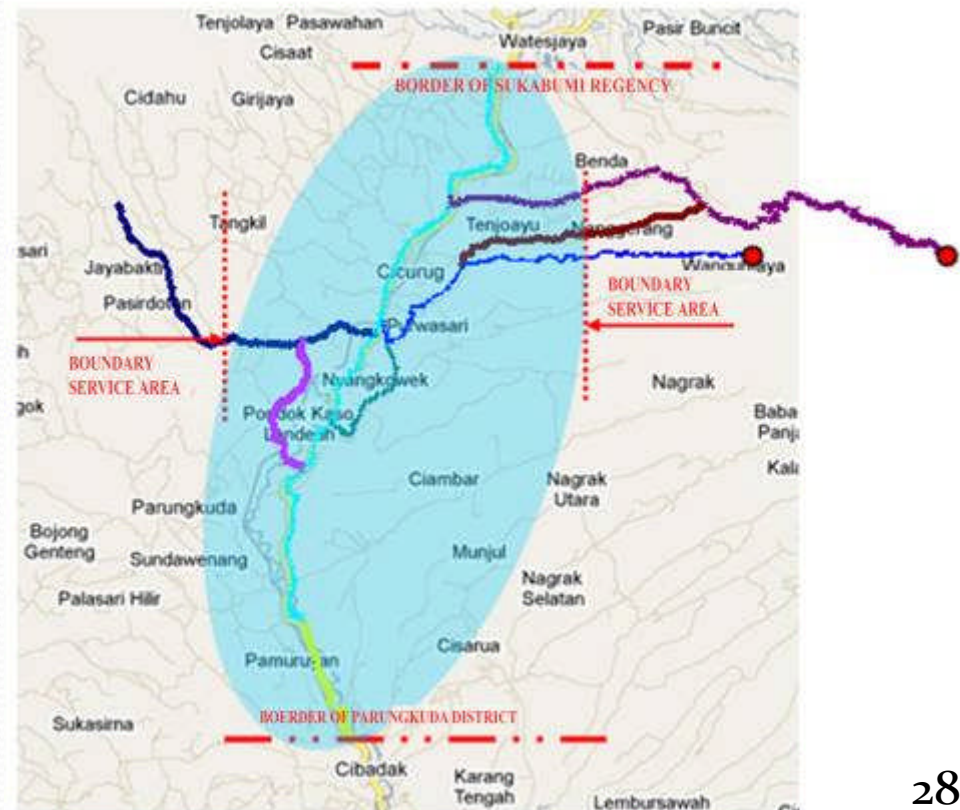


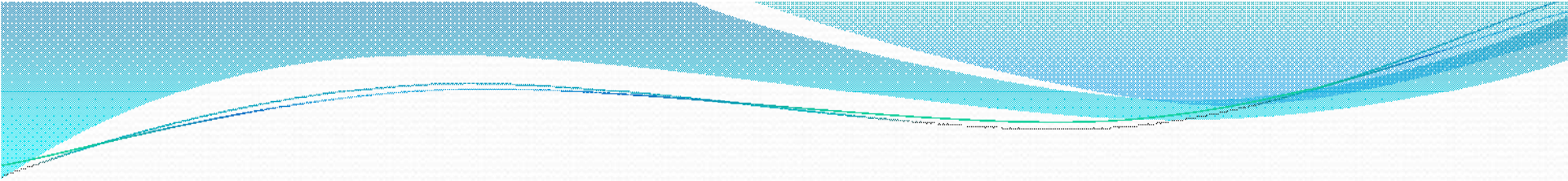
# SUKABUMI WATER SUPPLY

- PPP Modality : BOT/ concession
- Estimated Project Cost : 17.78 Million US \$
- Project Location : Cidahu, Cicurug, Parungkuda

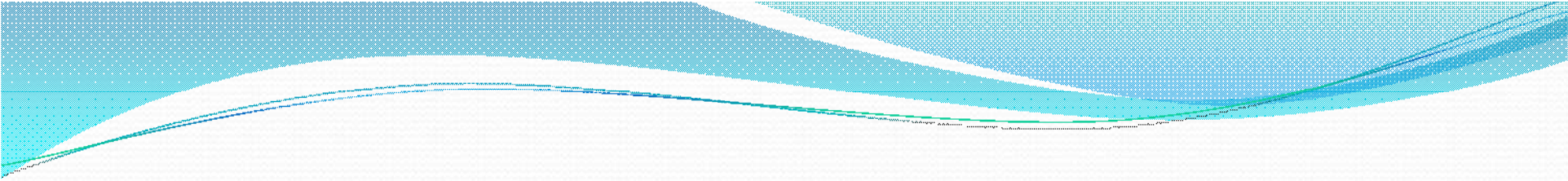
## PROJECT SCOPE :

- Broncapturing 195 L/det + 150 L/det
- Transmission pipe
- Distribution and service unit





## **II. SOLID WASTE MANAGEMENT**



## STRATEGIC ISSUES OF SOLID WASTE MANAGEMENT IN INDONESIA

- Solid waste collection service coverage is still low (60-75)%
- 90% of Solid waste disposal method still using open dumping, the rest has been upgraded to sanitary landfill
- Methane gas released directly into air due to lack of gas treatment facilities



# **NATIONAL DEVELOPMENT POLICY FOR SOLID WASTE MANAGEMENT**

## **SOLID WASTE MANAGEMENT (Public Works Minister Regulation No.21/2006)**

- Increase services coverage
- Improve quality of waste management
- Increase the active role of the community and private sector
- Improve of institution capacity
- Increase alternative funding source



## **NATIONAL STRATEGIC PLANNING ON SOLID WASTE MANAGEMENT 2010 - 2014**

- **Development of sanitary landfill sites in 210 cities**
- **Development of 3R facilities in 250 locations**
- **Supporting of landfill gas handling in 15 locations**

# THE EXISTING OF SOLID WASTE LANDFILL PROJECTS

## A. Technology: **Landfill Gas Flaring** (Final Disposal Site-TPA)

1. TPA SumurBatu, Bekasi City
2. TPA Batulayang, Pontianak City
3. TPA Sukowinatan, Palembang City
4. TPA Tamangapa, Makasar City
5. TPA Piyungan, Jogjakarta City

## B. Technology : **Gas, Landfill & Anaerobic Digestion**

1. TPA Bantargebang, DKI Jakarta
2. TPA Suwung, Bali

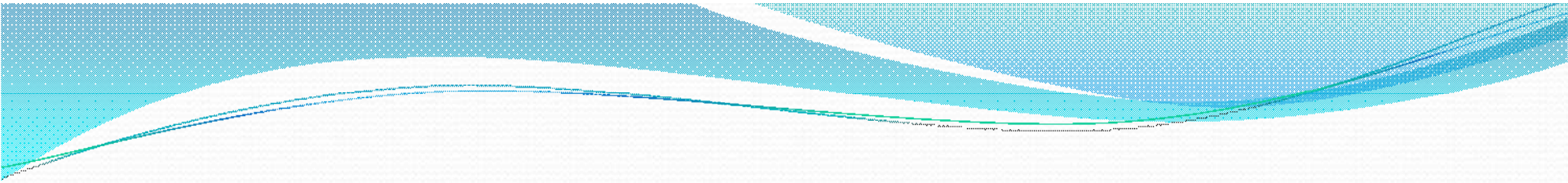
## C. Technology : **Aerobic Composting**

1. Gianyar waste recovery project, Kabupaten Gianyar, Bali



### Project Planning :

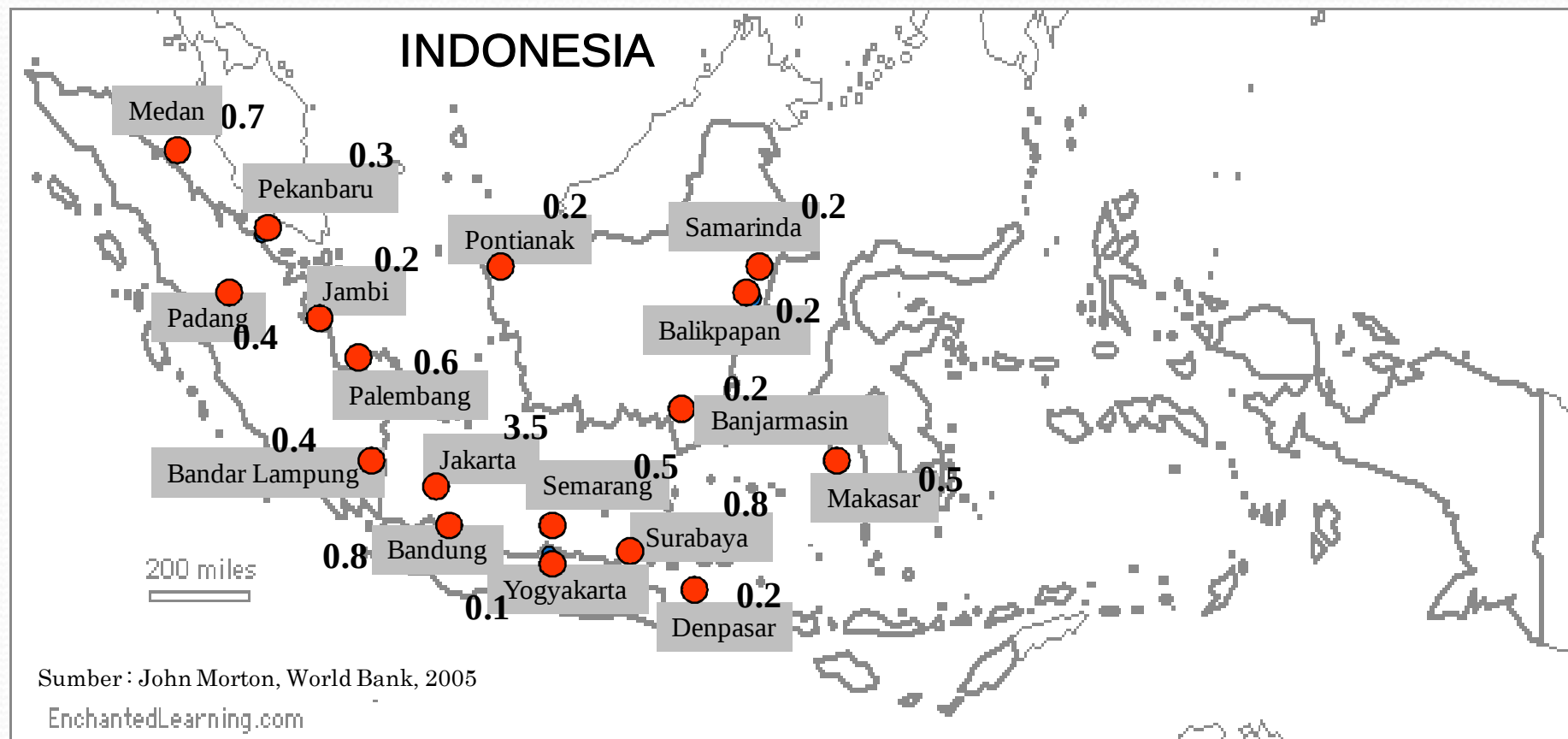
Landfill quality improvement and CDM projects development : cooperation between the Ministry of Public Works, Local Government and the World Bank, KfW (Germany)



# **INVESTMENT OPPORTUNITIES ON SOLID WASTE MANAGEMENT PROJECTS**

# PROSPECTS FOR SOLID WASTE MANAGEMENT

- Estimated waste generation in Indonesia's major cities : 10 million ton/year
- Methane gas produces about 404 million m<sup>3</sup>/year or 6.07 million ton CO<sub>2</sub>/year equivalent



# LIST OF POTENTIAL CITIES

| No       | City              | Population<br>(inhabitants) | Waste<br>(ton/day) | Incoming<br>Waste to<br>Landfill<br>(ton/day) | Potential<br>Reduction<br>tCO2e<br>(2010 –<br>2020) | Estimation                             |                                     |
|----------|-------------------|-----------------------------|--------------------|-----------------------------------------------|-----------------------------------------------------|----------------------------------------|-------------------------------------|
|          |                   |                             |                    |                                               |                                                     | Investment<br>2010 –<br>2020<br>(US\$) | Revenue<br>2010 –<br>2020<br>(US\$) |
| SUMATERA |                   |                             |                    |                                               |                                                     |                                        |                                     |
| 1        | Bandar<br>Lampung | 822,880                     | 514                | 334                                           | 742,399                                             | 3.05 million                           | 7.42 million                        |
| 2        | Medan             | 2,102,205                   | 1,577              | 788                                           | 1,750,626                                           | 7.19 million                           | 17.51<br>million                    |
| 3        | Pekanbaru         | 867.753                     | 434                | 295                                           | 655.213                                             | 2.69 million                           | 6.55 million                        |
| JAVA     |                   |                             |                    |                                               |                                                     |                                        |                                     |
| 4        | Depok             | 1,536,282                   | 1,152              | 691                                           | 1,535,292                                           | 6.31 million                           | 15.35<br>million                    |
| 5        | Semarang          | 1,511,236                   | 1,133              | 680                                           | 1,510,262                                           | 6.21 million                           | 15.10<br>million                    |
| 6        | Surakarta         | 522,935                     | 327                | 261                                           | 580,665                                             | 2.39 million                           | 5.81 million                        |
| 7        | Malang            | 816,637                     | 408                | 265                                           | 589,413                                             | 2.42 million                           | 5.89 million                        |

Note : Assumption 1 tCO<sub>2</sub>e = 10 US\$

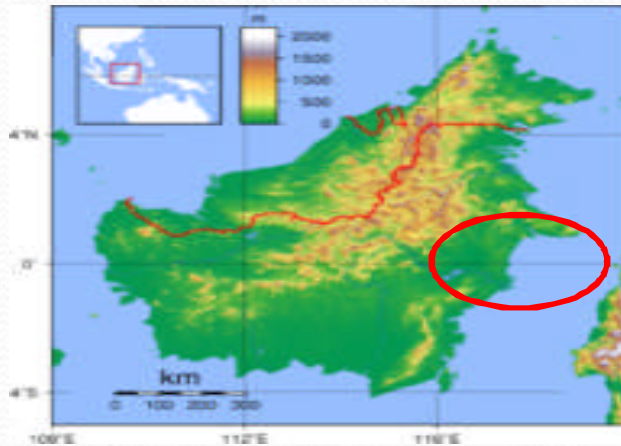
## LIST OF POTENTIAL CITIES (2)

| No                        | City        | Population<br>(inhabitants) | Waste<br>(ton/day) | Incoming<br>Waste to<br>Landfill<br>(ton/day) | Potential<br>Reduction<br>tCO2e<br>(2010 –<br>2020) | Estimation                             |                                     |
|---------------------------|-------------|-----------------------------|--------------------|-----------------------------------------------|-----------------------------------------------------|----------------------------------------|-------------------------------------|
|                           |             |                             |                    |                                               |                                                     | Investment<br>2010 –<br>2020<br>(US\$) | Revenue<br>2010 –<br>2020<br>(US\$) |
| WEST NUSA TENGGARA ISLAND |             |                             |                    |                                               |                                                     |                                        |                                     |
| 8                         | Mataram     | 504,000                     | 315                | 252                                           | 321,786                                             | 2.30 million                           | 3.22 million                        |
| KALIMANTAN ISLAND         |             |                             |                    |                                               |                                                     |                                        |                                     |
| 9                         | Balikpapan  | 512,128                     | 320                | 256                                           | 568,665                                             | 2.34 million                           | 5.69 million                        |
| 10                        | Banjarmasin | 627,245                     | 392                | 255                                           | 565,898                                             | 2.33 million                           | 5.66 million                        |
| 11                        | Palembang   | 1,417,047                   | 1,063              | 531                                           | 1,180,112                                           | 4.85 million                           | 11.80<br>million                    |
| 12                        | Samarinda   | 602,117                     | 376                | 245                                           | 543,228                                             | 2.23 million                           | 5.43 million                        |

Note : Assumption 1 tCO<sub>2</sub>e = 10 US\$

# BALIKPAPAN CITY - KALIMANTAN

- Balikpapan located at East Kalimantan Province



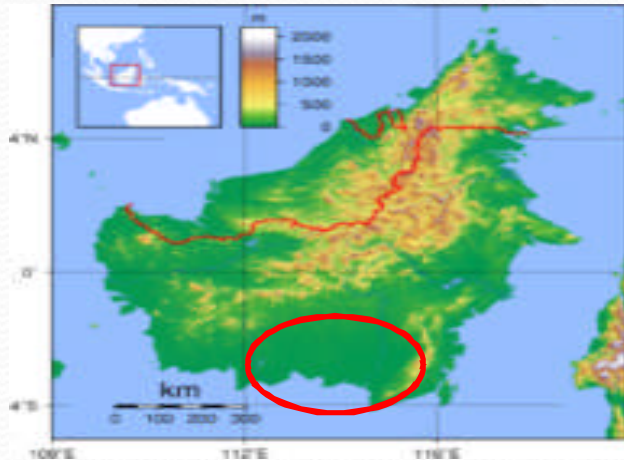
- Area : 503.30 km<sup>2</sup>
- Population : 512,128 people
- Solid Waste Management Agency : Cleansing Department of Balikpapan City
- Estimate of solid waste production : 320 ton/day
- Incoming waste to landfill : 256 ton/day

- Final Disposal Name : Manggar
- Size : 25.1 Ha
- Start operation 2002
- Method : Sanitary Landfil
- Waste Composition : 66 % organic
- Potential Reduction (2010-2020) : 568,665 ton CO<sub>2</sub>
- Estimated Investment (LFG Flaring System) : 2.34 million US\$
- Estimated Revenue (2010-2020) : 5.69 million US\$



# BANJARMASIN CITY - KALIMANTAN

## ➤ Area in South Kalimantan Province



- Area : 7 km<sup>2</sup>
- Population : 627,245 people
- Agency of Waste Management :  
Sanitation and Waste Management  
Agency of Banjarmasin City
- Estimate of waste : 392 ton/day
- Incoming waste to landfill : 255 ton/day

- Final Disposal Name : Basirih
- Size : 35 Ha
- Start operation 2000
- Method : Controlled Landfil
- Waste Composition : 56 % organic
- Potential Reduction (2010-2020) :  
565,898 ton CO<sub>2</sub>
- Estimated Investment (LFG Flaring  
system) : 2.33 million US\$
- Estimated Revenue (2010-2020) :  
5.66 million US\$



# BANDAR LAMPUNG CITY - SUMATRA

- Area in Lampung Province



- Area : 192 km<sup>2</sup>
- Population : 822,880 people
- Agency of Waste Management : Sanitation Agency of Bandar Lampung City
- Estimate of Waste : 514 ton/day
- Incoming waste to landfill : 334 ton/day

- Final Disposal Name : Bakung
- Size : 20 Ha
- Start operation 1996
- Method : Semi Controlled Landfill
- Waste Composition : 60 % organic
- Potential Reduction (2010-2020) : 742,399 ton CO<sub>2</sub>
- Estimated Investment (LFG Flaring system) : 3.05 million US\$
- Estimated Avenue (2010 - 2020) : 7.42 million US\$



# DEPOK CITY – WEST JAVA

- Area in West Java Province



- Area : 20.504,54 Ha
- Population : 1,536,282 people
- Agency of Waste Management : Sanitation and Environmental Agency of Depok City
- Estimate of waste : 1,152 ton/day
- Incoming waste to landfill : 691 ton/day

- Final Disposal Name : Cipayung
- Size : 10,1 Ha
- Start operation : 1988
- Method : Controlled Landfill
- Waste Composition : 79 % organic
- Potential Reduction (2010-2020) : 1,535,292 ton CO<sub>2</sub>
- Estimated Investment (LFG Flaring system) : 6.31 million US\$
- Estimated Revenue (2010-2020) : 15.35 million US\$



# PALEMBANG CITY - SUMATRA

- Area in South Sumatera Province



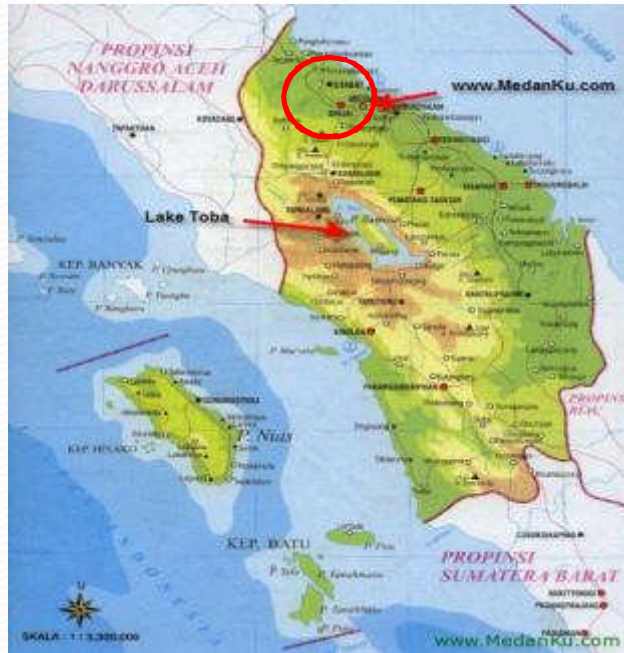
- Area : 400.61 Km<sup>2</sup>
- Population : 1,417,047 people
- Agency of Waste Management : Sanitation Agency of Palembang City
- Estimate of Waste : 1,063 ton/day
- Incoming waste to landfill : 531 ton/day

- Final Disposal Name : Karyajaya
- Size : 40 Ha
- Start operation : 1994
- Method : Sanitary Landfill
- Waste Composition : 68,12 % organic
- Potential Reduction (2010-2020) : 1.180.112 ton CO<sub>2</sub>
- Estimated Investment (LFG Flaring system) : 4.85 million US\$
- Estimated Revenue (2010-2020) : 11.80 million US\$



# MEDAN CITY - SUMATRA

- Area in North Sumatera Province



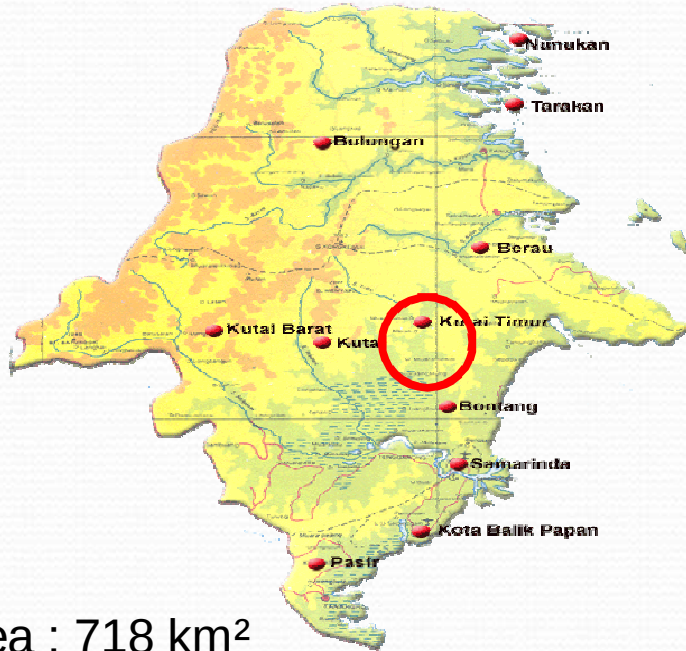
- Area : 265,10 km<sup>2</sup>
- Population : 2.102.105 people
- Agency of Waste Management : Sanitation Agency of Medan City
- Estimated of waste : 1.577 ton/day
- Incoming waste to landfill : 788 ton/day

- Final Disposal Name : Namo Bintang
- Size :  $\pm 17,54$  Ha
- Start operation : 1987
- Waste composition : 48,2 % organic
- Potential Reduction (2010-2020) : 1.750.626 tCO<sub>2</sub>
- Estimated Investment (LFG Flaring system) : 7,19 million US\$
- Estimated Revenue (2010-2020) : 17,51 million US\$



# SAMARINDA CITY - SUMATRA

- Area in East Kalimantan Province



- Area : 718 km<sup>2</sup>
- population : 602,117 people
- Agency of Waste Management : Sanitation Agency of Samarinda City
- Estimate of waste : 376 ton/day
- Incoming waste to landfill : 245 ton/day

- Final Disposal Name : Bukit Pinang
- Size :  $\pm$  5 Ha
- Start operation : 1995
- Waste composition : 61.5 % organic
- Potential reduction (2010-2020) : 543,228 ton CO<sub>2</sub>
- Estimated Investment (LFG Flaring system) : 2.23 million US\$
- Estimated Revenue (2010-2020) : 5.43 million US\$



# SEMARANG CITY – CENTRAL JAVA

- Area in Central Java Province



- Area : 37,366.84 Ha
- Population : 1,511,236 people
- Agency of Waste Management : Sanitation and Park Agency of Semarang City
- Estimate waste : 1,133 ton/day
- Incoming waste to landfill : 680 ton/day

- Final Disposal Name : Jatibarang
- Size : 44.5 Ha
- Start operation : 1993
- Method : Sanitary Landfill
- Waste composition : 61,95 % organic
- Potential Reduction (2010-2020) : 1,510,262 ton CO<sub>2</sub>
- Estimated Investment (LFG Flaring system) : 6.21 million US\$
- Estimated Revenue (2010-2020) : 15.10 million US



# MATARAM CITY – WEST NUSA TENGGARA

- Area in West Nusa Tenggara Province



- Area : 6,130.00 Ha
- Population : 504,000 people
- Agency of Waste Management : Sanitation Agency of Mataram City
- Estimate of waste : 315 ton/day
- Incoming waste to landfill : 252 ton/day

- Final Disposal Name : Kebon Kongok
- Size : 8.6 Ha
- Start operation : 1994
- Method : Sanitary Landfill
- Waste composition : 72 % organic
- Potential Reduction (2010-2020) : 321,786 ton CO<sub>2</sub>
- Estimated Investment (LFG Flaring system) : 2.30 million US\$
- Estimated Revenue (2010-2020) : 3.22 million US\$



# SURAKARTA CITY – CENTRAL JAVA

- Area in Central Java Province



- Area : 44.03 km<sup>2</sup>
- Population : 522,936 people
- Agency of Waste Management : Sanitation and Park

## Agency of Surakarta City

- Estimate waste : 327 ton/day
- Incoming waste to landfill : 261 ton/day

- Final Disposal Name : Putri Cempo
- Size :  $\pm$  17 Ha
- Start operation : 1987
- Waste composition : 65% organic
- Potenti Reduction (2010-2020) : 580,665 ton CO<sub>2</sub>
- Estimated Investment (LFG Flaring system) : 2.39 million US\$
- Estimated Revenue (2010-2020) : 5.81 million US\$



# MALANG CITY – EAST JAVA

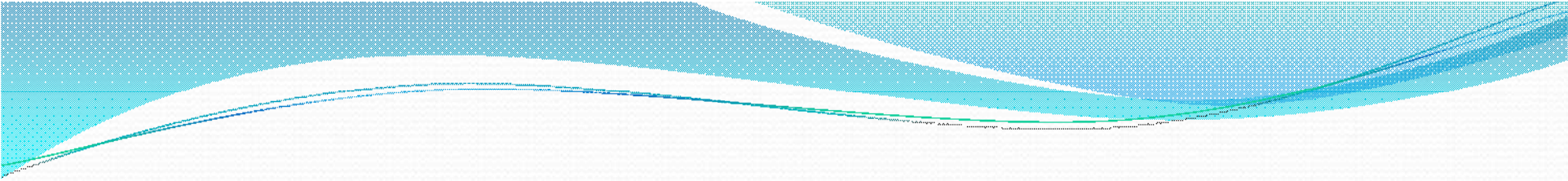
- Area in East Java Province



- Area : 110.06 Km<sup>2</sup>
- Population : 816,637 people
- Agency of Waste Management : Sanitation Agency of Malang City
- Estimate of waste : 408 ton/day
- Incoming waste to landfill : 265 ton/day

- Final Disposal Name : Supit urang
- Area :  $\pm$  11.9 Ha
- Start operation : 1993
- Waste composition : 88.76 % organic
- Potential Reduction (2010-2020) : 589,413 ton CO<sub>2</sub>
- Estimated Investment (LFG Flaring system) : 2.42 million US\$
- Estimated Revenue (2010-2020) : 5.89 million US\$





## **III. WASTEWATER MANAGEMENT**

# Water Recycling of Suwung WWTP

- Beneficiary: supply water for fire hydrant and for watering city park of Denpasar
- Estimated Project Cost: Rp 14,63 Billion (or equivalent with 1.63 Million US \$)
- Estimated FIRR: 14,8%
- Project Location: South Denpasar, East Denpasar, and West Denpasar
- Project Scope:
  - Pre chlorination
  - Main reservoir: 1.500 m<sup>3</sup>
  - Transmission pipe: HDPE 8.600 m
  - District reservoir @ 500 m<sup>3</sup>

