

Environmental Management in Bandung City, Indonesia



Bandung City

Environmental Management Board

February 13, 2014

Bandung city

- ▶ Bandung city is the capital of West Java Province in Indonesia, the country's third largest city with the population of 2.5 million in 2013.
- ▶ Bandung is located 768 metres above sea level, approximately 140 kilometres south east of Jakarta, Bandung has cooler temperatures year-round than most other Indonesian cities.
- ▶ The city lies on a river basin surrounded by



Enviromental Problem in Bandung

- ▶ **Solid waste management**
 - ▶ Total volume of solid waste generated in Bandung city is 1,492 ton/day which is 74% collected and transported to landfill.
 - ▶ Reduce, reuse, recycle, and composting are not common practices
 - ▶ High density population therefore difficult to find appropriate landfill location



Flood

- ▶ Clearance of catchment areas in the northern Bandung mountainous region and limited drainage system has caused the escalating number of floods in the city.



Air Pollution

- ▶ Large urban agglomerations in Bandung inevitably lead to air pollution.
- ▶ Bandung lack systematic measurements of air pollution.
- ▶ Bandung's air pollutants are trapped by a combination of surrounding mountains and the city's concave, bowl-like footprint,



Solution in Bandung (1): Eco-city and eco-village

- ▶ Bandung city implemented eco-city and eco-village concept.
 - ▶ In fact, the concept of eco-city and eco-village has emerged given the rapid pace of urbanization in Bandung city.
 - ▶ Ecocities essentially integrate economic, environmental and social considerations and develop projects, programmes, plans and policies towards sustainable governance of Bandung city.
 - ▶ Public involvement in this process is very important.
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Solution in Bandung (2): Eco-city and eco-village

- ▶ Bandung city has committed to becoming the sustainable and green city by developing and supporting green initiatives such as urban bicycling, use of renewable energy, promote urban farming and roof garden, and sustainable solid waste management.
 - ▶ Eco-village is more emphasis on adoption to local culture, renewable energy especially based on solar and biomass, organic farming, low water intensive usage with decentralized and community driven solutions.
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Solution in Bandung (3): Eco-city and eco-village

- ▶ The challenge is to develop an eco-village for high density living—a urban village that provided a variety of housing options and lifestyle choices based on sustainability, innovation and a strong sense of community.
- ▶ Therefore, Bandung city initiated first eco-village in Tamansari-Cihampelas area as a eco-village model number one or Bandung EcoVillage# 1.
- ▶ Bandung Ecovillage#1 Tamansari-Cihampelas objective is to become more socially, economically and ecologically sustainable.

Solution in Bandung (3): Eco-city and eco-village

- ▶ Concretely, Bandung Ecovillage#1 seek alternatives to ecologically destructive electrical, water, transportation, and waste-treatment systems, as well as the larger social systems that mirror and support them.
 - ▶ Bandung Ecovillage#1 reduce social impact from the breakdown of traditional forms of community, wasteful consumerist lifestyles, the destruction of natural habitat, urban sprawl, factory farming, and over-reliance on fossil fuels.
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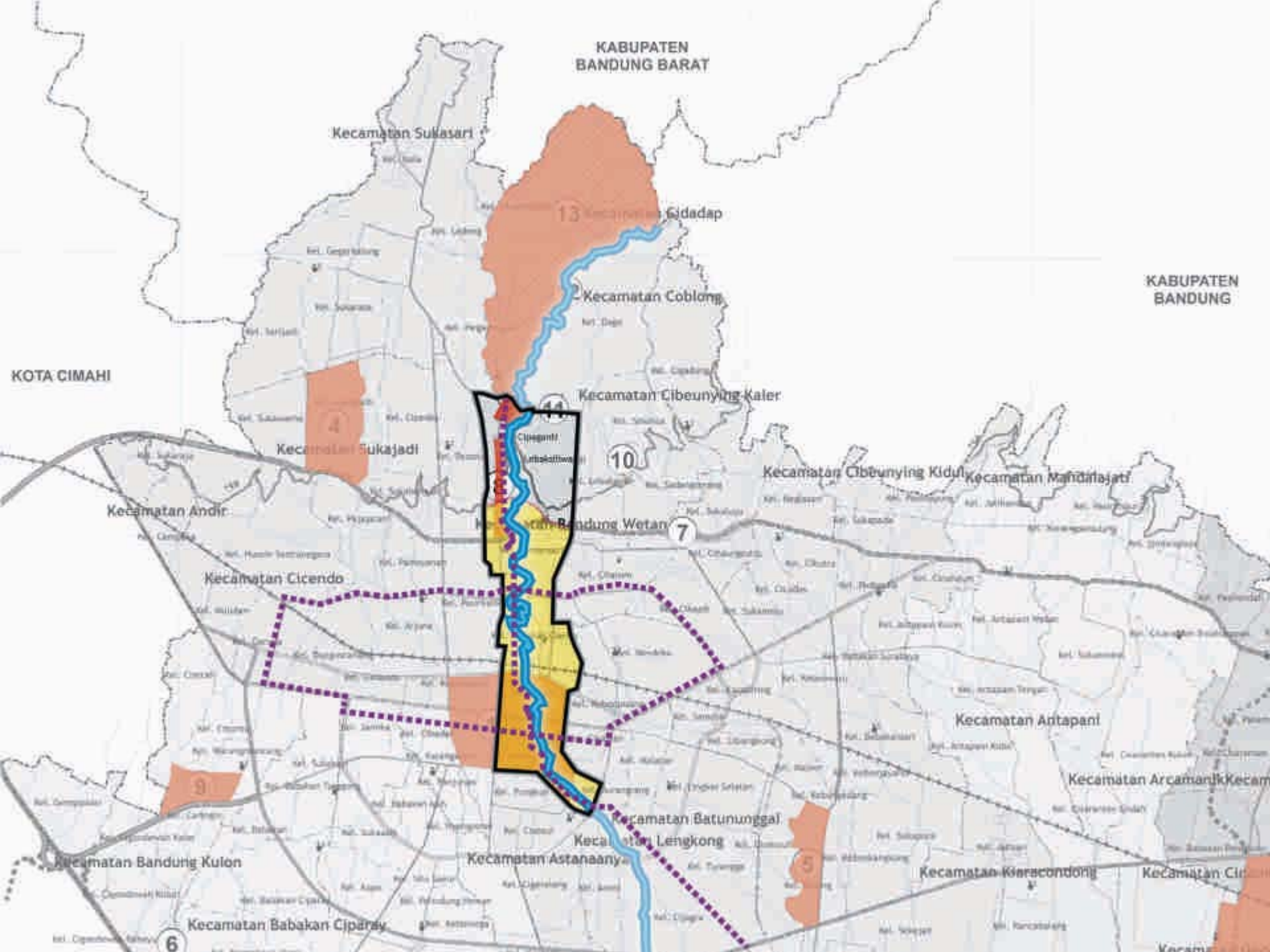
Component Bandung Ecovillage#1

- ▶ Sustainable Transportation
- ▶ Sustainable Solid Waste Management
- ▶ Sustainable Drainage System
- ▶ Integrated Wastewater Treatment
- ▶ Urban Farming
- ▶ Low Consumption and
- ▶ Renewable Energy

KABUPATEN
BANDUNG BARAT

KABUPATEN
BANDUNG

KOTA CIMAHI



Kecamatan Sukasari

13 Kecamatan Gidadap

Kecamatan Coblong

Kecamatan Cibunying Kaler

4 Kecamatan Sukajadi

10

Kecamatan Cibunying Kidul

Kecamatan Mandalajati

Kecamatan Andir

Kecamatan Cicendo

7 Kecamatan Bandung Wetan

Kecamatan Antapani

Kecamatan Arcamanik

9 Kecamatan Bandung Kulon

Kecamatan Batununggal

Kecamatan Lengkong

Kecamatan Astanajaya

Kecamatan Kiarasondong

Kecamatan Cid...

6 Kecamatan Babakan Ciparay

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Sustainable Transportation

- ▶ Bike Sharing
 - ▶ Bandung Ecovillage#1 has provided bicycle sharing system that is a service in which bicycles are made available for shared use to individuals on a very short term basis.
- ▶ Automated parking building
 - ▶ To reduce ground parking space, Ecovillage will build multi-story concrete
- ▶ structure with an internal



Sustainable Transportation

▶ Bus

- ▶ Bandung has developed Mass Rapid Transportation facilities. Bandung Ecovillage program will increase amount of bus in Bandung.



▶ Skywalk

- ▶ To increase bike user and walking habit, Ecovillage will provide Skywalk, a steel bridge along Jalan



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- ▶ Tamansari-Cihampelas road

Sustainable Solid Waste Management

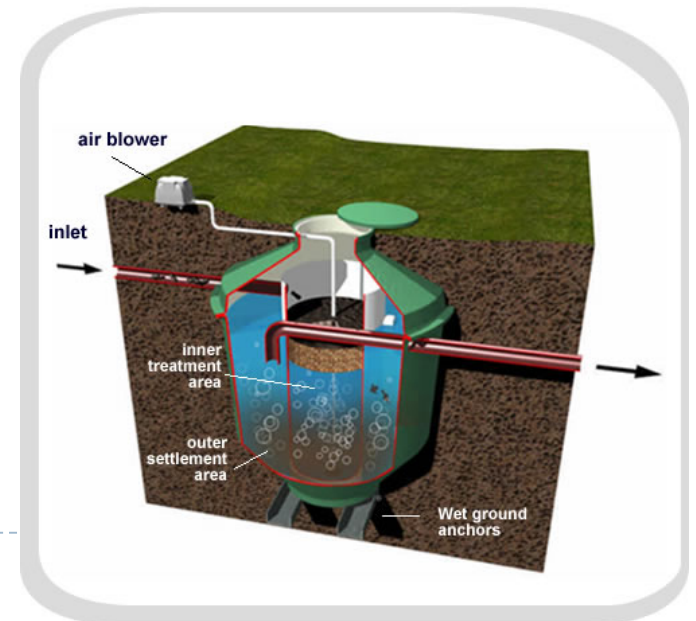
▶ Composting

- ▶ Bandung has implemented composting process both in household scale by providing composting bin and region scale by providing composting machines.



▶ Biodigester

- ▶ Bandung has built several biodigester. To carry out waste-to-energy program, Ecovillage will increase amount of biodigester system in region scale



Sustainable Solid Waste Management

- ▶ **Recycle center**
 - ▶ Ecovillage will provide Recycle center that recycling plastics, batteries, paper, metal, biomatter, glass, textile, electronic, and composite.
 - ▶ **Underground collection station**
 - ▶ To operate more cleaner and greener waste management, Ecovillage will provide underground solid waste collection system
 - ▶ **Plasma technology**
 - ▶ Ecovillage will introduce solid waste treatment by using plasma gasification technology. Plasma gasification is a process which converts organic matter into synthetic gas, electricity, and slag using plasma. A plasma torch powered by an electric arc is used to ionize gas and catalyze organic matter into synthetic gas and solid waste (slag).
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Integrated Wastewater Treatment

- ▶ **Communal septic tank**
 - ▶ Communal septic tank will be build to treat the sewage from Ecovillage community. The sewage will pass through sewer pipes to the communal septic tank.
 - ▶ **Sewage conveyor-pipe along river**
 - ▶ Sewage from house near river that are not serviced by Communal Septic Tank will be serviced by sewage conveyor-pipe system. The sewage will pass through sewer conveyor-pipes to the City Domestic
 - ▶ Wastewater Plant.
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Integrated Wastewater Treatment

- ▶ Sustainable drainage system
 - ▶ Bandung Ecovillage will provide sustainable drainage system such as source control, permeable paving such as pervious concrete, storm water detention, storm water infiltration, and evapo-transpiration (e.g. from a green roof)
- ▶ Public toilet
 - ▶ Bandung Ecovillage will provide several Public Toilets. Public toilets are an important amenity for slum-dwellers, the homeless and those working in the informal sector.



Urban farming

- ▶ Urban farming

- ▶ Ecovillage will increase practice of cultivating, processing, and distributing food in a city by Urban Farming Program.

- ▶ Roof garden

- ▶ Ecovillage will introduce roof garden, a garden on the roof of a building/house. Besides the decorative benefit, roof plantings may provide food, temperature control, hydrological benefits, architectural enhancement, habitats or corridors for wildlife, and recreational opportunities.

- ▶ Green street

- ▶ Ecovillage will implement many elements of street design, construction, and operation in favor of achieving green and sustainable street

Low Consumption and Renewable Energy

- ▶ Street lighting by LED technology
 - ▶ Ecovillage will use street lighting by LED technology. LED street lighting has higher energy efficiency compared to conventional street lighting
- ▶ Street lighting by solar cell technology
 - ▶ Ecovillage will also use street lighting by solar cell technology. Photovoltaic (PV) energy supply technology support concerns over global climatic change, local air pollution and resource scarcity.



Thank you for your attention...

