



# Kota Probolinggo

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## Post-Urban Sprawl Improvement of Waste Water Management

### 1. Challenge

Uncontrolled urbanization reduces green areas

2004



Kanigaran

2014



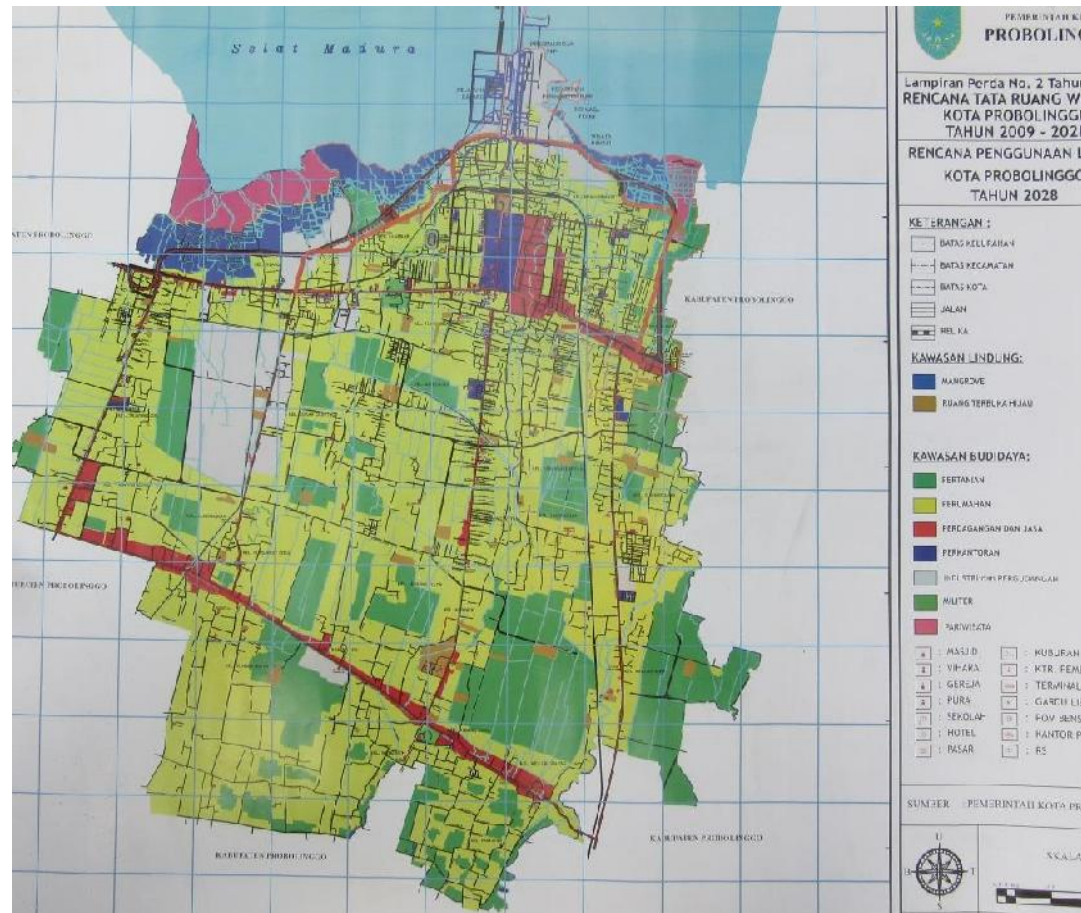




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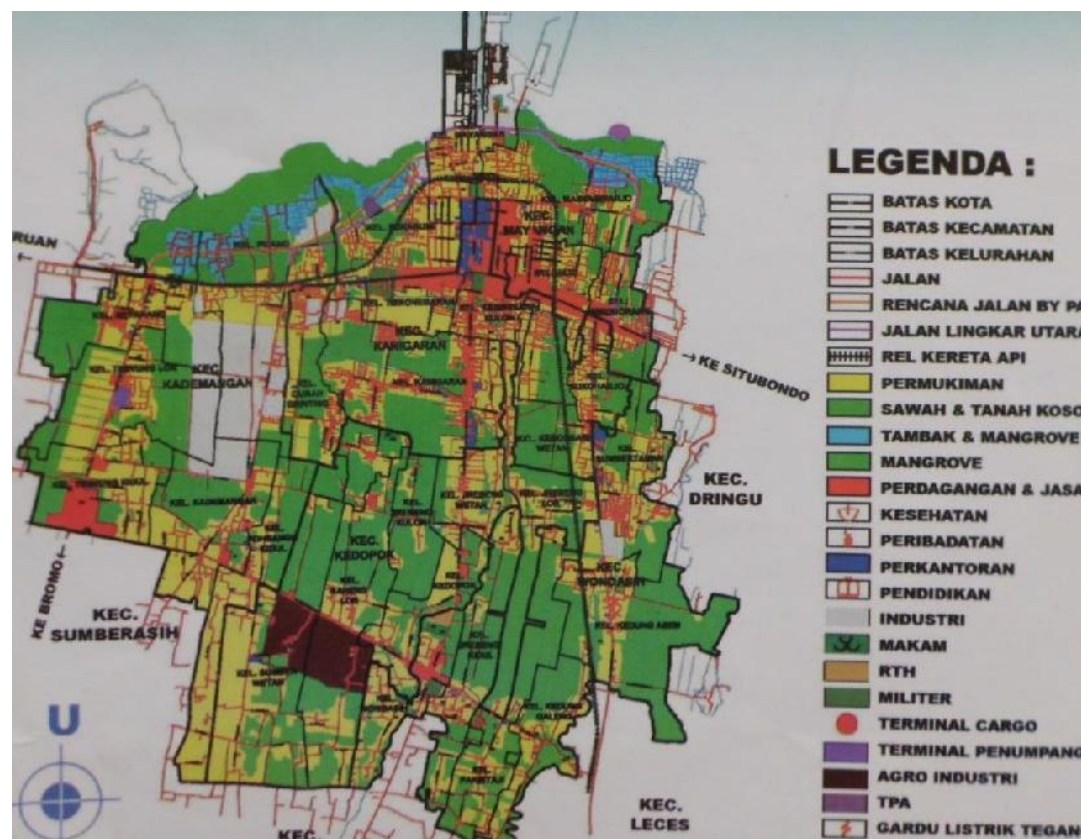
Built-up areas  
(yellow) are  
eliminating green  
areas (green)

Landuseplan  
2009 – 2028



Landuse  
before 2009

Probolinggo:  
230000 Inhab.  
Area: 57 km<sup>2</sup>  
2015 new harbor  
opened







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Industry (foto ca 1980)



Mangrove coast

.... a city with high quality of living : industry, agriculture, maritime, local culture, landscape, green areas, tourist attractions - How to maintain these qualities?



Bromo crater



Batik



Urban sprawl in agriculture







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## 2. Institutional setting



Infrastructure in settlements created by rapid unplanned urbanization is often inadequate. In 2012 Ministry of Public Works provided funds to PU, PEMAS, BLH for installation of waste water treatment plants in areas of low income.







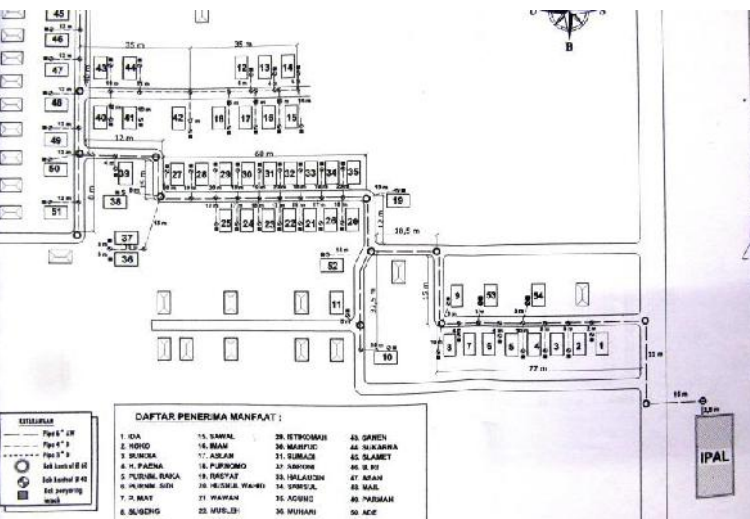
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The current situation:  
sewage of some toilets in  
city centre still pollute the  
rivers



## 3. An instrument to face the challenge

**IPAL** = Communal waste water treatment plant



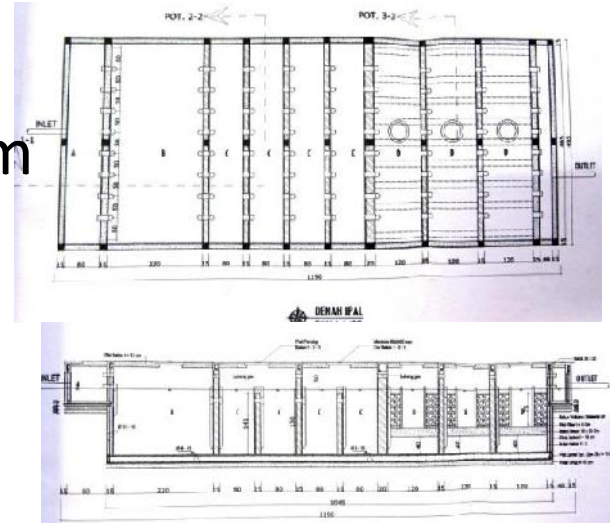
In 2014 in Pilang 54 houses were  
connected to a new communal  
treatment plant. Black and grey  
water flow to the plant. Treated  
water flows to the river.  
Previously grey water was going  
to the open canals, polluting the  
canals and rivers.





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Size of the treatment plant 5m x 12m and 2,2m deep. It has 9 chambers, the last 3 use volcanic stones as filter. Every 2 years the sludge has to be removed.



Treatment plant

fresh piping

Pesantren An Nur is using the treated water for fishbreeding

## 4. Outputs/results

2000 houses have in the last 4 years been connected to IPAL.

## 5. Lessons learnt + 6. Transfer

A close cooperation between inhabitants, civil society and public institutions is necessary. Timely construction of infrastructure in built up areas is sometimes difficult and later upgrading necessary. A plot for the treatment plant is needed.