

## Waste to Energy: Municipal Solid Waste

Karnataka published a Renewable Energy policy covering electricity generation from municipal solid waste from 2014-2020, but has yet to see any municipal solid waste based Waste to Electricity plants on the ground. MSW is a heterogeneous mix of combustibles, organic matter, inert matter and moisture. Solid waste is collected, segregated and burned to produce electricity or gas, or directly used as solid fuel. Energy generation will depend on the levels of segregation and collection efficiency of MSW. It is assumed under all scenarios that by 2050 urban areas will have MSW collection efficiency of approx 100% and segregation levels of approx. 90%, and rural areas will have MSW collection efficiency of approx. 100% and segregation levels of approx. 70%. Few plants have been announced in Bangalore which are assumed to be commissioned at different timelines in the levels 1 to 4.

### Level 1

Level 1 assumes a slow growth of MSW based waste to electricity to reach 205 MW by 2050. Conversion of waste to gaseous and solid fuel would require demonstrated technology, inter-agency coordination and favorable policies. This is not envisaged in Level 1.

### Level 2

In level 2, with a faster growth than Level 1, the total installed capacity is assumed to reach 255 MW by 2050. With improving segregation levels, 25% of urban segregated organic MSW and 20% of rural segregated organic MSW will generate biogas, and 18% of segregated urban combustibles will generate solid fuel.

### Level 3

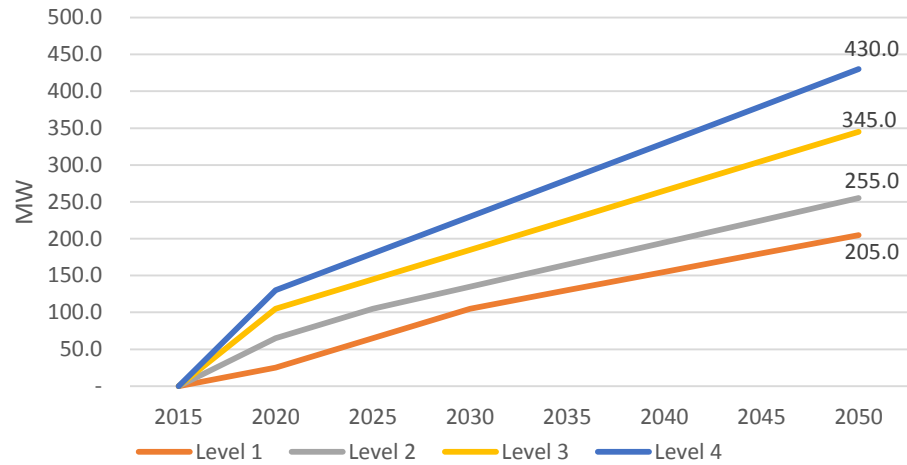
In Level 3, with a faster growth than Level 2, the total installed capacity is assumed to reach 345 MW by 2050. Urban Local Bodies will emphasize MSW based resource recovery. Policies and incentives are aligned. Rural areas adopt organic MSW based gas as a key energy option. 50% of urban segregated organic MSW and 40% of rural segregated organic MSW will generate biogas, and 30% of segregated urban combustibles will generate solid fuel.

### Level 4

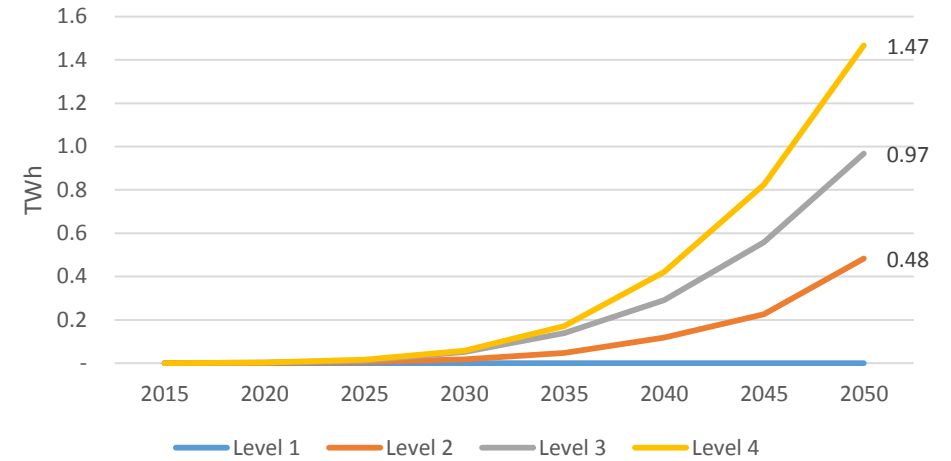
In Level 4, with a faster growth than Level 3, the total installed capacity is assumed to reach 430 MW by 2050. Here all economic social and technical barriers are removed. Increase in fossil fuel prices is also factored. 75% of urban segregated organic MSW and 60% of rural segregated organic MSW will generate biogas, and 62% of segregated urban combustibles will generate solid fuel.

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MSW based Waste to electricity capacity



Energy from waste to gas



Energy from waste to solid fuel

