CENTRE FOR SCIENCE AND ENVIRONMENT

ANIL AGARWAL DIALOGUE 2020

# ANNUAL MEDIA CONCLAVE

# ON THE STATE OF INDIA'S ENVIRONMENT

ANIL AGARWAL DIALOGUE 2020

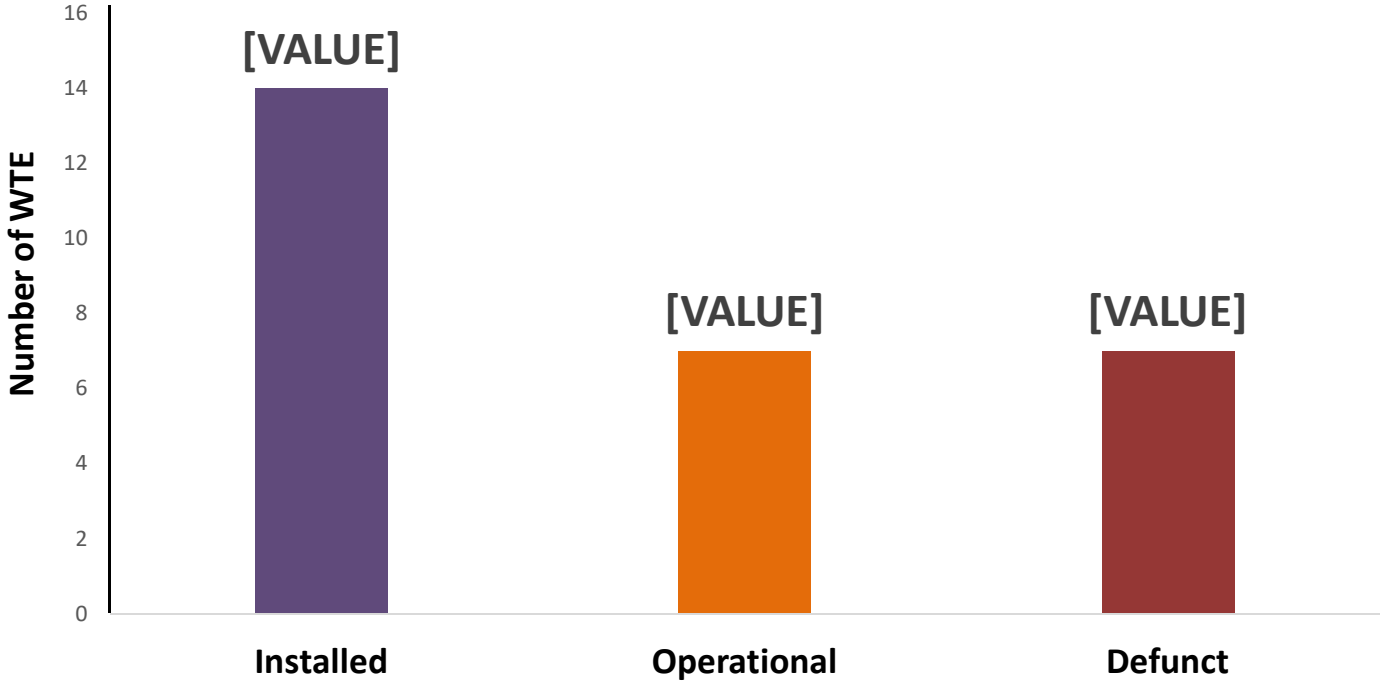

# The Dilemma of Waste-To-Energy

## An Overview

CSE

# Legacy of Waste-To-Energy

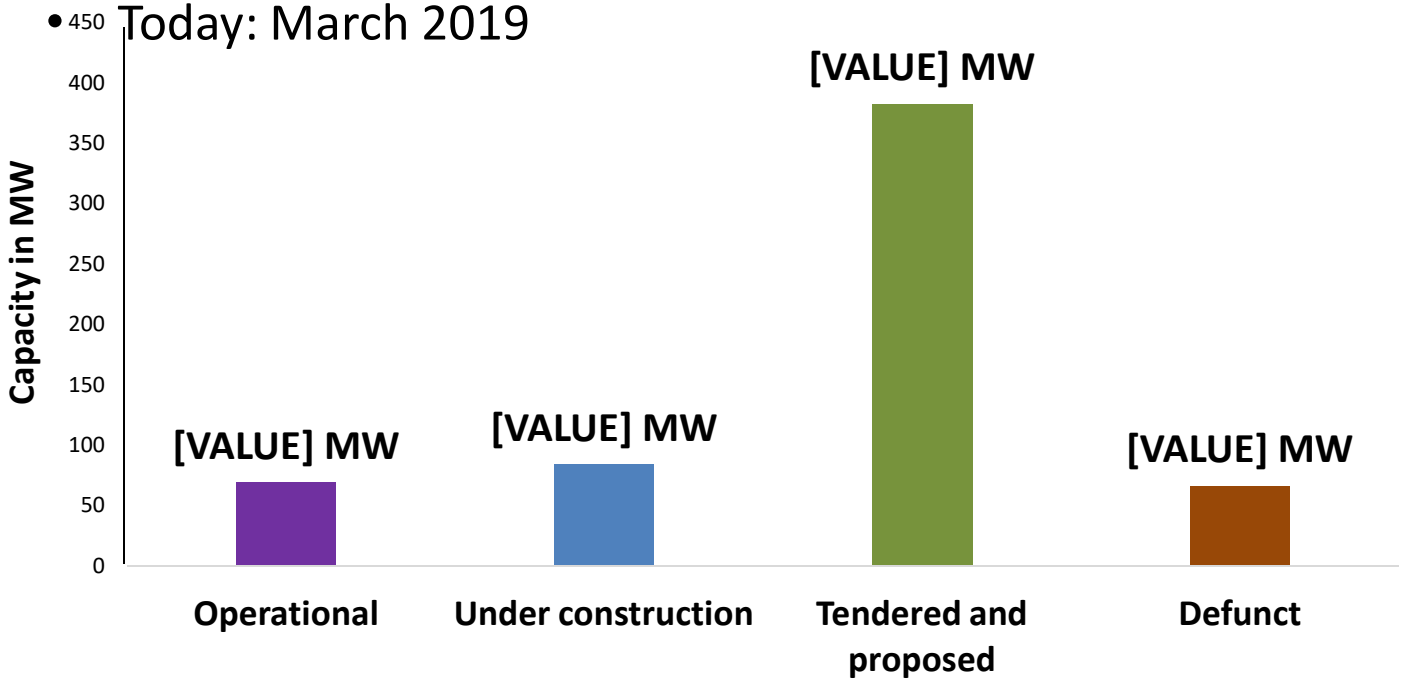
- First Waste-To-Energy (WTE) plant commissioned in 1987 at Timarpur, Delhi.
- Designed to incinerate 300 tonnes of waste per day (TPD) and generate 3.75 MW of electricity. It failed and shutdown in 1990
- Capital cost of Rs. 20 crores and operational cost of Rs. 1.25 crores




Source: CSE, 2019

# 2016 onwards: Policy push for WTE

- NITI Aayog recommended WTE plants of 511 MW capacity in "Three Year Action Agenda"
- Suggested formation of the Waste to Energy Corporation of India to promote incineration plants in PPP mode
- In September 2017, National Thermal Power Corporation (NTPC) invited investors to set up 100 WTE plants
- Today: March 2019




Source: CSE, 2019

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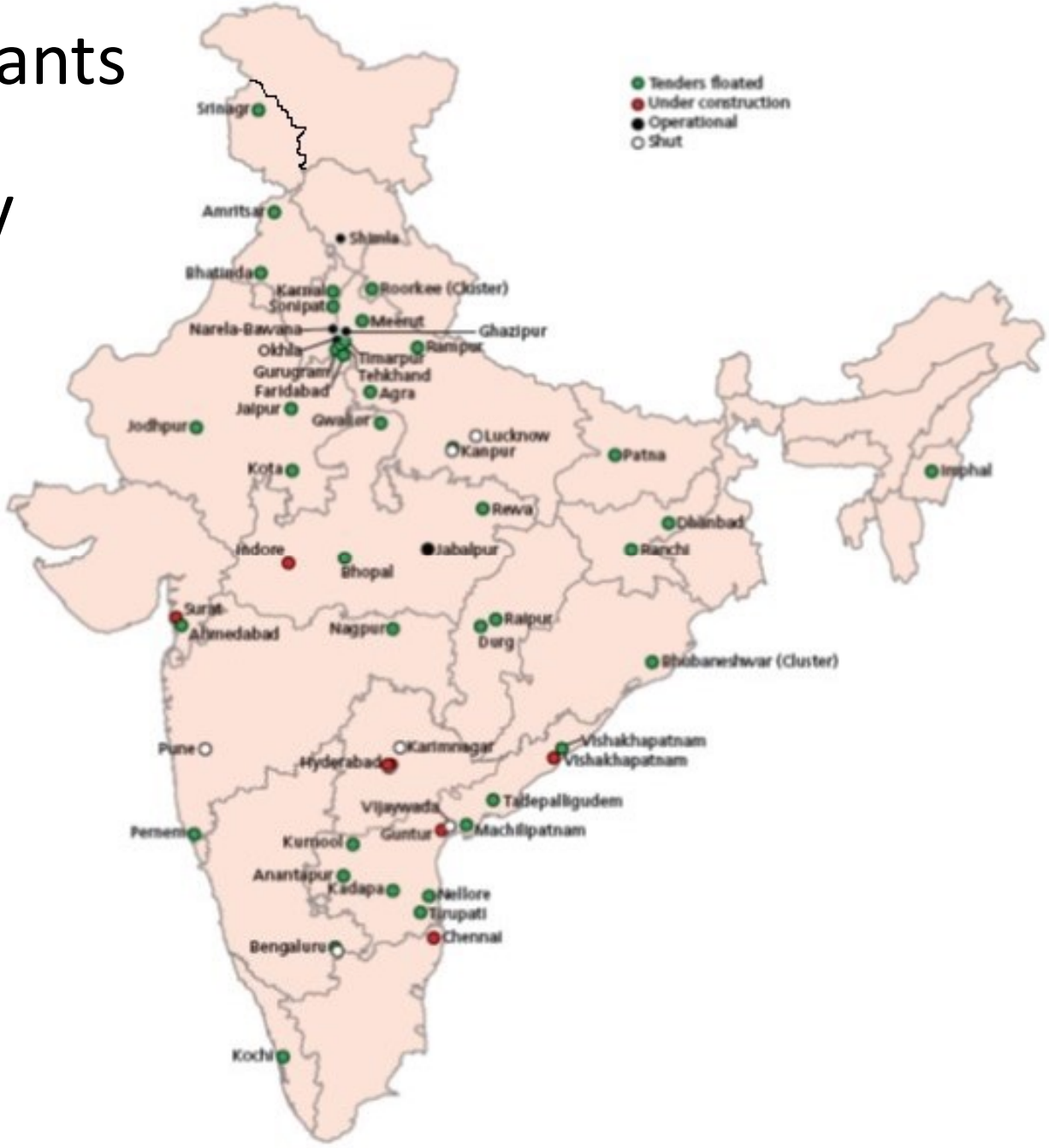
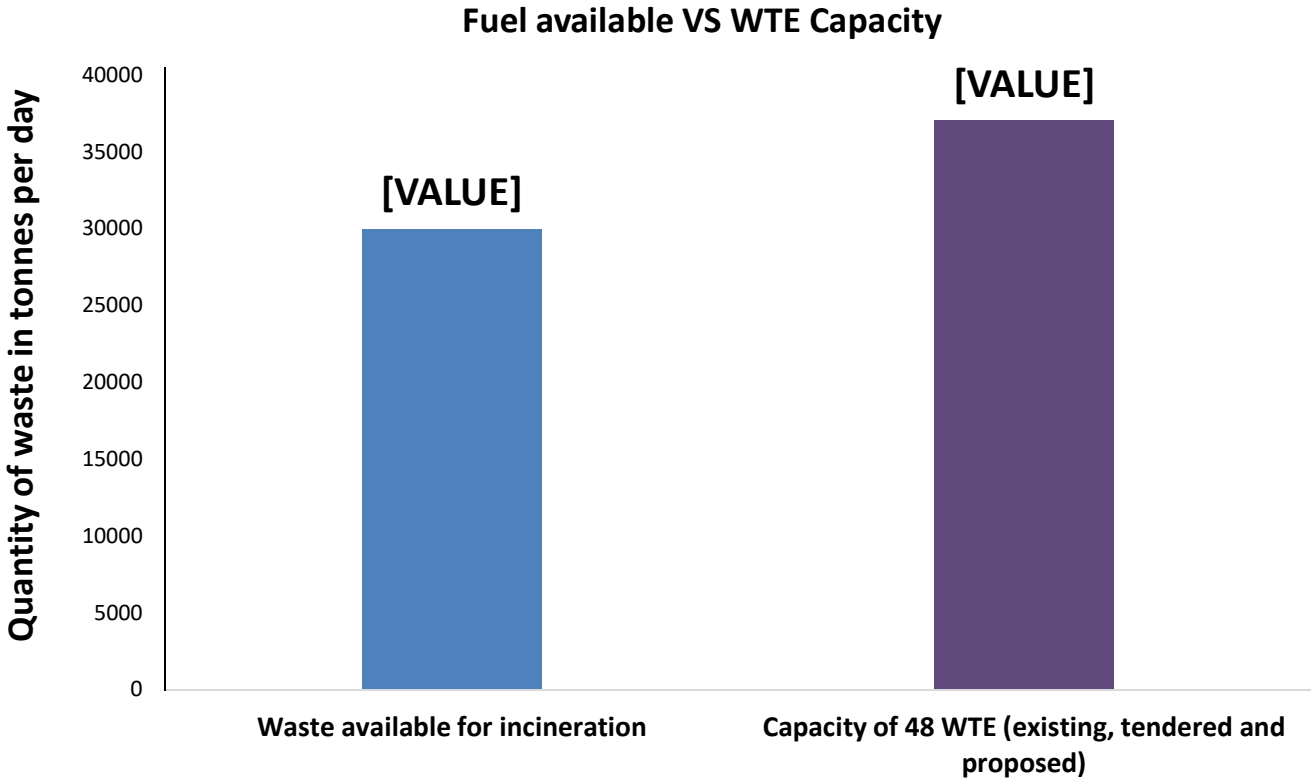
# WTE plants in the country




Source: CSE, 2019

# What to Burn

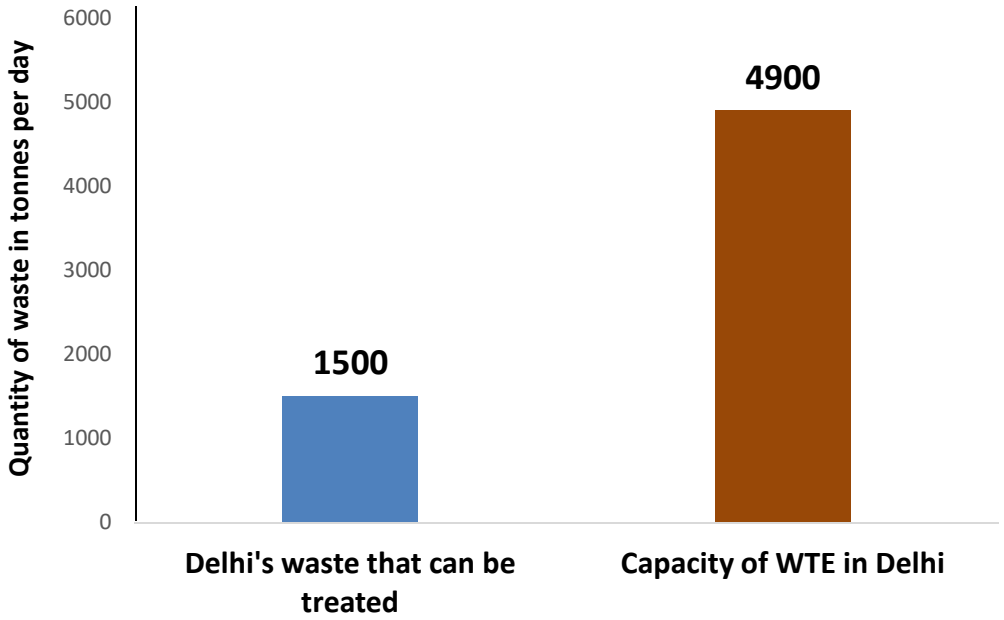
- As per Solid Waste Management Rules, 2016; **Only segregated non-recyclable high calorific waste** be sent to WTE plants
- Of the 55 Million tonnes of MSW generated every year in India, only about 15 per cent can be classified as non-biodegradable, non-recyclable, high-calorific-value waste.




Source: CSE, 2019

# What Delhi Burns

- Delhi generates 11,600 TPD of solid waste
    i. 10% recovered by Informal sector
    ii. 25% is inert material
    iii. 65 % can be treated (biological-60% and thermal-40%)
- Waste that can be treated thermally is 13% (1500 TPD) of 11,600




Source: CSE, 2019

# Burn wrong stuff means?

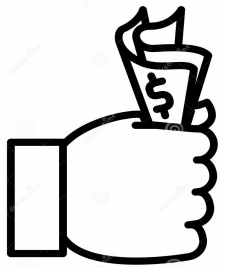
- 1. **Pollution goes up** – as the plant now emits toxins and is not designed to clean up. This means people who live near plants are exposed and protests increase
- 2. **Toxic waste goes up** – bottom ash in plants using mixed waste is high and disposal becomes a problem

- 3. **Efficiency of the plant goes down** – fuel quality determines the energy output – online portal of government shows 50% efficiency of plants. This means viability goes down and plants shut down

# Choice of Technology requires:

- Composition and calorific value (CV) of cities is studied by CSE with population as measure
  - Cities with population over 1 million
  - Cities with population 0.1-1 million
  - Cities with population below 0.1 million


Composition

Affordability

| | | |
|---|---|---|
| Bio-degradable fraction ranging from 40-70% | CV ranged from 1411-2150 Kcal per kilo | Cost per kWh<br>Coal and solar: Rs. 3-4<br>WTE : Rs. 7 |

# The Challenges

- Low segregation percentage
- Low calorific value
- High moisture content
- Environmental, Social and Health costs