

# **CLEAN ENERGY POSSIBILITIES** **from** **SEWAGE TREATMENT PLANTS** **(STPs)**

**13<sup>th</sup> November, 2018**  
**11.00 am - 12.30 pm**  
**Room No.2&3, BCCK**

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# SEWAGE TREATMENT PLANTS (STPs)

- **STPs are generators of methane**, a potent non-CO<sub>2</sub> Green House Gas (GHG), released from the breakdown of organic wastes in sewage.
- Methane contributes more than 20% to the annual increase in global warming by all GHGs.
- If allowed to leak into the atmosphere before being used, **methane effectively traps the sun's heat and contributes to global warming trapping 20 times more heat than CO<sub>2</sub>.**

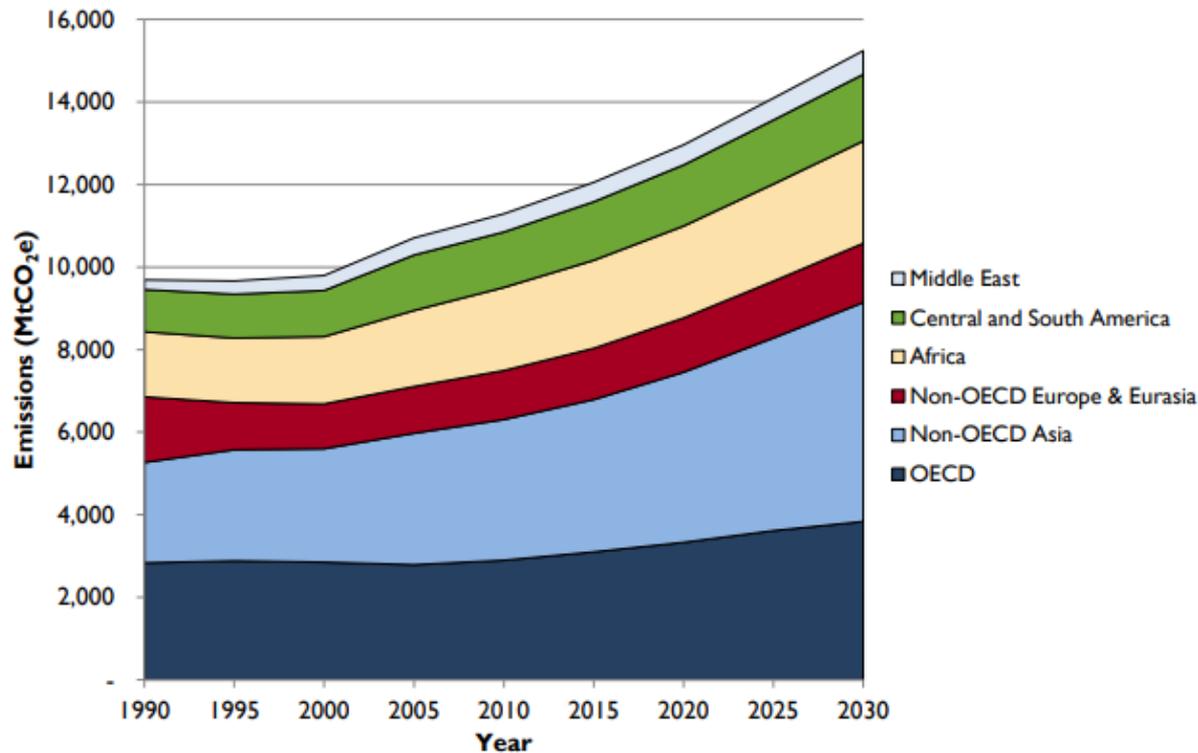
# SEWAGE TREATMENT PLANTS (STPs)

- Methane not only has a direct influence on climate but also has a number of indirect effects including its role as a precursor to the formation of tropospheric ozone (an air pollutant).
- If methane is captured from anaerobic digestion in STPs, the energy cost of running STPs (both for aeration and pumping) would reduce by 20-30%.
- In addition cooking gas can be supplied to at least 200 households in the vicinity.

# Methane Emissions

- Asia is the largest contributor of global methane emissions and the trajectory for Asia is **nowhere near slowing down**.

Exhibit 4: Total Global non-CO<sub>2</sub> Emissions, by Country Grouping (MtCO<sub>2</sub>e)



Source: EPA Report - Global Anthropogenic Non-CO<sub>2</sub> Greenhouse Gas Emissions: 1990 - 2030

# SEWAGE TREATMENT PLANTS (STPs)

- In India, dependence on fossil fuels would be greatly reduced, if a 20% reduction in cost of energy for running STPs is achieved.
- In Delhi, for instance, the monthly energy cost of running 20 STPs is as high as US\$1 million.
- Assuming even a 20% reduction in the energy cost would ensure a saving of US\$0.20 million per month which on an annual basis would be approximately US\$2.4 million.
- If Methane is captured from the STPs, dependence on coal-fired thermal plants would reduce, leading to lesser air pollution and lesser fly ash (a major source of air pollution in Metros).

# Hurdles in capturing methane from STPs

Issue	Description
<b>Legacy Issues:</b>	The useless by-product was flared.
<b>Technological and Legal Issues:</b>	<ul style="list-style-type: none"><li data-bbox="498 389 1841 596">• Most sewage treatment technologies have been guided by effluent parameters prescribed under the respective country environment laws.</li><li data-bbox="498 632 1841 989">• Non-biological technologies like Sequential Batch Reactor (SBR) and Moving Bed Bio-film Reactor (MBBR) have been used to meet the Biological Oxygen Demand (BOD) parameters for the treated effluent.</li><li data-bbox="498 1025 1841 1310">• However, methane recovery takes place in STPs running only on biological processes, like Upflow Anaerobic Sludge Blanket (UASB) and Activated Sludge Process (ASP).</li></ul>

# Hurdles in capturing methane from STPs

Issue	Description
<b>Technological and Legal Issues:</b> ...contd...	<ul style="list-style-type: none"><li data-bbox="479 325 1846 915">• Environmental laws in South Asian countries do not specify that the treatment technology should be self-sufficient in terms of energy use. This is essential for the treatment process to be sustainable and to reduce dependency on fossil fuels.</li><li data-bbox="479 962 1846 1290">• This can happen only if methane is looked upon as a resource and is not allowed to leak into the atmosphere as a Short-Lived Climate Pollutants (SLCP)</li></ul>

# Retrofitting STPs

- South Asian cities have enormous potential to be innovation centres to deliver cost-effective solutions for methane mitigation.
- **Re-designing and retrofitting STPs with bio-digesters for anaerobic digestion** makes the case for methane recovery from STPs far more compelling both for climate change and public health.
- If Methane is captured both from STPs and Landfills, the power cost of running STPs would be reduced at least by 30%.