Global WTERT activity summary

Prof. Nickolas Themelis
Director EEC/ Head GWC

Dr. A. C. (Thanos) Bourtsalas
Manager, EEC- Columbia/ WTERT-US

COLUMBIA UNIVERSITY
EARTH ENGINEERING CENTER

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WTERT-US and the Global WTERT Council (GWC)

- **WTERT-U.S. was founded by the Earth Engineering Center of Columbia University with the help of the U.S. WTE industry in 2002**
- **The aim of WTERT-US was to advance WTE and ALL other means of waste management in the U.S.A.**
- **At the end of 2011, GWC was incorporated as a non-profit organization under the laws of the state of New York and the U.S.A.**

The mission of the Global WTERT Council (GWC):

- **Identify the best available technologies for the recovery of materials and energy from all types of "wastes"**

- **Disseminate this information by means of press publications, the multilingual WTERT web pages, and periodic meetings and national and international conferences.**

Visit of China Everbright International (CEI) WTE plants

Visit of China Everbright International (CEI) WTE

Parameters	Changzhou WTE	Nanjing WTE	Boluo WTE
Year of operation	2008	2014	2015
Capacity (tons/day)	800	2,000	700
Total cost of investment ($/tonne)	220	193	243
Operational costs ($/ tonne)	10	30	N/A
Calorific value of MSW (MJ/kg)	6.9 to 7.3	7.1	6.3 to 7.1
Electricity produced (kWh/ tonne)	400	324	330
WTE gate fee ($/tonne)	12	10	13
Cost for utilization of WTE residues ($/tonne of residue)	Collected by the government at no cost	Bottom ash: -1.2 Fly ash: 50	Collected by the government at no cost
High Pressure steam parameters (T, P)	400° C, 4 MPa	400° C, 4 MPa	450° C, 6.7 MPa

Visit of SACYR Group MBT and WTE plant in Mataro, Barcelona, Spain

	Tonnes in 2015	% of the total MSW to in Mataro, Baecelona
Bulky materials to WTE	**7,461**	**2.4**
>200 mm fraction to WTE	32,828	10.7
<200 mm fraction to MBT	230,520	75.0
Total MSW to MBT and WTE	**263,388**	**85.7**
Source separated to transfer station	36,400	11.8
Total MSW itoMataro	**307,249**	**100.0**

Breakdown of electricity production at Mataro plant, SACYR Group

2015	Production (MWh)	Produced from source as % of total produced	To the grid (MWh)	To the grid as % of total produced	Total revenue from electricity (€)
WTE	85,315	94.2	57,486	63.5	2,875,000
AD	4,800	5.3	4,800	5.3	240,000
Solar	400	0.4	400	0.4	20,000
Total	**90,515**		**62,686**	**69.3**	**3,135,000**
Total inplant	**-27,829**	**30.7**			

MBT and WTE vs. WTE

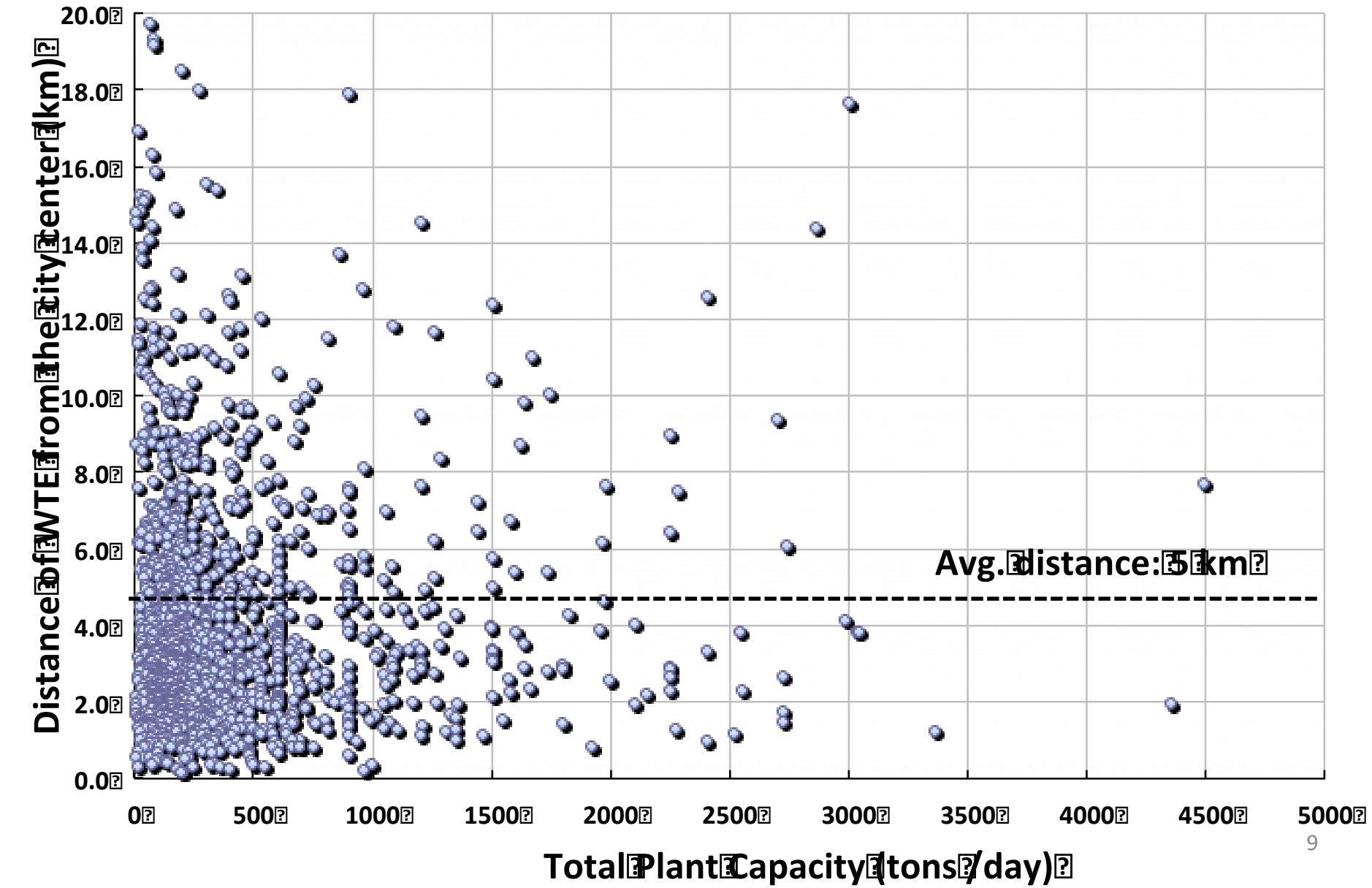
	MBT and WTE	WTE	% difference
Capacity of MBT (tons)	230,520	N/A	
Capacity of WTE (tons)	168,187	263,388	36
Total capacity (tons)	263,388	263,388	

Capital cost of (230,520 tons) MBT + Capital cost of (168,187 tons) WTE < Capital cost (263,388 tons) WTE , or

Capital cost of (230,520 tons) MBT + 0.36 x Capital cost of (263,388 tons) WTE < Capital cost (263,388 tons) WTE, or

Capital cost of (230,520 tons) MBT < 0.64 x Capital cost of (263,388 tons) WTE

Current GWC-Columbia study: Distance of global WTEs from center of city



Main conclusions from a comparative LCA of 6 EU discharge and treatment techniques of IBA residues

- **Discharge and metals recovery system**: Dry discharge system is more resource and energy efficient.

- **Coarse and medium mineral fraction**. Landfilling of the coarse and medium IBA fraction leads to multiple environmental burdens.

- **Fine mineral fraction**. Stabilisation and landfilling of the fine IBA fraction leads to higher eutrophication and abiotic depletion burden. However, processing of the fine fraction is associated with higher energy consumption.

Next steps of this research:

MS Thesis by Ms. Yi Xu:

- Data for secondary market and destination of the unprocessed mineral fraction.
- Life cycle cost analysis (LCCA) to estimate the cost of installing improved metal recovery systems and using the mineral fraction for civil engineering applications.

Surveys:

- USDOT and state DOT construction product specifications
- Natural aggregate availability and pricing information for geographical areas with high concentrations of WTE facilities

EEC- Columbia projects

Metal recovery to allow improved beneficial reuse of WTE residues in civil engineering

Processing of WTE residues after metal separation for the production of concrete

Developing an inventory of mercury emissions in the U.S.

Inventory of all dioxin sources in China

Analysis of Moving Grate and Circulating Fluid Bed technologies

Evolution of public health benefits from improvements in waste management in NYC

LCA of SCR and SNCR systems for NO_x emissions

Application of Thermal Spray coatings for combatting corrosion in WTE boilers

Estimation of the carbon mitigation cost/benefit ($/ton of CO2) of WTE

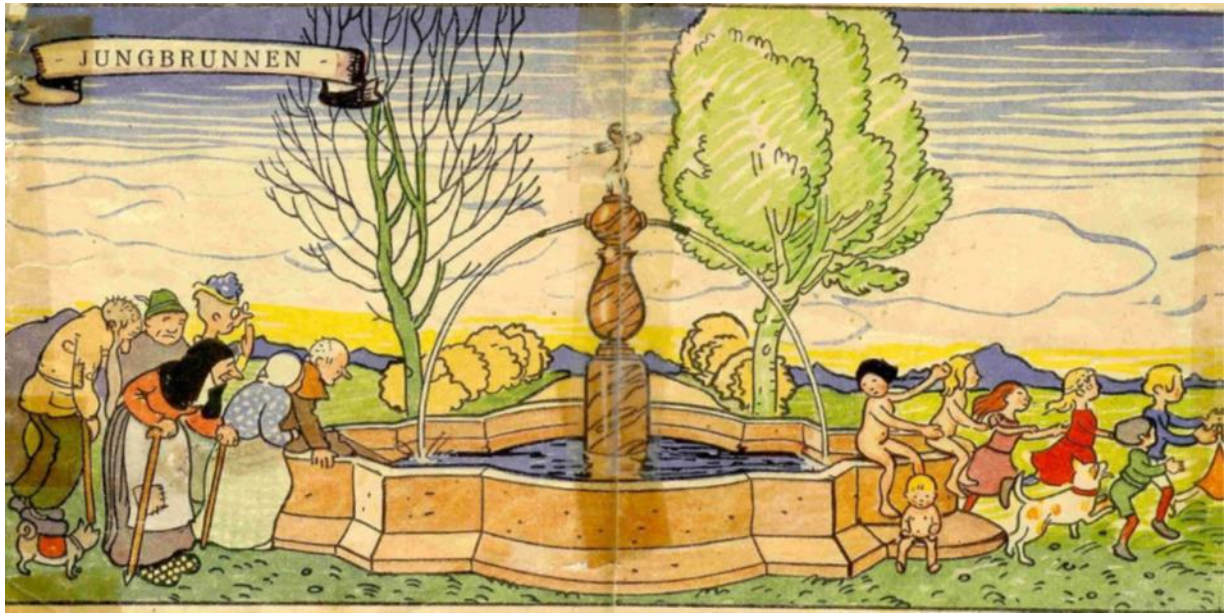
Advancing informal recycling and WTE in Santiago, Chile

Waste to Energy providing new material resources

Waste → Resource opportunity

Research

The best opportunities need research to make them happen……..



Thank you very much for your attention!

Thanos C. Bourtsalas: ab3129@columbia.edu

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