

Statistical comparison of Solid Waste Management Performance in 40 Cities

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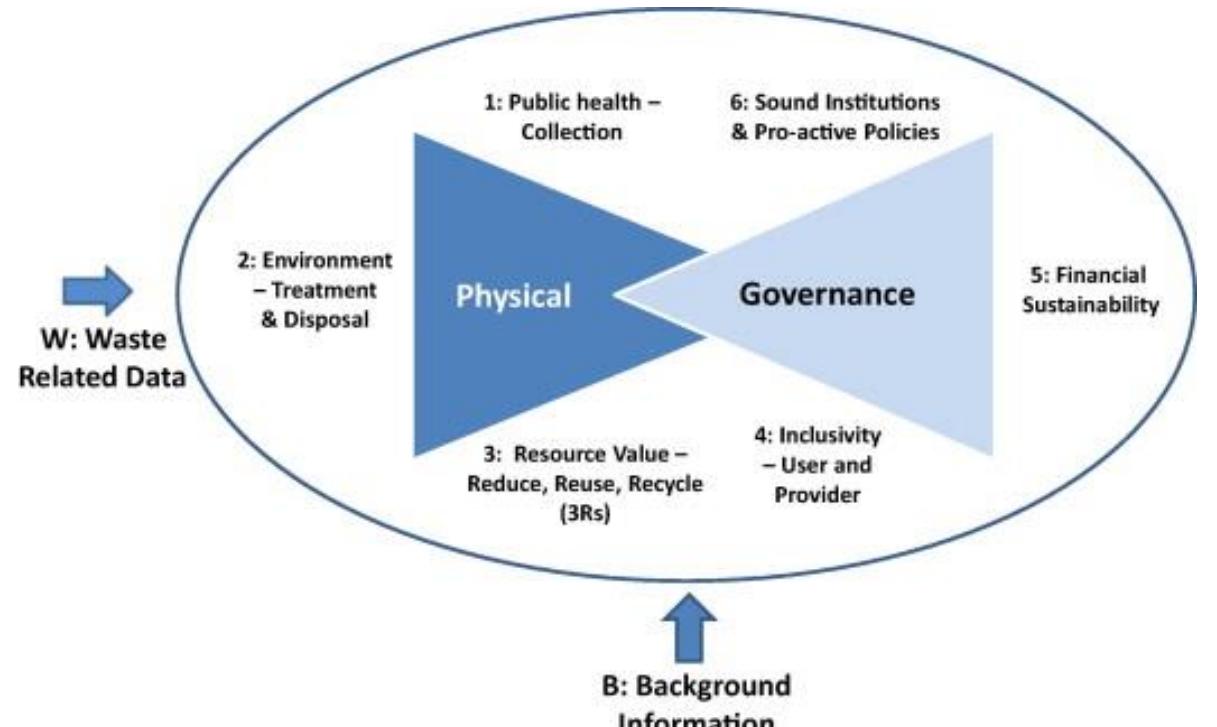
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1. Rationale

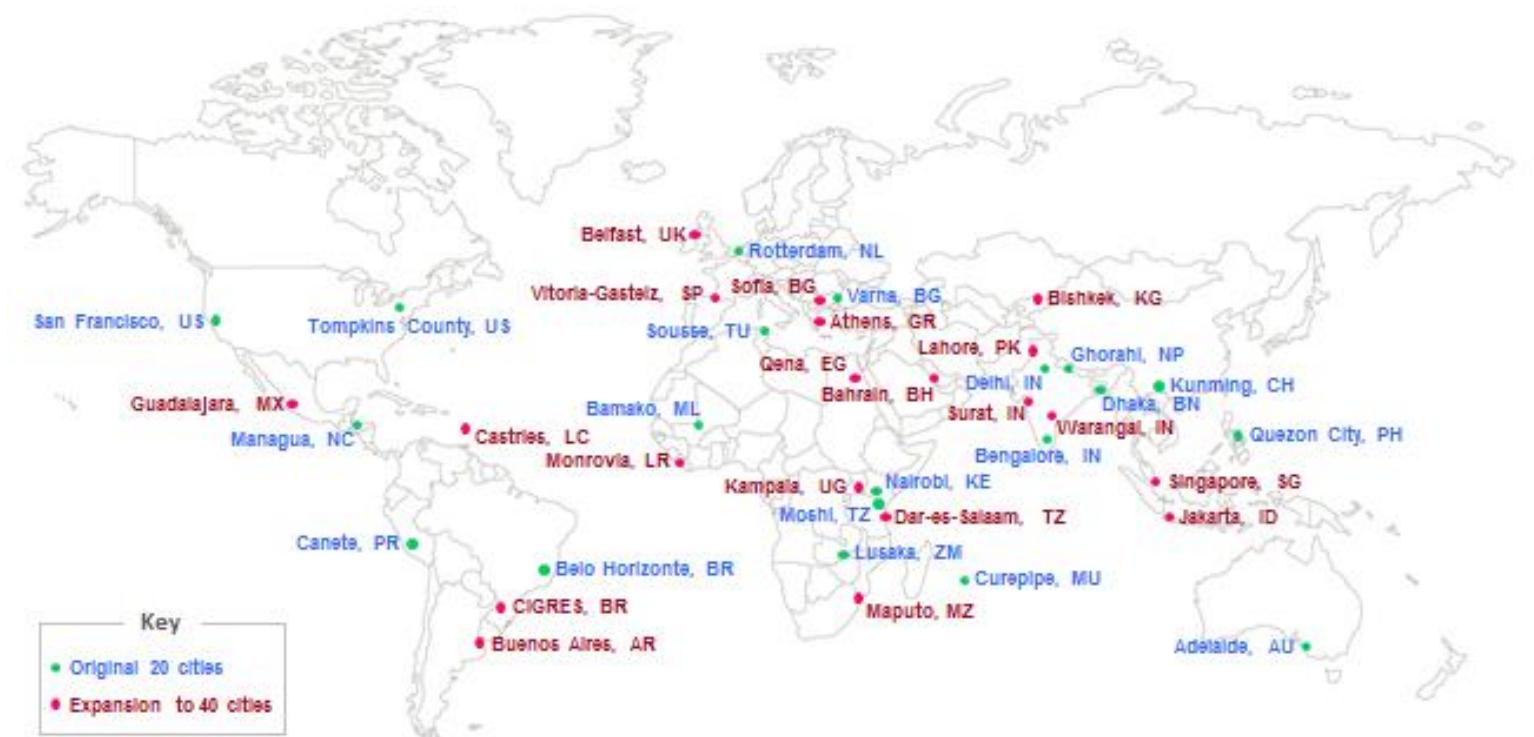
- Rapid economic growth, urbanization and continuing population growth are causing the increase of waste generation levels (1.3 billion tons in 2012 to increase to 2.2 billion tons by 2025).
 - Concerns for public health and rising environmental issues; affects the image of the city (tourism, businesses, investments...).

'If you don't measure it, you can't manage it'

2. Background



- A holistic approach (socio-cultural, environmental, economic and technical factors).
 - Suits both developed and developing countries.
 - Addresses the historical lack of reliable and consistent data.
 - Helps decision-making, monitoring changes.



3. Approach

- Compile, refine and update the database extended to 40 cities.
 - Source relevant independent variables (GDP per capita, SPI, EPI, cultural cluster, climate...).
 - Perform descriptive analysis and basic statistics.
 - Review existing literature and build for the first time multiple regression models.

References

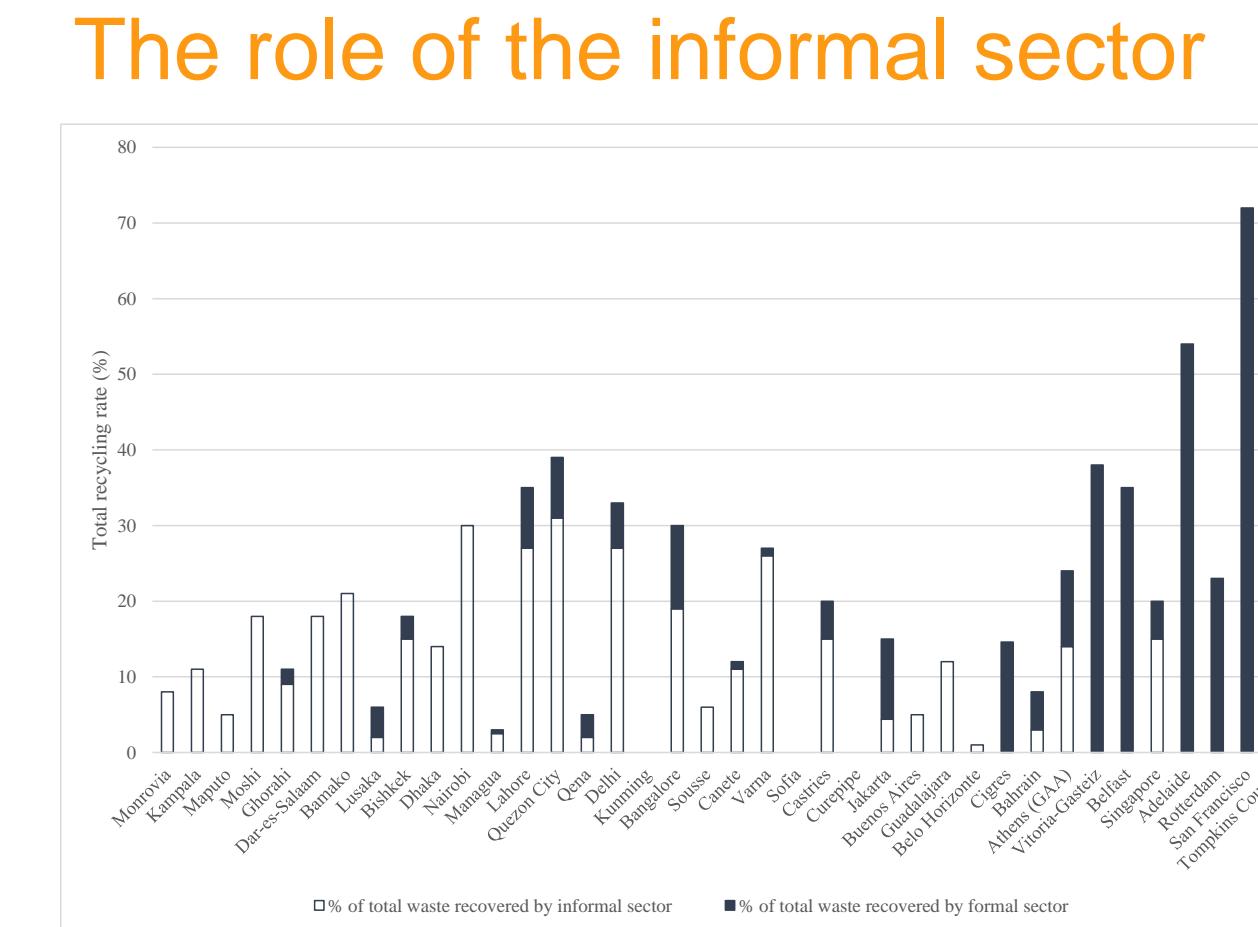
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Scheinberg, A., Spies, S., Simpson, M. H. & Mol, A. P. J. (2011) Assessing urban recycling in low- and middle-income countries: Building on modernised mixtures. *Habitat International*. 35 (2), 188-198.

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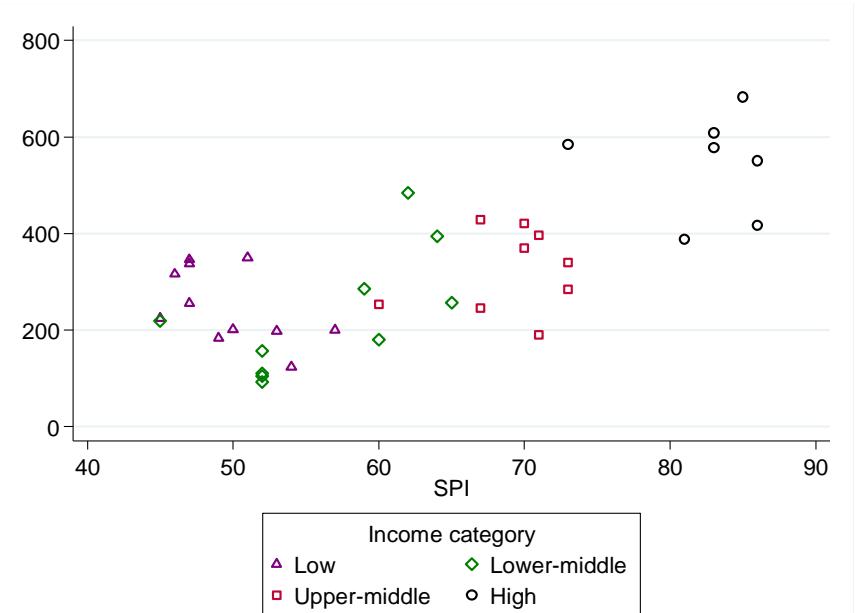
Caution with the results

- Sourcing at municipal level and covering a maximum of the database are often incompatible.
 - The existing theory on SWM is scarce and provides mixed results.
 - More observations are required to confirm the multiple regression models.
 - Hypothesis to explain the correlations found were raised but others could be possible.

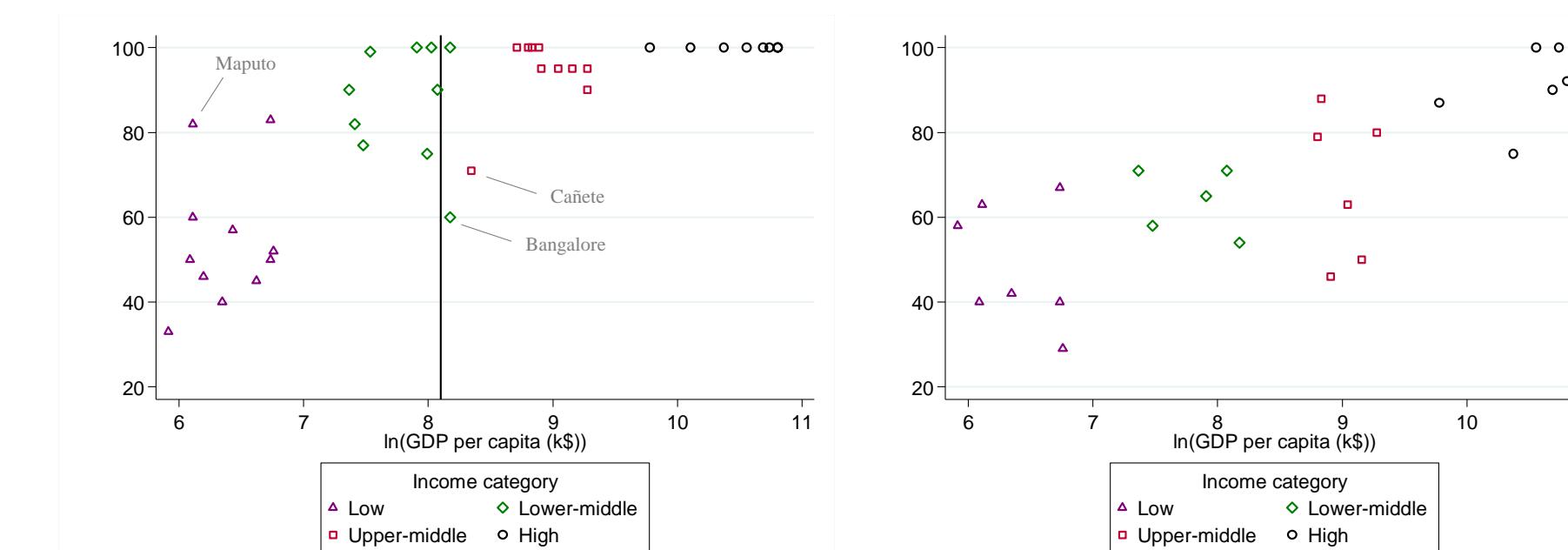


Waste generation per capita

- There seems to be a linear correlation between waste per capita and the level of socio-economic development ($R^2 = 0.51$).
 - Could it follow the hypothesis of the Waste Kuznets Curve (WKC) with a delinking for the very-high category of social progress?



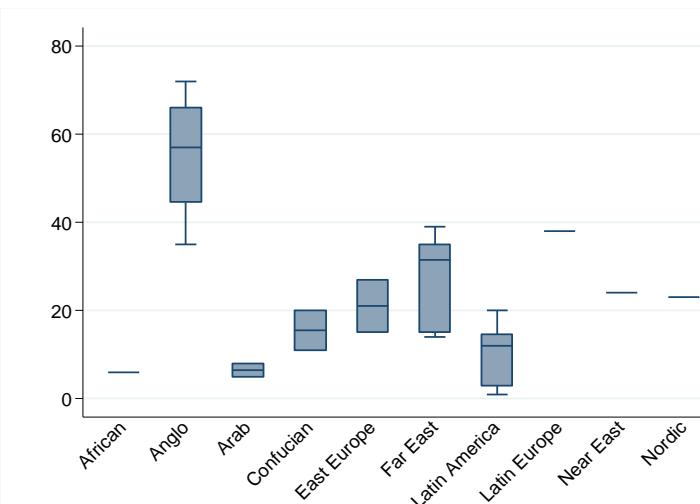
Collection service



Multiple model for recycling rate

Source	SS	df	MS	Number of obs	=	36
Model	3862.29885	2	1931.14943	F(2, 33)	=	11.51
Residual	5538.54003	33	167.834546	Prob > F	=	0.0002
				R-squared	=	0.4108
				Adj R-squared	=	0.3751
Total	9400.83888	35	268.595397	Root MSE	=	12.955

rec_rate	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
lngdppc	5.39298	1.348211	4.00	0.000	2.650023 8.135937
lat_am	-17.37222	5.504434	-3.16	0.003	-28.57107 -6.173363
_cons	-20.22708	11.34046	-1.78	0.084	-43.29942 2.845254



Correlation ≠ Causality

Acknowledgments

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