Evaluation of factors affecting residential solid waste composition and its generation in Iqbal Town, Faisalabad, Pakistan

Faisalabad

An Industrial Hub & Third Largest City of Pakistan

Faisalabad and its Climate

- The current study was planned to quantify the domestic waste generation from the city of Faisalabad, Pakistan (latitude 31°4187′N, longitude 73°0791′E) (Rio *et al*. 2012; Ahmad & Schmitz 2011)

- June is the hottest month = experience 46^{o}C and above.
- Temperature during winter = 1^{o}C

Importance of Study

- There is no study existed on the composition and quantity of MSW in Faisalabad

Problem: Open Heaps Of Waste

- A big gap exists between solid waste generation and disposal capacity in Faisalabad. That's why;
- local community throws its solid waste on any nearest open place

Problem: Drains Blockage

- During heavy rain fall openly dumped solid waste on the roads is flushed away in the sewerage system
- stagnant pools of sewage water on roads

Problem: Air Pollution

- people burn the solid waste to get rid of its nuisance effects.
- Owing to burning of solid waste, many toxic fumes and gases are produced, which pollute the environment badly.

Objectives

- To develop a representative approximation of the composition and quantity of the solid waste generated in Iqbal Town, Faisalabad.

- The study also evaluated the quality and quantity of waste produced at the domestic stage along with factord affecting its generation e.g. seasons, weekdays and socioeconomic factors.

Methodology

- Residential areas of Iqbal Town of Faisalabad was selected on the basis of their income level from three Union Councils (UCs)
- high income group = ((Rs. 100,000 and above ($ 953),
- middle income group (Rs. 35,000 ($ 333) and
- low income group (Rs. 10,000 9 ($ 95))

- To obtain representative results, fifteen households from each socioeconomic class were selected randomly (Sujauddin et al., 2008; Batool et al., 2014)
  - 3 socio economic groups × 15 households × 7days × 4 seasons = 1260

Waste Collection, Handling and Transportation

- For sample collection every household was given two different tagged polythene bags. One polythene bag was meant for dry solid waste and other for kitchen waste, provided 24 hours before its collection.

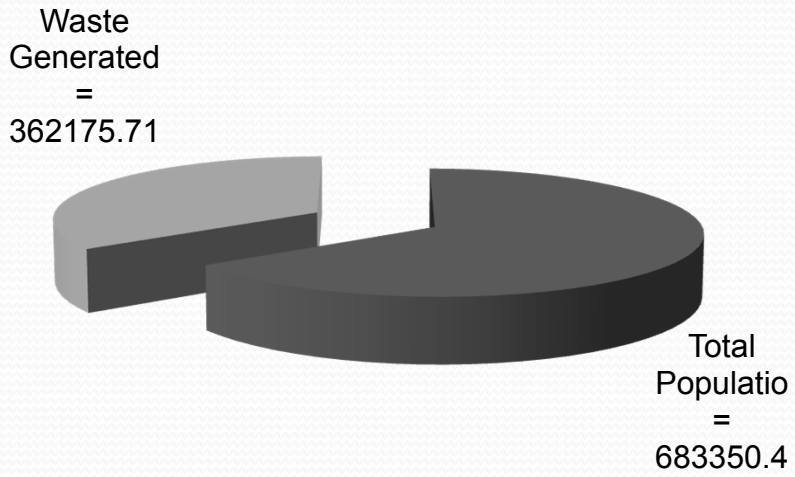
- Team leader and waste collectors were responsible for waste collection, transportation to waste segregation site.

Composition of Municipal Solid Waste

- Waste is segregated into sixteen categories depends on their physical composition. The used physical segregation is derived from Danish household waste research data, 2003 documented by Riber *et al.*, 2009.

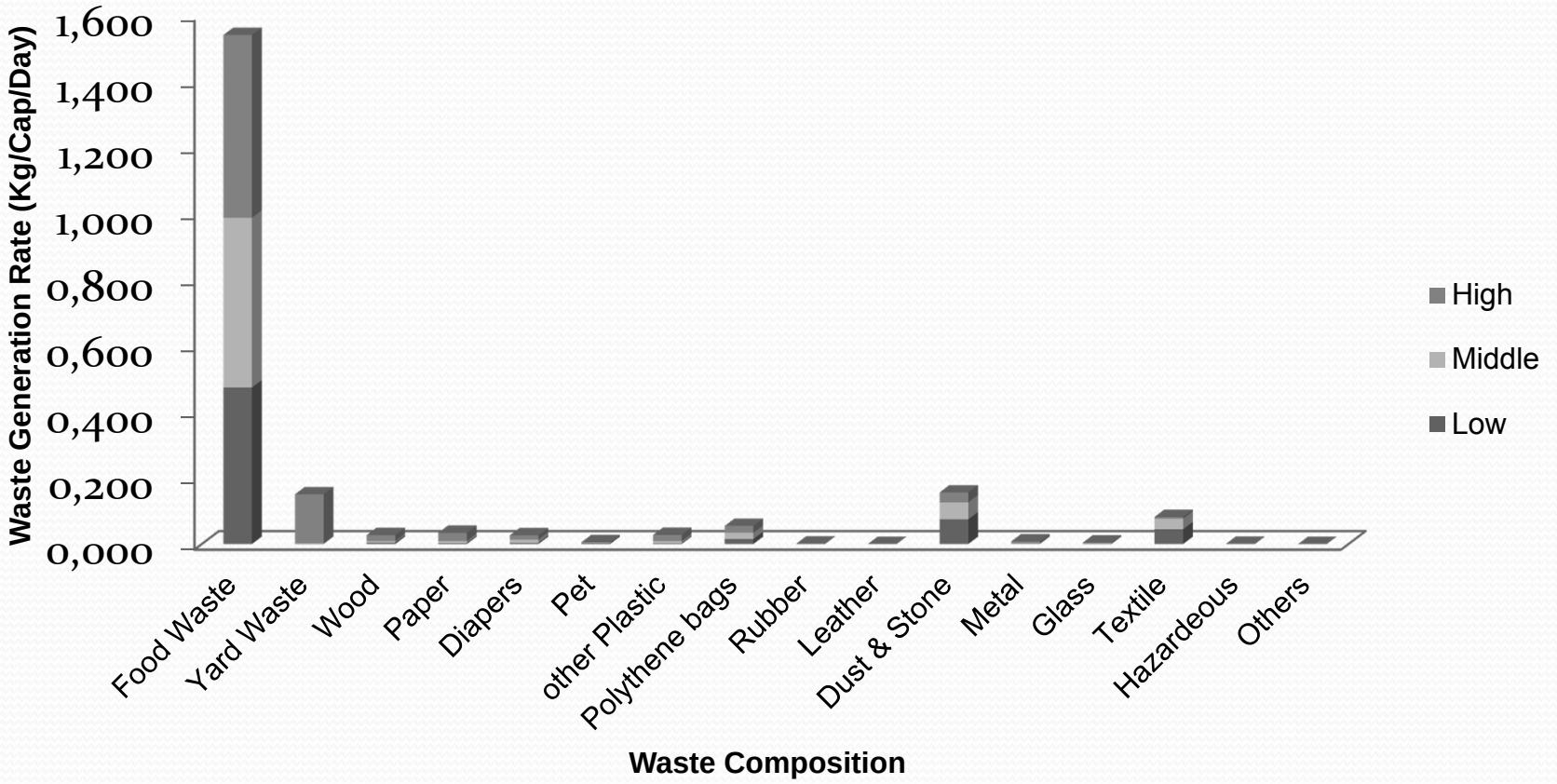
Main Findings

- Overall 45 house from 3 socioeconomic groups were visited for waste collection and estimated

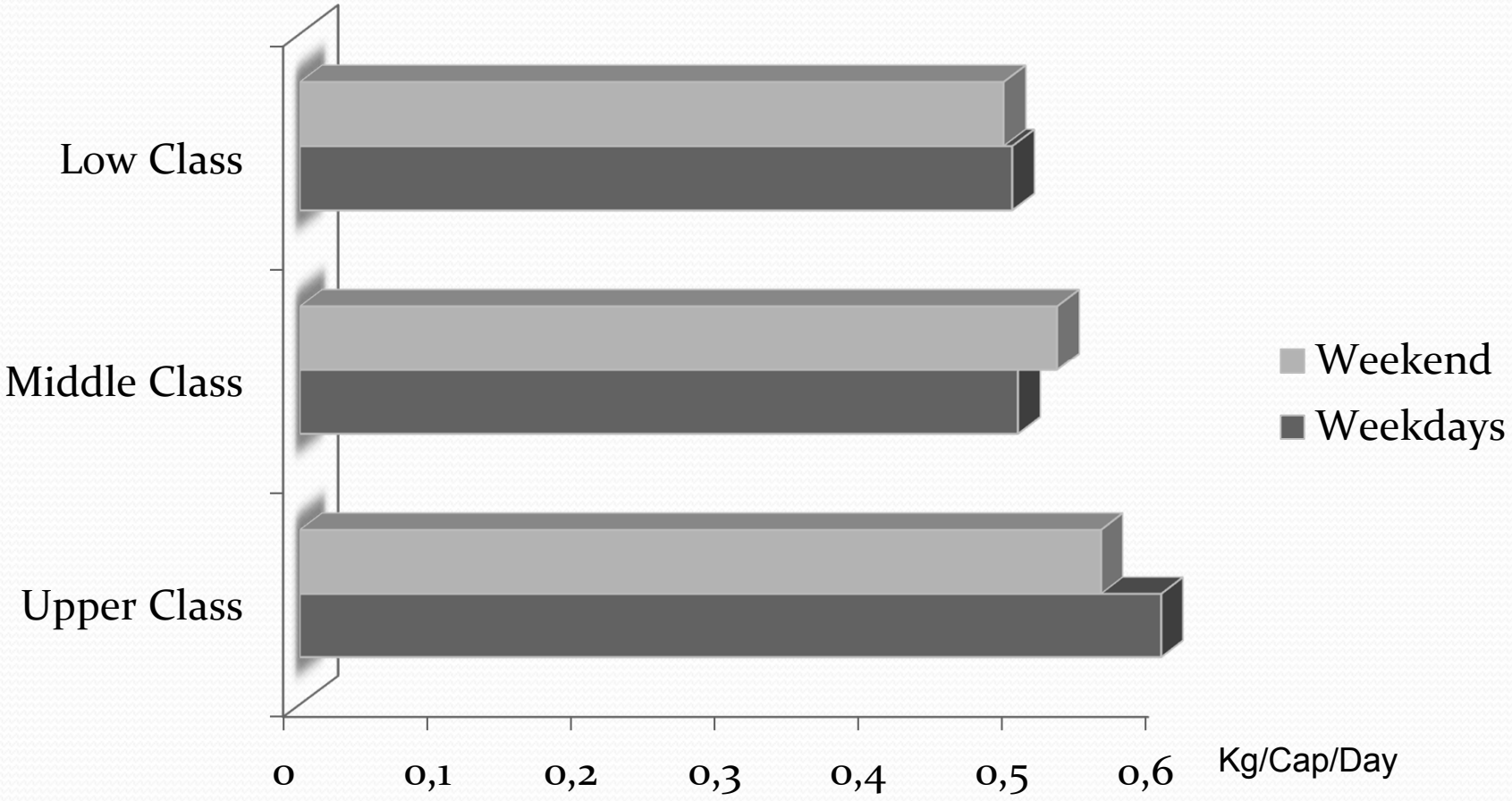


%age Fraction of total collected waste (0.65 Kg/Capita/Day)					
Serial No.	Component	%age	Serial No.	Component	%age
1	Organic	72.67	9	Diapers	1.24
2	Dust	7.37	10	Metal	0.38
3	Yard	7.11	11	Pet	0.26
4	Textile	3.87	12	Glass	0.21
5	Polythene Bags	2.59	13	Rubber	0.06
6	Paper	1.59	14	Hazardous	0.05
7	Plastic	1.31	15	Leather	0.02
8	Wood	1.27	16	Others	0.00

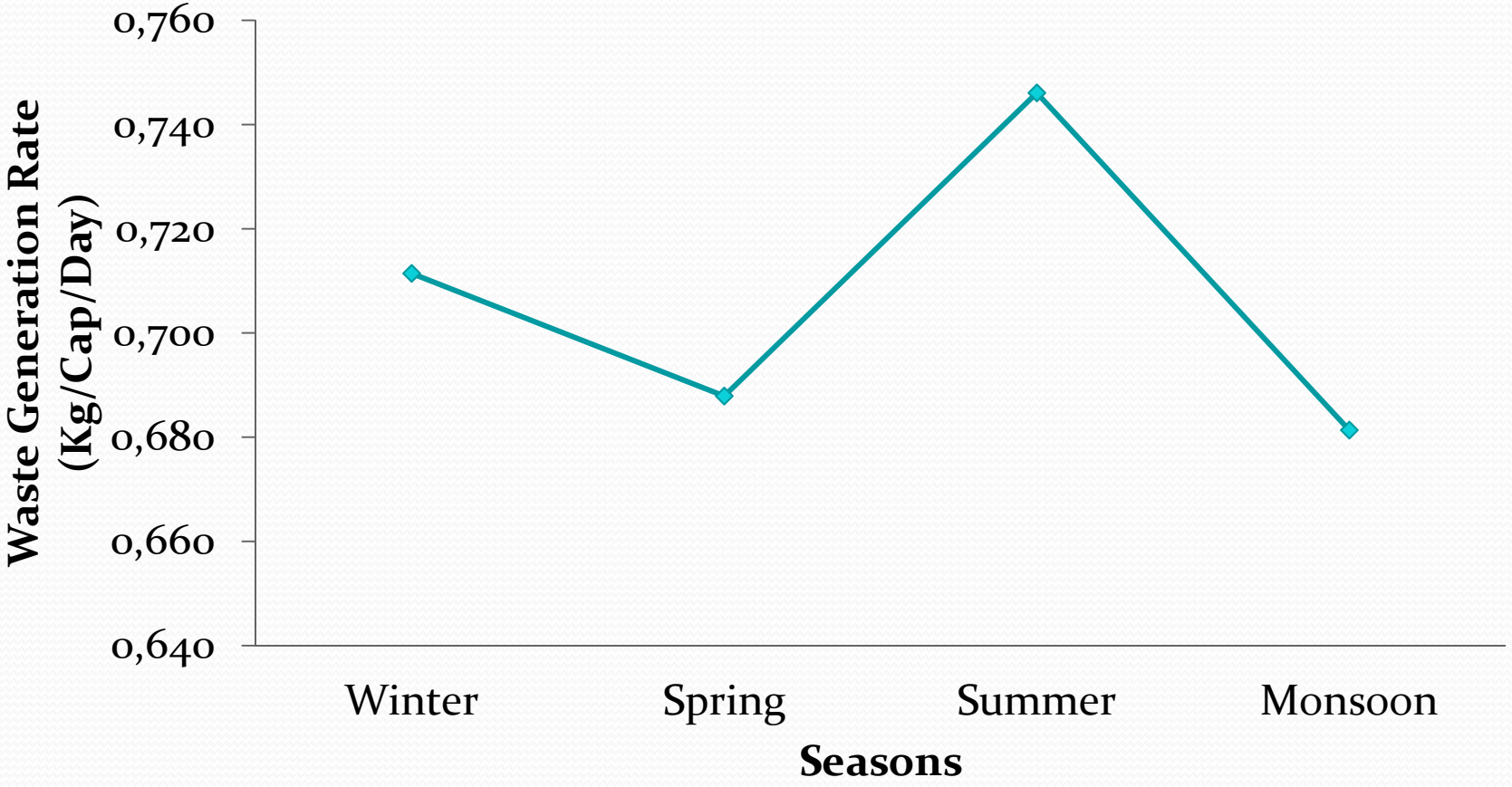
Socio-economic status and waste Generation



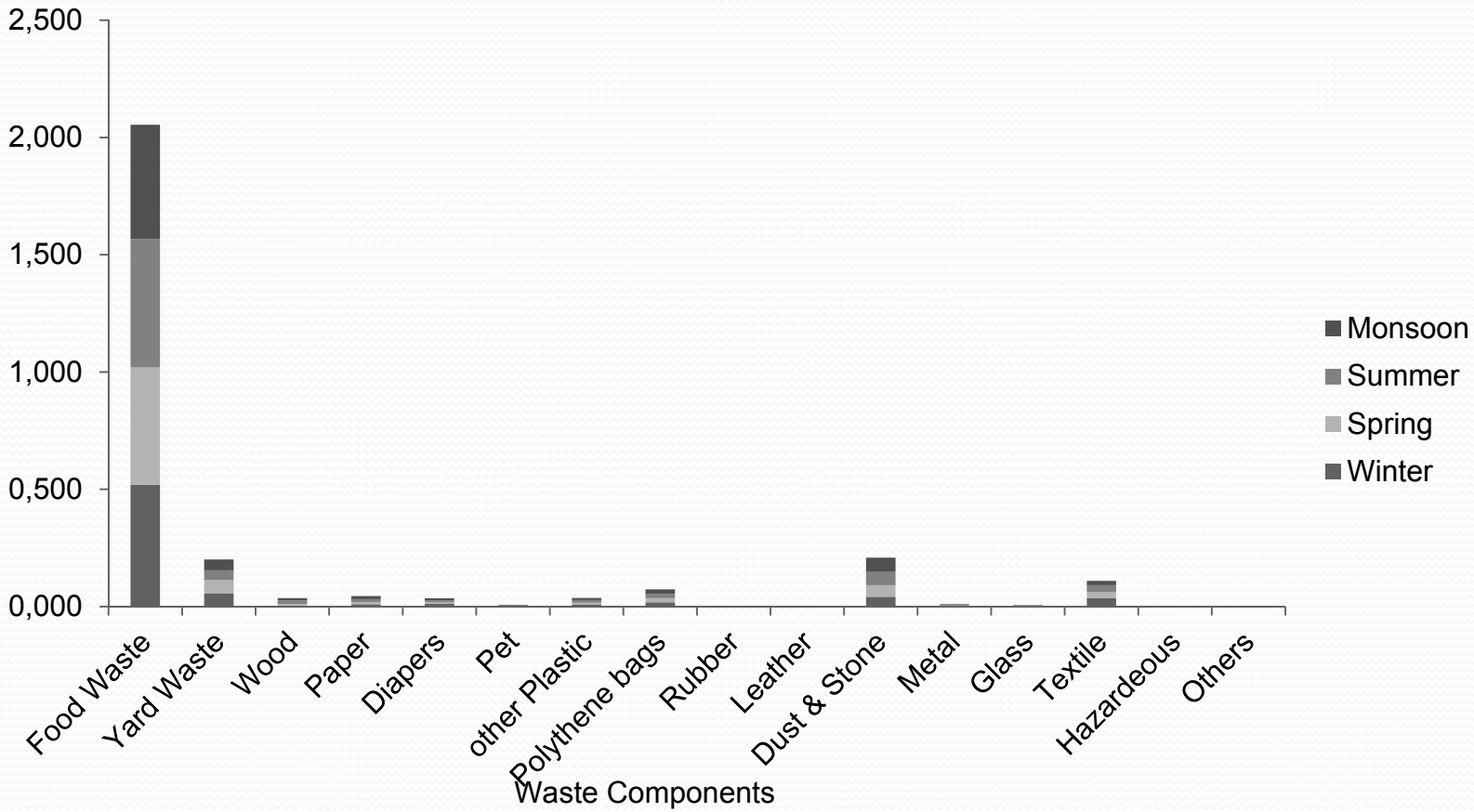
Effect of weekdays on Waste Generation



Seasonal influence of waste generation



Seasonal influence on waste generation



Seasonal influence on %age of waste generation

Component	Winter (% age)	Spring (% age)	Summer (% age)	Monsoon (% age)
Food Waste	72.89	72.67	73.32	71.7
Yard Waste	8	8.14	5.63	6.8
Dust & Stone	6.04	7.27	7.64	8.1
Diapers	2.95	1.01	0.94	1.47
Paper	1.4	1.45	1.61	1.91
Wood	0.7	0.87	2.14	1.47
Plastic	1.12	1.31	1.47	1.32
Pet	0.14	0.29	0.13	0.3
Polythene Bags	2.53	2.62	2.41	2.93
Textile	5.2	3.49	4.02	2.64
Metal	0.28	0.29	0.53	0.44
Glass	0.28	0.29	0.13	0.15
Rubber	0	0.15	0	0.15
Leather	0	0	0	0
Hazardous	0	0.15	0.13	0

Future Perspective

- We are Planning to estimate green house gases (GHGs) emitted from collected domestic solid waste through LCA and proposed some mitigatory measures to reduce the share of GHGs from this sector and clean our society.

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THANK YOU
FOR YOUR
TIME