Potential Reduction of Greenhouse Gas Emissions from the Implementation of Banjarmasin Mayor Regulation No. 18 of 2016 in Retail and Modern Stores in Banjarmasin

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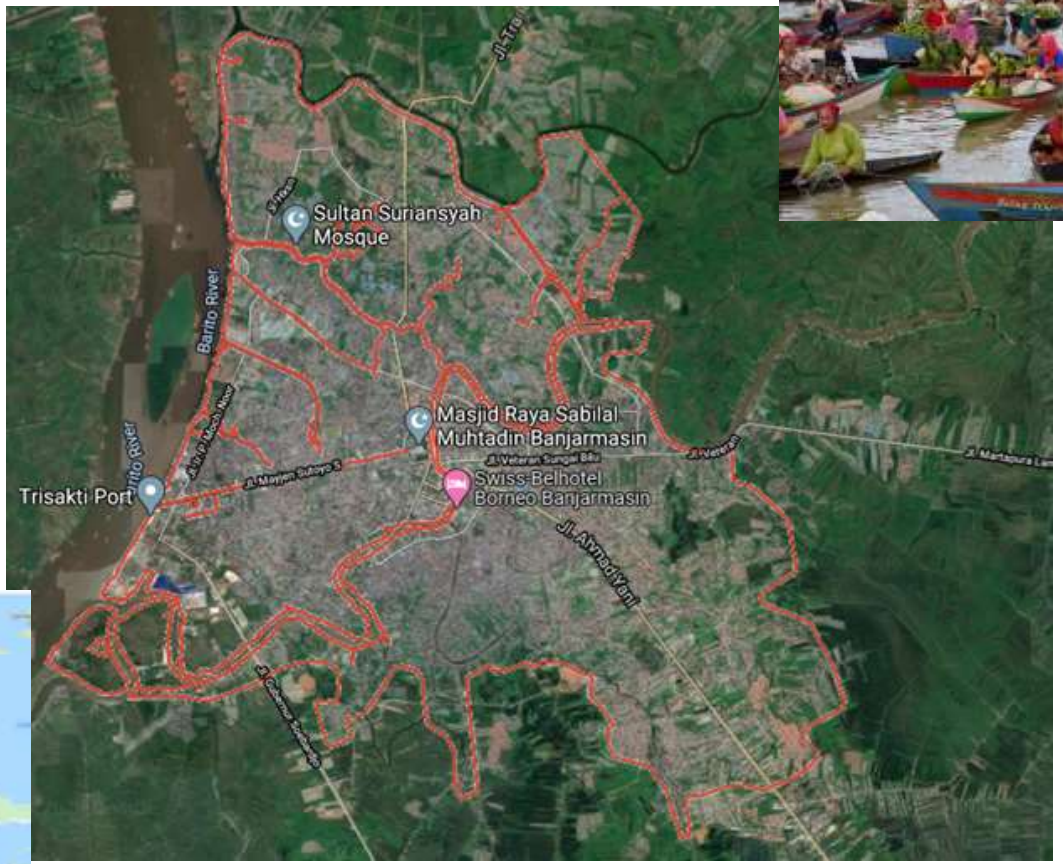
Banjarmasin City

Banjarmasin is the **capital city** of South Kalimantan

Area: 98.46 km2
Population (2019): 708,606

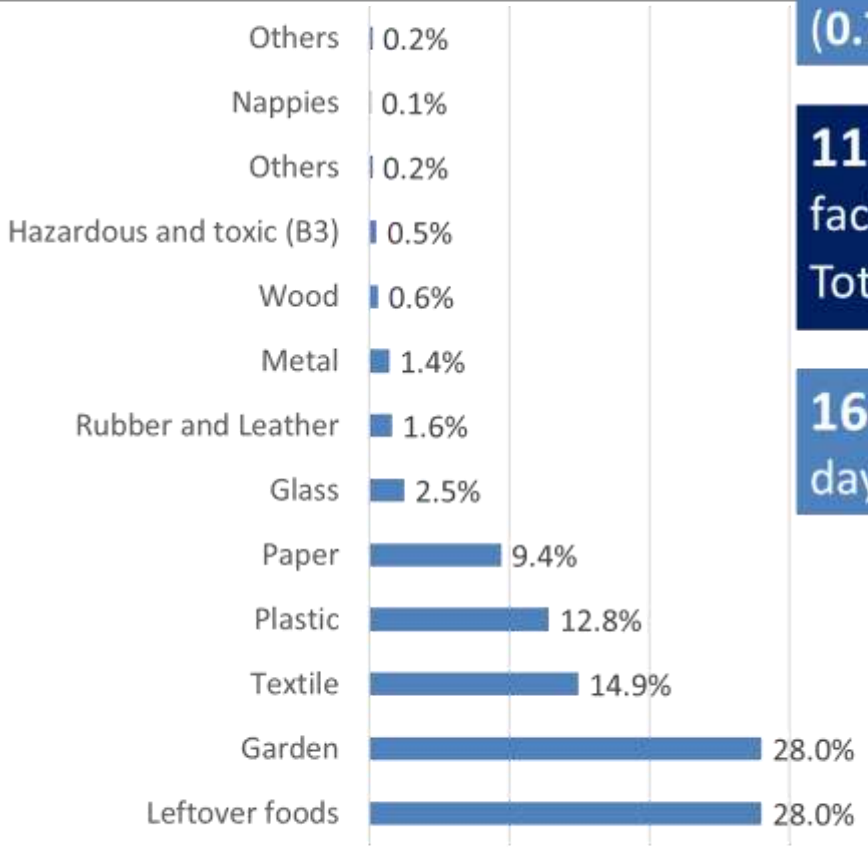
Part of Banjarkula Metropolitan Area (total population 1.9 million, equivalent to 52% of South Kalimantan Population)



A **"city of a thousand rivers":** There are 102 rivers

Waste Management

Waste Composition in Banjarmasin is Dominated by Organic Wate



Source: Banjarmasin City Environmental Agency, 2019

About 500 tons of solid waste per day (**0.7 kg**/person per day).

113 waste disposal facilities (TPS) Total Capacity: 1,000 m3.

166 tons of waste per day was not managed

The Objective of the Research

1. Analyze the annual reduction in the use of plastic bags in retail and modern stores that have implemented Banjarmasin Mayor Regulation No. 18 of 2016 concerning Reducing the Use of Plastic Bags in retail and modern stores in Banjarmasin
2. Analyze the potential reduction of greenhouse gas emissions in Banjarmasin after the implementation of Banjarmasin Mayor Regulation No. 18 of 2016 concerning Reducing the Use of Plastic Bags in retail and modern stores in Banjarmasin.

The Method of the Research

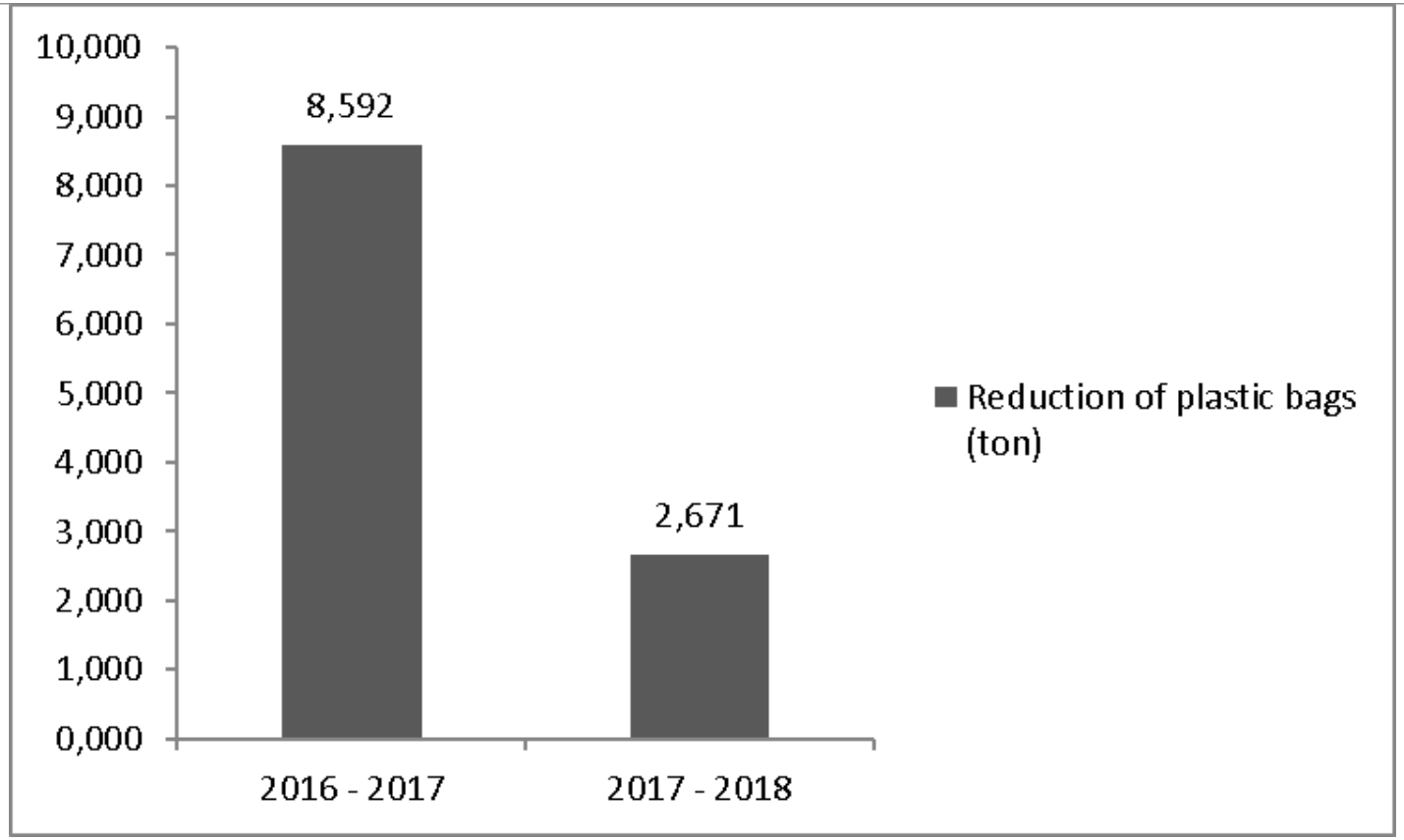
1. The method in this study was carried out in several stages. The first step of the research was to collect data on the number of retail and modern stores in the city of Banjarmasin that have implemented Banjarmasin Mayor Regulation No. 18 of 2016 and data on the number of plastic bag usage per retail and modern stores. The second stage is to analyze the reduction of plastic bag in each retail and modern stores, then process the data using descriptive analysis methods.
2. The third stage is to calculate greenhouse gas emissions from the use of plastic bag using Waste Reduction Model (WARM) approach.

Banjarmasin City Government limits the distribution of plastic bag by businesses to consumers through Banjarmasin Mayor Regulation No. 18 of 2016.

Table 2. Total plastic bag use in retail and modern stores in Banjarmasin in 2016-2018

No	Year	Number of Retail	Type of Retail	Plastic Bag (Kg/Year)	Plastic Bag (Gg/Year)	Plastic Bag (Tons/year)
1	2016	92	92 Minimarkets	16560	0.01656	16.56
2	2017	56	53 minimarkets, 2 supermarkets, 1 department store	7967.55	0.00796755	7.97
3	2018	53	46 minimarkets, 1 supermarket, 6 department stores	5296.8	0.005296774	5.29

Reduction of plastic bag use in retail and modern stores in Banjarmasin



Potential Reduction of Greenhouse Gas (GHG) Emissions in Banjarmasin after the Implementation of Banjarmasin Mayor Regulation No. 18 of 2016

Year	Waste Category	LDPE Reduction (tons/Year)	Landfilled LDPE waste (tons/year)	GHG emissions (TCO_2E) reduction
2016-2017	LDPE	8.592	6450.96	15.60
2017-2018	LDPE	2.671	2508.81	4.85

Conclusion

1. The reduction of plastic bag in Banjarmasin retail and modern stores after the Implementation of Banjarmasin Mayor Regulation No. 18 of 2016 shows the decreased amount of total use of plastic bag in 2016-2018 (2016 amounted to 16.56 tons, 2017 amounted to 7.97 tons, 2018 amounted to 5.29 tons).
2. Reducing the use of plastic bag in retail and modern stores in Banjarmasin in 2016-2017 can reduce greenhouse gas emissions 15.60 TCO_2E/year. Meanwhile, in 2017-2018, it was able to reduce greenhouse gas emissions 4.85 TCO_2E/year.

Reducing the Use of Plastic Bag contributes to reduce plastic waste that enters the landfill and reduce GHG emissions from plastic waste source reduction.

Problems in waste management cannot be solved with only one waste management option, it needs a comprehensive and integrated waste management system.