IMPLEMENTING WASTE-TO-ENERGY TECHNOLOGIES IN THE PHILIPPINES USING ANALYTIC HIERARCHY PROCESS

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Where I am workin

- Scimago Institution Ranking 714
- THE World Ranking 801+
- Assessed at institutional level by **AUN QA**
- 3000+ Scopus-indexed publications
- QS World Ranking 801+
- QS Asian Ranking 155

- 1,100 academic staff (40% full time)
- 14,000 undergraduate students
- 4,500 graduate students
- 11 research centers, 4 research support offices, 1 technology business incubator
- 8 colleges, 36 academic departments
  - ✓ Br. Andrew Gonzalez College of Education (BAGCED)
  - ✓ College of Computer Studies (CCS)
  - ✓ College of Law (COL)
  - ✓ College of Liberal Arts (CLA)
  - ✓ College of Science (COS)
  - ✓ Ramon V. Del Rosario College of Business (RVRCOB)
  - ✓ School of Economics
  - ✓ **Gokongwei College of Engineering (GCOE)**

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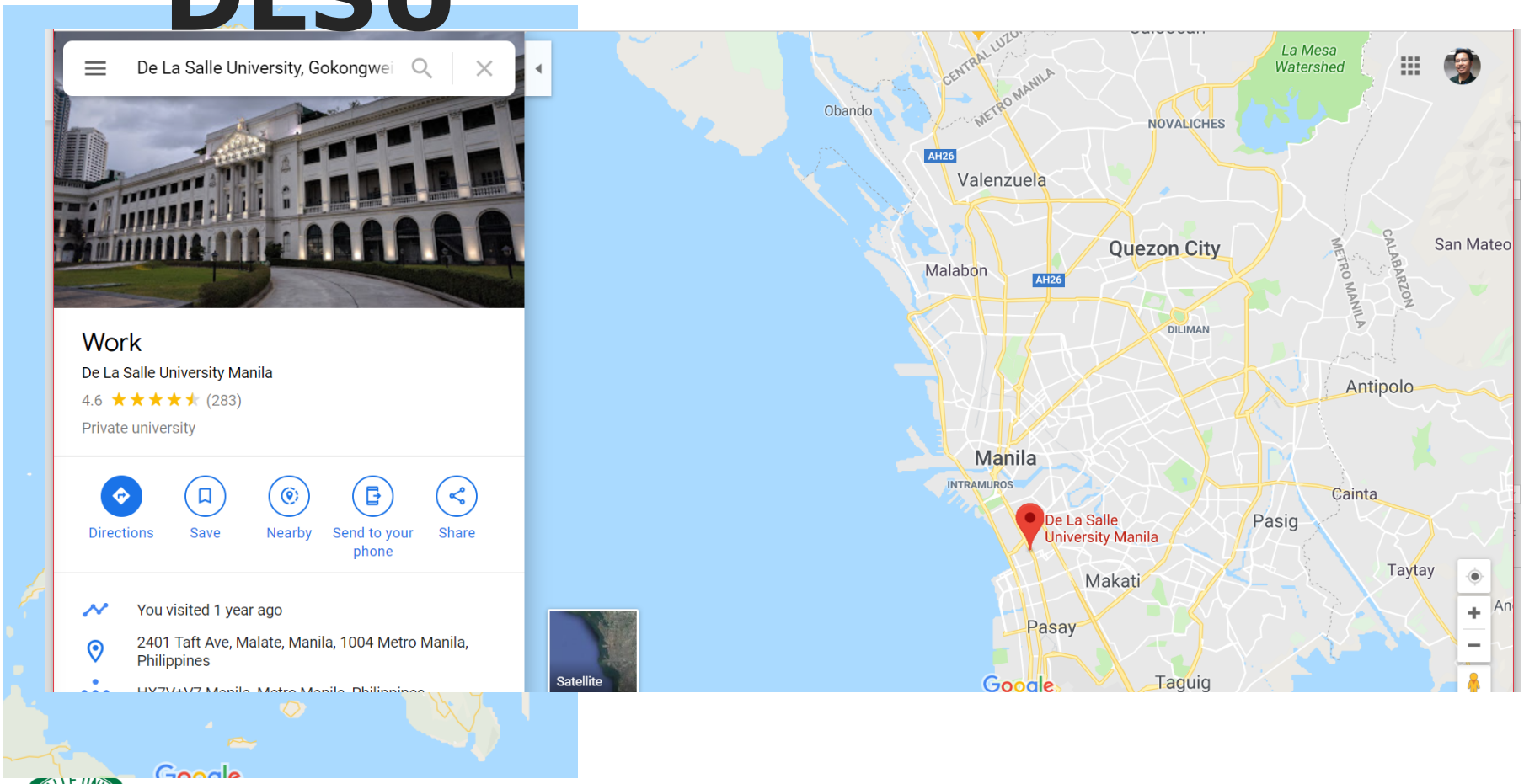
About Manila and DLSU



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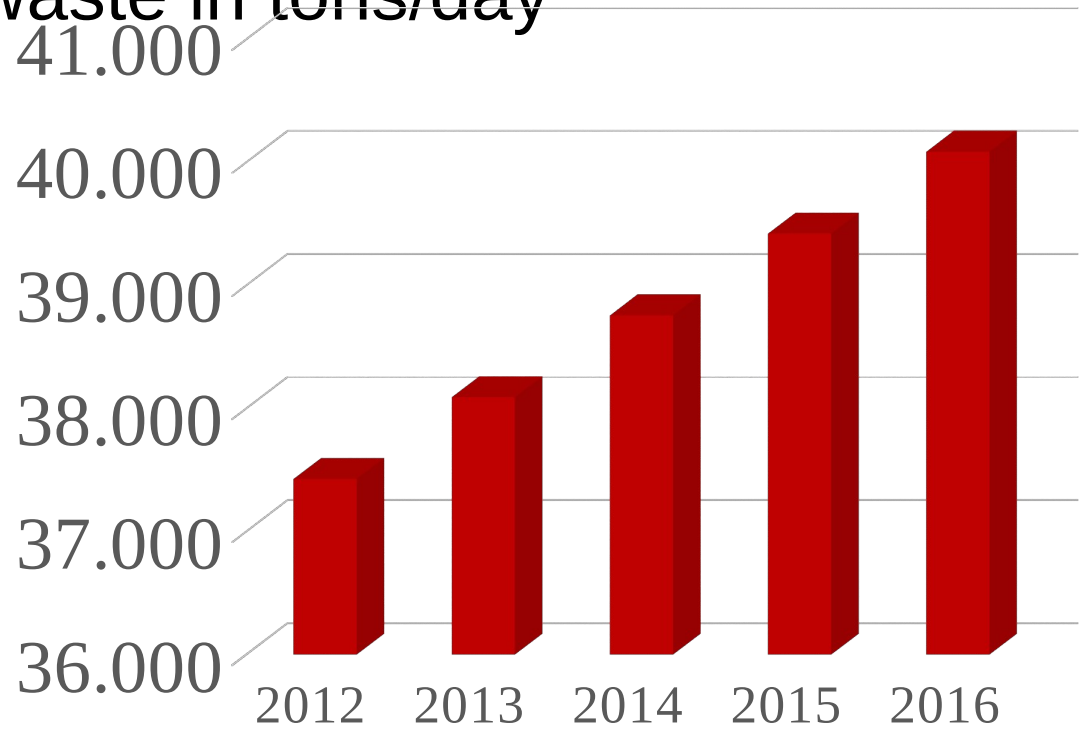
Research motivation

Philippines' generated waste in tons/day



Source: National Solid Waste Management Commission (NSWMC), 2017

Facts and Figure

- **323** local government units of **1634** (LGUs) have accessed to a total of **135** sanitary landfills
- Only **10,052** Material Recovery Facilities (MRFs) out of the **42,035** total barangays in the Philippines (2018)
- **423** illegal dumpsites (closure)

Management Act (RA9003)

- From Open dump site to Sanitary Landfill.
- Material Recovery Facility (MRF) for every Barangay.
- **Ban Incineration** (Article 1, Section 2)

> "Ensure the proper segregation, collection, transport, storage, treatment and disposal of solid waste through the formulation and adoption of the best environmental practice in ecological waste management excluding incineration;"

Research Questi

- What are the critical barriers in implementing waste-to-energy such as incineration projects in the country?

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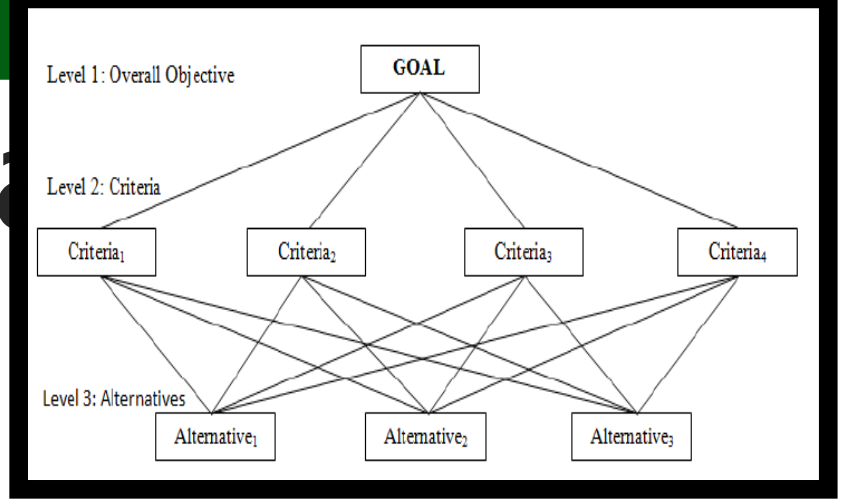
Methodologica framework



- Analytic Hierarchy Proce
- Key Informant Interview
  - Government Sector
  - Technical Experts
  - Civil Society

Main Issues

- Financial Affordability
- Implementability
- Social Acceptability
- Environmental Effectiveness

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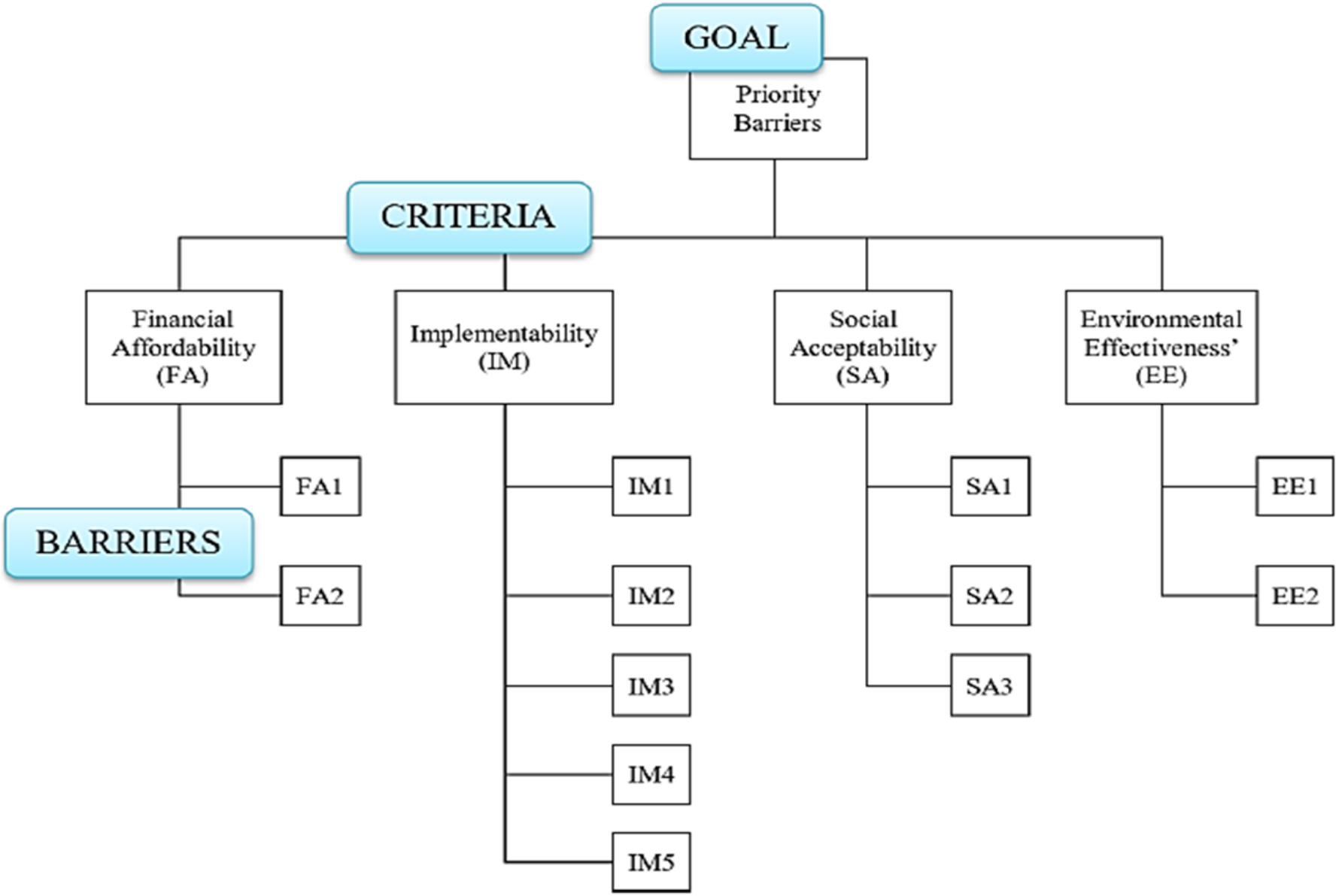
DECISION STRUCTURE



Priority vectors from AHP

Criteria	Aggregated Weights and Rank	Barrier	Aggregated Weights and Rank
Financial Affordability (FA)	0.096 (4)	High capital costs	0.726 (1)
		High costs involved in the purchase and installation of monitoring equipment of the government	0.274 (2)
Implementability (IM)	0.443 (1)	Undefined and/or overlapping role of key persons/ agencies/ stakeholders involved	0.059 (5)
		Lack of policy to support the implementation of incineration	0.500 (1)
		Variation in the amount of generated waste and high fraction of food and organic waste	0.174 (2)
		Absence of monitoring mechanism	0.098 (4)
		Lack of experts for planning, operation and monitoring of incineration plants	0.169 (3)
Social Acceptability (SA)	0.141 (3)	Lack of knowledge or information on incineration	0.372 (2)
		Perceived threat or danger	0.446 (1)
		Lack of public participation in decision-making process	0.182 (3)
Environmental Effectiveness (EE)	0.320 (2)	Large amount of heavy metals and dioxin/furans	0.644 (1)
		Contribution to climate change	0.220 (2)

CONCLUSION

- **Implementability** or the technical and administrative feasibility of Waste-to-Energy is the most critical issue.
- The **lack of policy support** and **concerns on the large amount of emitted heavy metals and their on dioxins/furans** are the most critical barriers to the implementation of **Waste-to-Energy projects** such as projects.

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Let's build a CLEANER and HEALTHIER Future

Thank you for listening!

Questions and Comments are Welcome

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