In Caribbean Small Island Developing States (CSIDS), islands face a number of barriers and challenges that prevent sustained economic growth and prosperity in the region. Two such challenges that exist are improper solid waste management and unstable energy supply. These challenges are often exacerbated by burgeoning population, the rural exodus and increased economic consumption per capita. This means Caribbean municipalities are facing increased pressure to improve the solid waste management and electricity generation services islandwide. Jamaica, the biggest English-speaking Caribbean island, has implemented a national development plan, where they strive to diversify their energy mix and improve solid waste management services.

**Research Question**
1. Which areas in Kingston are unsuitable for waste conversion facilities considering environmental and social factors that make up constraint criteria?
2. Which areas in Kingston are suitable for waste conversion facilities considering environmental and social factors that make up preference criteria?
3. Where is the most suitable location for a waste-to-energy facility in the Kingston Metropolitan Area, Jamaica?

**Introduction**

A constraint index was created through a raster calculation incorporating reclassified scores (1-5) of four layers: (1) medical amenities, (2) schools and universities; (3) tourist attractions and (4) inland waterbodies. All scores held the same weight and were symbolized using a diverging colour model (Figure 2) with red indicating the most constrained areas (red) and the least constrained areas (green).

A preference index was created through a raster calculation incorporating reclassified scores (1-5) of two layers: (1) major roads and (2) the municipal disposal site. Both scores held the same weight and were symbolized using a diverging colour model (Figure 3).

**Methodology**

**Constraint Assessment**

**Suitability Assessment**

Both constraint and preference indexes were used in a raster calculation to discern which constituency is most suitable for a waste-to-energy incinerator. The additive suitability model is the sum of equal weighted criteria (Figure 4).

The weighted model identified the **St. Andrew Southwestern Constituency** as the most suitable constituency to house an incineration facility.

**Results**

The constitute is mainly industrial as the open land neighbours manufacturing plants. The constituency identified also has **access to a major road** (Spanish Town Road) and is **away from rivers, streams and residential areas**. It is important to note, informal settlers, i.e. squatters, are not accounted for.

**Conclusion**

The adoption of an incinerator with the purpose of energy generation is extremely feasible in the Caribbean island context. The results indicate that there is a constituency that is quite suitable considering all factors based on the weighted model.

**References**