

# An Alternative System

Household-scale comparative study of the barriers to adopting alternative energy systems in Swaziland and Portland

## Background

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The increasing demand for energy can see relief on the household scale with the use of alternative and efficient energy systems.

### Swaziland

- Swaziland, a small, developing, energy-dependent country has been seeing massive population increases in the past few decades, especially in the periurban region: The Ezulwini Valley
- Due to this population increase, degradation of local forests are being depleting, causing the beginnings of an energy crisis for many households (SEA 2012)
- With the adoption of alternative energy systems, efficient stoves specifically, households can both decrease their impact while increase energy efficiency

### Portland

- While considered a “greener” city, PDX relies primarily on imported fossil fuels for energy within the household sector (Portland Plan 2009)
- In order to address the Climate Action Plan, serious changes in energy systems, such as renewable electricity, solar panels, and efficient cars, must be considered



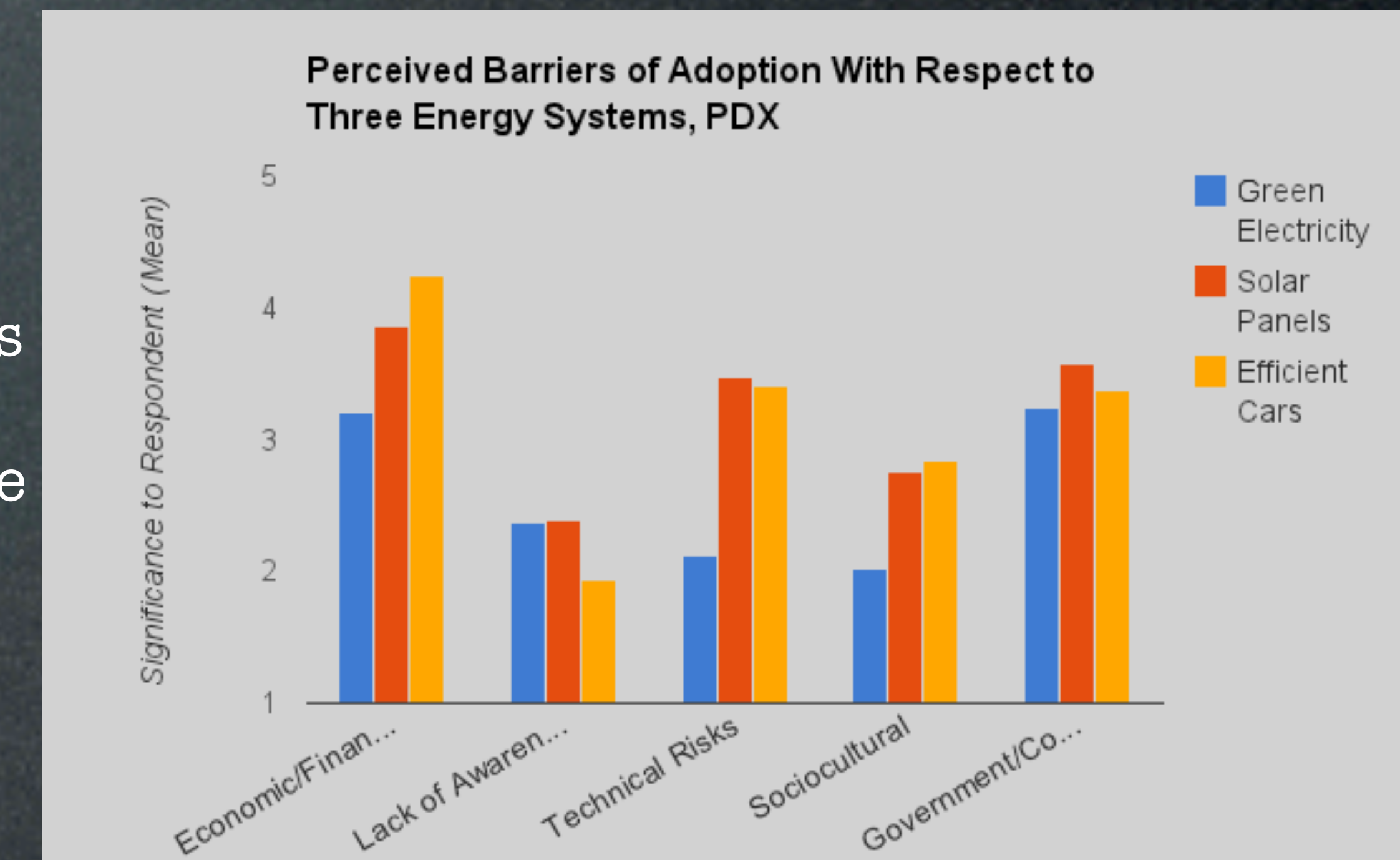
## Results

Results indicate that a difference in barriers of adoption were found between SZN and PDX.

**Swaziland:** Data indicate that a **Sociocultural** barrier in adopting new energy systems, in this case efficient stoves, is a major challenge.

**Portland:** In the “green” city of Portland, data has shone that **Economic/Financial** barriers prove to be what is holding most households back from adopting alternative energy systems, such as green electricity, solar panels, and/or efficient cars.

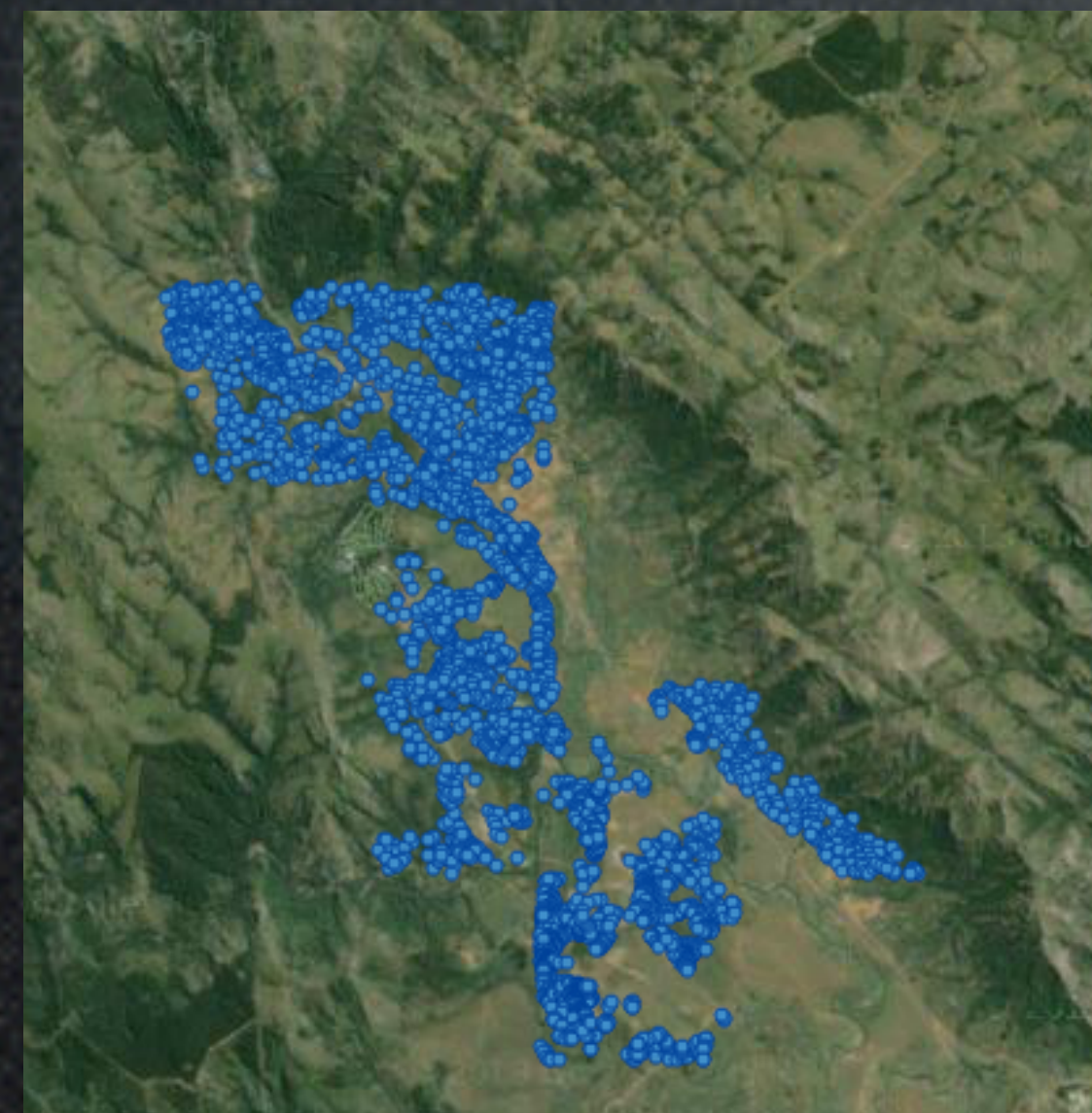
**What are the barriers to adopting alternative energy systems in Swaziland and Portland and how, through either direct or indirect relationships, do they differ?**



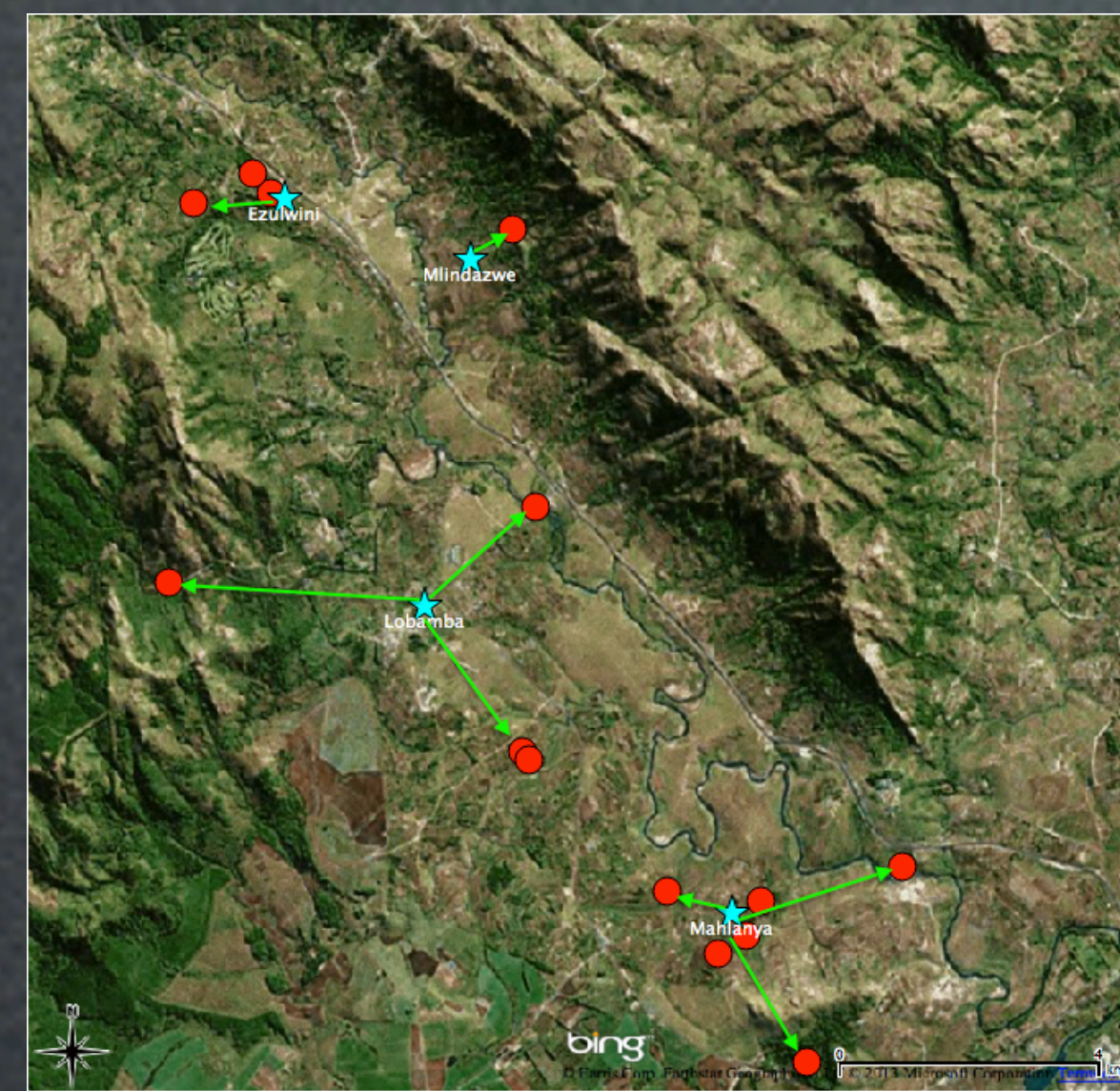
Ezulwini Valley Settlement 1972



Ezulwini Valley Settlement Current



Fuelwood Harvest Points and Distances, Ezulwini Valley



## Discussion

Distinct differences arise between PDX and SNZ, therefore clear solutions can be addressed.

Location	Prescription	Discussion
Swaziland	Directed Action Groups	“One-takes-all” approach seems to not work. In order to address the different needs of different socioeconomic and sociocultural groups, directed action must be taken.
	Education and Interest Groups	Grassroots and community organizations are closer and willing to work within local communities, providing a vehicle for social and government change.
	Data	With more data, specifically forestry, SZN would be able to spatially address energy issues and help educate communities on land-use change, promoting sustainability.
Portland	Policy Change	Policies, such as tax returns, that favor alternate energy will promote the adoption of alternative energy systems.
	Subsidies	Government subsidies on renewable energies will reduce prices of alternative energy systems, thus leading households to gain interest.
	Social Change	In PDX, it is difficult to quantify one’s impact. With increased awareness and outreach, an energy-efficient society can be promoted.

## Methodology

To keep consistent, methodology in both Portland and Swaziland was kept similar.

### 1) Expert Interviews

- Swaziland:** Officials within the Ministry of Natural Resources and Energy, Energy Department, and Forestry Department were interviewed. These interviews were informal, informational, and all performed in-person.
- Portland:** Individuals from Cascadia Green Building Council and Portland General Electric were interviewed. These interviews were informal, informational, and performed over the phone.

### 2) Field Reconnaissance

- Swaziland:** A household-scale Environmental Health Assessment of the Ezulwini Valley was investigated through surveying over 250 households. Local energy source-points were mapped and spatially related to communities.
- Portland:** Surveys regarding household barriers of adoption were distributed and analyzed.