

Comparative analysis of Kansas commercial wind energy projects and Wizelius' wind energy project development model

Melissa A. Granville* & Jeffery S. Fletcher
Faculty: Deborah Ballard-Reisch

Elliott School of Communication

Abstract. Kansas ranks second in wind-producing potential in the United States. While in 2009 wind energy contributed only 5.2% of the state's electricity supply, Kansas wind energy development will increase. This study analyzes nine operational and one banned Kansas wind energy projects. Researchers collected and thematically analyzed public documents relevant to the 10 projects. Data were compared across projects to develop a trajectory for existing Kansas wind projects. This trajectory was contrasted with Wizelius' model to identify critical steps and obstacles to wind energy development. Results indicate that early and sustained dialogue between developers and communities are important steps in the development process.

1. Introduction

Kansas has nine operational commercial wind energy projects that account for 5.2% of the electricity generated in the state [1].

Table: 1

Kansas operational commercial wind projects	
Name	County
Gray County Wind Farm	Gray County
Elk River Wind Farm	Butler County
Spearville Wind Farm	Ford County
Smoky Hills Wind Farm Phase 1	Lincoln/Ellsworth Counties
Smoky Hills Wind Farm Phase 2	Lincoln County
Meridian Way Wind Farm Phase 1 & 2	Cloud County
Flat Ridge Wind Farm	Barber County
Central Plains	Wichita County
Greensburg Wind Farm	Kiowa County

Kansas is second in wind producing potential in the contiguous United States [2] with an estimated 120 GW of wind potential [3]. Currently, Kansas ranks fourteenth in installed wind capacity with 1,026 MW [4]. Wind energy has increased rapidly over the last decade; of the nine commercial wind energy projects 70% were developed within the last three years [4]. With federal goals to generate at least 20% of electricity from wind by 2030 [5] and Kansas renewable portfolio standard (RPS) requirement that utilities acquire 20% of their energy from renewable sources by 2020 [6], wind energy development must increase.

In order to assist with future wind energy development in Kansas, this study will assess the trajectories and factors that facilitated or impeded development of existing or banned wind energy projects. Additionally, the Kansas trajectories will be compared to Wizelius' [7] model of wind energy development in Scandinavian and European countries to identify similarities and differences.

2. Experiment, Results, Discussion, and Significance

To assess operational wind energy project trajectories and factors that facilitated or impeded the development of Kansas wind energy projects, a document analysis was conducted. The following is a description of the rigorous processes by which documents were selected and analyzed.

Document selection process

The public documents were collected from four types of sources: the Kansas Energy Information Network (KEIN) website, online databases, county websites and county offices and the websites of key stakeholders.

Document analysis process

The public documents were thematically analyzed [8] using both deductive/prior research driven and inductive/data driven approaches. First researchers identified deductive code categories for the analysis. Using a grounded theory [9] approach, the research team immersed themselves in theory, data and prior research and collaboratively identified four coding categories which served as the foundation for deductive coding of data in this component of the study. The four coding categories are:

Table: 2 Data coding categories

Coding category	Definition
Project timeline	Critical dates in the development process of the wind energy project
Key contributors	The people, organizations, and groups that played a key role in the development of the wind energy project
Support and opposition	The people and/or organizations that openly supported or opposed the wind energy project
Project trajectory	The steps in project development

After the coding categories were identified, researchers read and flagged the documents using the coded system for emergent themes. After all articles were read for one project, the researcher typed all flagged content by theme into a data file, which was read theme by theme for coherence. The data was then analyzed for subthemes. The process of reading and coding was repeated for each wind energy project.

After the public documents for each wind energy project were thematically analyzed, a cross-cutting procedure of comparing and contrasting the themes and subthemes for each wind energy project was undertaken.

The emergent themes were compared with Wizelius' [7] model of wind energy development in Scandinavian and European countries. The following are the steps in this model.

Table: 3

Wizelius' wind energy development model stages	
Early dialogue	Purchase
Land acquisition	Contracts
Detailed planning	Installation
Second dialogue	Transfer
EIA	Operation
Permission	Dismantling

Results indicate that eight steps were common to all Kansas projects except the banned Munkers Creek Wind Farm Project in Wabaunsee County. The order of steps varied by project.

Table: 4 Common steps among Kansas projects

Land acquisition	Contracts
Detailed planning	Installation
Environmental Impact Assessment (EIA)	
Purchase	Transfer/Operation

Three themes differed among the Kansas projects and Wizelius' model:

- Early dialogue
- Second dialogue
- Permission

For some Kansas projects, early dialogue was not present but second dialogue was, or vice versa. Also, Kansas does not have standardized permission steps. Therefore, permission steps differed among Kansas projects as well as with Wizelius' model. Additionally, a variation occurred in the Kansas projects not articulated in the Wizelius model. In Kansas, some projects were initiated by communities rather than developers.

3. Conclusions

1. Fair and transparent early dialogue is critical to the timely development of a sustainable, mutually beneficial project
2. Ongoing consultation with the community leads to early identification of potential problems and sustains community commitment to the project
3. Permission standardization leads to mutually beneficial development that protects communities and developers

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