

Resilient Renewable Energy Planning in Peripheral Regions: An Architectural Approach Towards Place-Specific Infrastructure in Greenland

Susan Carruth, Professor Peter Gall Krogh
Aarhus Architecture School, Denmark

This paper proposes conceptual strategies for planning renewable energy infrastructures in peripheral regions, suggesting that an architectural lens can reframe resilience through place-specificity. It reports empirical research findings – from both fieldwork and research-through-design - into the village of Kapisillit in Greenland, and extracts principles and practices for resilient renewable energy planning that hold potential for other peripheral regions.

Many peripheral, isolated regions face challenges in supplying clean, reliable renewable energy due to lack of infrastructure, capital and political motivation. Villages and small towns are subject to increasing levels of environmental, socio-political and economic volatility, and their future is under threat. However these very challenges also provoke innovation and unconventional thinking, born out of necessity. Kapisillit, a settlement of around 75 people approximately 100km east of Nuuk in west Greenland, is highly isolated with very little conventional, fixed infrastructure for energy or water. The population is declining and its future is uncertain in the face of climatic, cultural and environmental change. A diesel generator primarily powers the village, but residents are beginning to explore private wind or solar energy production to supplement this system. *Can the indigenous culture, landscape and infrastructural traditions inspire a renewable energy strategy that is resilient, beautiful and community controlled?*

The paper begins by describing field research undertaken in Kapisillit, before detailing how this informed the theoretical groundwork that underpins the research-through-design experiment. This experiment took the form of a one-month intensive student workshop with 2nd year students at the Aarhus Architecture School, where participants were asked to create conceptual strategies, driven by distributed, community-controlled renewable energy, for the future of Kapisillit. The workshop began with a 3-day trip to south Denmark, living with limited resources to prototype off-grid living. Students then returned to the studio to construct architectural strategies for both digital and physical infrastructures, focusing on building resilience and antifragility into this fragile place. After illustrating the designs of selected students, the paper identifies planning strategies emergent in the empirical work e.g. synergy, bricolage, open-source technology, mobile phone SMS management etc. - principles that are relevant to local renewable energy planning policy and practice in the Arctic and other peripheral urban regions globally.