

IEA EBC - Annex 93

Energy Resilience of the Buildings in Remote Cold Regions

The key objectives of this project are to:

- Identify major threats specific to cold regions; develop definitions for energy resilience in cold regions;
- Document and assess existing practices through case studies across cold regions with different local conditions.
- Develop guidelines for energy resilient and efficient buildings and energy systems for different cold regions. The guidelines will address technical, social and economic aspects.
- Disseminate best practices for planning and construction of energy-resilient buildings and communities in cold regions through technical papers, conference presentations, and training.



Challenge,

- **Climate change, heat and cold waves etc.**
- **Other disruptions:** Energy crises, energy storage, grid breakdown, political crises
- **Cold region issues:** Very low temperatures, wind, snow, permafrost, low humidity
- **Access issues:** Remote, seasonal or **no access** for long period
- **Building & infrastructure resilience** is critical: Must remain habitable during crises

To address the challenge,

- **Local renewables preferred:**
 - **Energy sources:** Biomass, geothermal, hydro, wind, heat pumps, solar, boiler
- **Energy storage:**
 - **Battery storage:** For electricity backup
 - **Thermal storage (TMES):** Stores heat for space/water heating
- **Benefits:**
 - Ensures **system resilience**
 - Reduces peak loads & operating costs
 - Supports **energy autonomy** in remote areas
 - Reduce costs and **shave peak demand**