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SMART CITY CHALLENGE 2024
Solution idea for the city challenges

Max 3 pages

send to smartcity@taltech.ee by Sept 16, 2024

Solution Idea Title (max 5 words, no acronyms) - Community-Driven Renewable Energy Hubs

Planned pilot project duration – 24 months

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1. Which urban challenge or problem are you planning to provide a solution to?

Our solution targets the following critical urban challenges in Chernivtsi:

1. **Unreliable Energy Supply and Dependence on Non-Renewable Sources:**
    a. **Description:** Chernivtsi suffers from frequent blackouts due to the compromised state of Ukraine's energy infrastructure, exacerbated by ongoing conflicts. The city's dependency on non-renewable energy sources heightens environmental risks and threatens long-term sustainability.
    b. **Importance:** Reliable and sustainable energy is crucial for the city's resilience, especially during crises. Transitioning to renewable sources will mitigate environmental damage and ensure consistent energy supply, crucial for maintaining essential services.
2. **Need for Ecologically Friendly Public Spaces and Community Integration:**
    a. **Description:** With a significant influx of internally displaced persons (IDPs), Chernivtsi faces a pressing need for public spaces that support social interaction, cultural exchange, and community integration. Currently, there is a lack of such spaces, contributing to social isolation and diminished community cohesion.
    b. **Importance:** Creating inclusive and environmentally sustainable public spaces is essential for fostering social cohesion and improving quality of life, particularly for IDPs and local residents.
3. **Psycho-Emotional Well-being and Civic Engagement:**
    a. **Description:** The ongoing conflict and rapid urban changes have increased stress and mental health issues among residents. There is a need for spaces that inspire creativity, foster civic engagement, and support mental well-being.
    b. **Importance:** Addressing mental health through supportive public spaces is crucial for building a resilient community and enhancing overall well-being.

These challenges are not unique to Chernivtsi but are prevalent in many cities facing similar conditions, especially in regions affected by conflict or rapid demographic changes. Cities globally are grappling with energy sustainability, public space development, and mental health issues. Chernivtsi's specific context, including the impact of regional instability, amplifies these challenges but also provides an opportunity to develop scalable solutions applicable to other cities experiencing comparable issues.

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2. The solution you are proposing

We propose establishing **Community-Driven Renewable Energy Hubs** (CDREH) across Chernivtsi. These hubs will integrate renewable energy sources into public spaces while fostering community engagement and improving psycho-emotional well-being. Each hub will feature solar panels, wind turbines, and multifunctional public areas designed to serve as both energy generators and community centers.

Energy Independence and Sustainability:

- **Renewable Energy Integration:** By equipping public spaces with solar panels and wind turbines, the CDREH will reduce reliance on non-renewable sources and provide a reliable energy supply for communal facilities, mitigating the impact of blackouts.
- **Energy Efficiency:** These hubs will include energy storage solutions to manage supply and demand, ensuring a stable energy flow even during periods of low production.

Ecologically Friendly Public Spaces:

- **Design and Functionality:** Hubs will be designed to be aesthetically pleasing and functional, incorporating features like charging stations, lighting, and green areas that promote social interaction and integration.
- **Community Engagement:** These spaces will host cultural events, workshops, and social activities, fostering community cohesion and providing a platform for IDPs and locals to connect.

Mental Health and Civic Engagement:

- **Supportive Environments:** The hubs will be equipped with areas dedicated to creative and recreational activities, helping to alleviate stress and improve mental well-being.
- **Inclusive Design:** Spaces will be designed to be accessible and welcoming to all residents, promoting civic engagement and participation in local initiatives.

3. Innovation and piloting of your pilot solution.

Current Solutions: Existing solutions focus on either renewable energy projects or public space improvements separately. Some cities have implemented solar-powered public amenities, but these often lack integrated community functions.

Innovation: The CDREH approach integrates renewable energy infrastructure directly into multifunctional public spaces, creating a dual-purpose solution that addresses both energy and social needs. Key innovations include:

- **Multi-Functional Hubs:** Combining energy generation with community spaces, offering additional services like device charging and emergency lighting.
- **Community-Centric Design:** Engaging local residents in the planning and development process to ensure the spaces meet their needs and foster inclusivity.

Requirements:

- **Site Selection:** Identification of suitable public spaces for hub installation, including parks, school grounds, and community centers.

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- **Partnerships:** Collaboration with local businesses, NGOs, and energy providers for funding, technical support, and community engagement.
- **Regulatory Support:** Navigating legal and regulatory frameworks to facilitate the installation and operation of renewable energy technologies in public spaces.

Piloting Process:

- **Phase 1: Planning and Design:** Engage stakeholders to design the hubs, select sites, and develop a detailed implementation plan.
- **Phase 2: Installation:** Set up renewable energy systems and construct community spaces. Ensure integration with existing infrastructure.
- **Phase 3: Operation and Monitoring:** Launch the hubs, monitor performance, gather feedback, and make adjustments as needed.

Team Capabilities:

- **Expertise:** The team will include experts in renewable energy systems, urban planning, and community engagement. Experience in similar projects, especially in conflict-affected or rapidly changing environments, is crucial.
- **TalTech Role:** TalTech will contribute expertise in advanced energy technologies, including smart grids and renewable energy integration. Their knowledge in sustainable urban development and data analytics will be vital for optimizing hub performance and ensuring effective community engagement.

4. Expected impact of your pilot solution.

City Environment:

- **Energy Efficiency:** The CDREH will enhance energy efficiency and reduce the city's carbon footprint, contributing to a more sustainable urban environment.
- **Aesthetic and Functional Improvement:** By integrating renewable energy infrastructure into public spaces, the cityscape will be beautified and made more functional, increasing the overall quality of urban environments.

Citizens:

- **Enhanced Quality of Life:** Residents will benefit from reliable energy sources, improved public spaces, and access to amenities and services that promote social interaction and well-being.
- **Community Cohesion:** The hubs will serve as focal points for community engagement, reducing social isolation and fostering a sense of belonging among residents, including IDPs.

City Governance:

- **Improved Resilience:** Reducing dependence on centralized energy systems and incorporating renewable energy solutions will enhance the city's resilience to crises and improve its ability to manage energy resources independently.
- **Strengthened Civic Participation:** The creation of inclusive public spaces will encourage greater civic engagement and foster stronger connections between the city administration and residents.

Disclaimer: by submitting this form you will give the FinEst Centre for Smart Cities the right to share this idea with cities and other researchers, companies through FinEst Centre homepage. If this idea is selected, the FinEst

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Centre for Smart Cities has the right to implement this idea with offering you an active role in conducting the pilot. If this pilot is selected then the financing is an investment by the FinEst Centre for Smart Cities.

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