Advance Smart Building Initiatives in Commitment to a Sustainable City and Community

11 SUSTAINABLE CITIES AND COMMUNITIES

NIDA is making significant strides towards becoming a smart campus, integrating advanced technologies to enhance sustainability and efficiency. This initiative aligns with the global Sustainable Development Goals (SDGs), particularly emphasizing the promotion of sustainable cities and communities, as outlined in SDG 11. A key component of this initiative is the collaboration with Sanken Setsubi Kogyo, a leader in Zero Energy Building (ZEB) technology. This collaboration intends to incorporate innovative energy solutions into NIDA's infrastructure, thereby reinforcing the organization's commitment to sustainability.

ENGAGEMENT

Smart Campus Initiatives with Sanken

NIDA's collaboration with Sanken is pivotal in creating a smart campus that utilizes advanced technologies for efficient resource management. This partnership enables NIDA to implement NZEB principles across its facilities, significantly reducing energy consumption and enhancing the overall sustainability of the campus environment. The integration of these initiatives directly supports SDG 11 by promoting sustainable urbanization and enhancing the quality of life for students and staff.

Key features of the smart building project related to SDG 11

1. **Net-Zero Energy Building Design:** the cooperation will focus on designing net-zero energy buildings. This includes high-efficiency insulation, renewable energy sourcing, and sophisticated mechanical systems for reducing consumption while enhancing performance. This is part of SDG 11 (Sustainable Cities and Communities), which links directly to action on a number of targets.

2. **Energy Management Systems:** NIDA will incorporate Sanken's cutting-edge energy management systems, which include real-time monitoring and analytics to optimize energy use across campus facilities. This technology will help identify inefficiencies and promote sustainable practices among students and staff, aligning with SDG 11 by implementing integrated policies for resource efficiency.

3. **Data-Driven Insights:** NIDA has partnered with Esri Thailand, a leader in GIS technology, to jointly develop a prototype smart city of the future. This initiative aims to serve as a model for solving resource management problems by utilizing GIS technology to build a smart campus. The project enables efficient planning of indoor and outdoor green space usage, leading to future energy savings that reduce energy consumption by at least 10% and increase the green space in the horizontal and vertical directions.

By employing spatial technology to develop various infrastructure systems within the institute, the project seeks to optimize space utilization more effectively and sustainably. NIDA and ESRI have successfully created a Digital Twin—a lifelike 3D model—to plan and manage spaces in various facilities. It enables us to comprehend the institute's activities in real time. The initiative has begun by collecting usage data at the Navamindradhiraj Building. NIDA can use the gathered information to distribute the building's usage more effectively. For example, datasets of building users on each floor help visualize the usage density, indicating whether each floor has many or few users. We can use this data to plan space utilization and support future energy-saving strategies efficiently. This supports SDG 11, which emphasizes inclusive and sustainable urbanization and public access to open and green spaces, and SDG 12: Responsible Consumption and Production.

4. **Research & Development:** The alliance with industries also paves the way for collaborative R&D in emerging technologies of energy conservation and renewables integration.This partnership aims to enhance NIDA's position as a hub for intelligent, sustainable design and construction research, particularly in Thailand, where the government has recently implemented changes that promote more integrated implementation of SDG 11, fostering positive economic, social, and environmental threads in urban areas.

5. Community Engagement: The smart campus initiative encourages collaboration among students, faculty, and the local community to foster innovation in sustainability practices. We hold workshops and training to educate stakeholders on the benefits of smart technologies, promoting awareness of sustainable practices that extend beyond the campus.

OPERATION

Utilizing knowledge & prototypes for broader impact

In addition to improving its own facilities, NIDA intends to use the information obtained from its smart building projects to create prototypes that can be implemented in public spaces throughout the province and in distant areas of Thailand. NIDA intends to share lessons learned from its smart campus initiative through workshops and training programs for local government officials, urban planners, and community leaders in neighboring provinces. For instance, NIDA's National Housing Authority (NHA) training aims to influence community-building developers across the country by implementing SDG11. By developing adaptable models based on successful NIDA implementations, these prototypes can serve as templates for other organizations and municipalities wishing to upgrade their infrastructure sustainably

As NIDA progresses with its smart campus project in collaboration with industries and communities, it aspires to serve as a benchmark for other institutions in Thailand and beyond. The integration of smart building technologies and NZEB principles is expected to create a more sustainable educational environment that aligns with the broader objectives of SDG 11. NIDA's commitment to developing a smart campus through innovative technologies positions it as a leader in sustainability within higher education. By leveraging advanced technologies and collaborative research, NIDA is poised to lead by example in pursuing a greener future for higher education in Thailand. This initiative not only enhances the learning experience but also contributes positively to environmental stewardship while directly supporting the goals outlined in SDG 11 for sustainable cities and communities across both urban and remote areas in Thailand.