Smart Eco-Village: Saemaul Undong Movement Strategy in the Era of the Fourth Industrial Revolution

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Concept of Smart Eco-Village : U-Eco City

Reference: Lee, J. J. (2009). Low-carbon green cities and U-Eco City, founding general meeting of the Eco City Research Association.

Concept of Smart Eco-Village : Smart City

- **Goal.**
  - Environment: Energy Efficiency, Environmental Pollution, Resources.
  - Welfare: Public Safety, Education, Medical & Health, Social Stability
  - Economy: Investment, Job, Innovation
- **Industry.**
  - Smart Utility
  - Smart Building
  - Smart Transportation
  - Smart Government
- **Infrastructure.**
  - Sensor Network, Data Analysis
  - Smart Node, Control System
 - Telecommuncation Platform, Web Services

Reference: GigaOM Pro (2012), Key technologies for the future of the smart city.

Concept of Smart Eco-Village : Smart City

- **A city that is connected by a network using ICT-based technology and various convergence technologies, enabling information exchange between people and people, people and objects, objects and objects, and even between cities, reaching every corner of the city.**
  - Aiming for sustainability, economic viability, and improvement of citizens' quality of life.

- **The typical framework for building a smart eco-city begins with the central or local government seeking the help of think tanks, consultants, and non-profit organizations (NGOs) related to smart city development to draft policies (Korea Information Society Development Institute, 2013, Future Cities of ICT and Advanced Industry Convergence - 'Smart City').**
  - When the central and local governments draft policies, developers, consultants, designers, and construction companies begin to work on infrastructure development such as utilities.
  - At this point, not only the government but also various stakeholders involved in the project are assigned their respective roles.

Concept of Smart Eco-Village : The Fourth Industrial Revolution
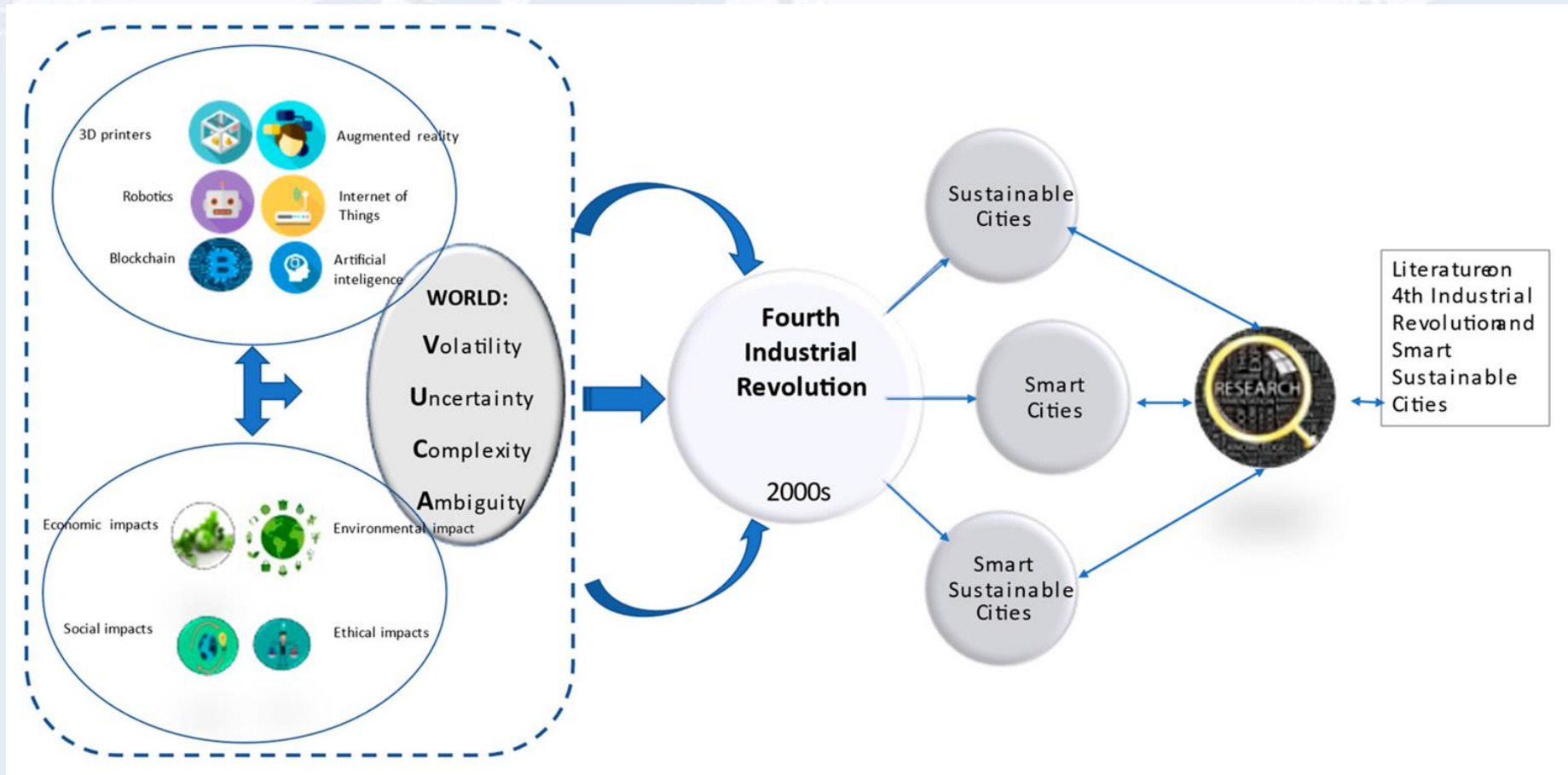
Reference: Gabrielli, (2021). The Impacts of the Fourth Industrial Revolution on Smart and Sustainable Cities.

Concept of Smart Eco-Village : The Fourth Industrial Revolution

- **The Fourth Industrial Revolution (4IR) - current stage of technological advancement in which the physical, digital, and biological worlds are increasingly interconnected. It builds upon the third industrial revolution, which was characterized by the widespread use of computers and the internet.**
  - artificial intelligence (AI), robotics, the Internet of Things (IoT), 3D printing, and advanced materials - increasing efficiency, productivity, and connectivity.

- **A smart eco-village can be considered a manifestation of the fourth industrial revolution in the context of sustainable development. Such a village leverages the power of advanced technologies to create a community that is environmentally friendly, socially responsible, and economically viable.**
  - Smart grid systems: efficient management/renewable energy sources solar and wind power, Internet of Things (IoT) sensors: monitor (water, air quality) Autonomous transport systems: Electric and autonomous vehicles, Advanced waste management systems: anaerobic digestion and composting, Sustainable building materials: Advanced materials such as bioplastics, nanomaterials, and sustainable concrete.

Concept of Smart Eco-Village

- It means a village/community where every corner of the village is connected by a network through ICT-based technology and various convergence technologies, enabling mutual information exchange between people and people, people and things, things and things, and even between villages.
    - Aiming for sustainability, economic viability, and improvement of residents' quality of life.
    - The reform of the consciousness of village residents and the expansion of technological accessibility have become important issues.

- The differentiation of Smart Eco-Village.
    - ICT-based appropriate technology and convergence technology are required.
    - The elements of education and training are emphasized.
    - It is important to introduce education and technological elements that are tailored to the characteristics of the village.

- The establishment of a smart eco-village begins with the central or local government creating policies in collaboration with support agencies, research institutions, and non-profit organizations (NGOs) related to smart eco-villages.
    - When the central and local governments draft policies, the companies related to support agencies start building utilities and infrastructure together with the village residents.
    - At this point, not only the government but also various stakeholders involved in the business have their roles defined

Key Components of Smart Eco-Village

- **Expansion of citizen participation through ICT.**
  - Improving technical education and information communication accessibility for residents.
  - Introduction of technology that fits the culture of the region or village.
  - Introducing the concept of e-government at the village level.
- **Improvement of physical environment.**
  - Water supply and food supply.
  - Improvement of housing and hygiene.
- **Education and health services.**
  - Improvement of educational opportunities and health services through information and communication technology (online education, telemedicine, etc.).
  - Expansion of education on information and communication technology.
- **Income generation and regional development.**
  - Designing a value chain in the agricultural sector.
  - Startup and marketization strategy (online sales, utilizing blockchain).

Components of Saemaul Undong Movement's pilot village (1).

Reference: Lee, Yang-soo (2017), A Study on the Development of a Model for Activating Saemaul Undong in Korea, Gyeongsangbuk-do Provincial Office.

Components of Saemaul Undong Movement's pilot village (2).

- **Components of the pilot village implementation process.**
    - Appropriate program configuration according to development priorities.
    - Demand-based on local governments and residents.
    - Strengthening the capacity of officials from related organizations and local residents.
    - Encouraging participation of local residents in pilot projects.
    - Action Plan step-by-step business implementation based on an Action Plan.
    - Dissemination of achievements through post-mortem regional policy reflection.

- **Components according to the capacity of the pilot village.**
    - Social capital: trust, participation, network connections, institutions and norms, altruism.
    - Governance: driving organization (form, leadership, values, common goals), driving methods (exercise of authority, decision-making, information production, production of public goods, resource procurement).

References: Jee, S. T. (2013). A study on effective implementation strategies for rural development ODA models. Asia Research. So, J. K. (2007). Performance evaluation of Saemaul Undong pilot projects in Asian developing countries. Journal of Korean Regional Development Association.

The strategy for promoting smart eco-villages through the Saemaul Undong Movement pilot village project

Saemaul Undong Strategy	Expansion of Citizen Participation through ICT	Improvement of Physical Environment	Education and Health Services	Income Generation and Regional Development	
Income Increase				●	
Improvement of Living Environment		●	●		
Revolution of Consciousness	●		●	●	
Process of Pilot Village Implementation	Expansion of Citizen Participation through ICT	Improvement of Physical Environment	Education and Health Services	Income Generation and Regional Development	
Program Composition	●				
Local and Resident Demand	●		●		
Enhancement of Resident Capacity	●	●	●	●	
Encouragement of Citizen Participation	●				
Project Promotion/Execution		●	●	●	
Dissemination of Achievements/Result	●			●	
Capacity of Pilot Village	Expansion of Citizen Participation through ICT	Improvement of Physical Environment	Education and Health Services	Income Generation and Regional Development	
Social Capital	●		●	●	
Governance	●	●			

Cooperation's potential benefits to Korea and Africa's stake-holders

Cooperation between Korea and Africa's stakeholders can bring several benefits, such as:

- **Transfer of knowledge and technology:** With Korea's advanced technologies and expertise in sustainable development, African countries can benefit greatly from shared knowledge and technology.

- **Sustainable development:** The Smart Eco-Village Strategy can be adapted to suit the needs and contexts of African countries, promoting sustainable rural development.

- **Job creation:** The implementation of smart eco-villages has the potential to create jobs in various sectors such as agriculture, energy, and tourism.

- **Climate change mitigation:** The creation of smart eco-villages can contribute to reducing carbon emissions and lessening the impacts of climate change.

- **Corruption and lack of transparency is deep rooted in African countries. E-government will help to build more efficient, effective, and accountable government institutions in Africa, contributing to sustainable development, economic growth and improvement in the lives of citizens.**

- **Social equity:** By prioritizing community involvement and social equity, smart eco-villages promote inclusive development and can help to reduce inequality (high in Africa) within communities.

Conclusion and Suggestions

- **Smart Eco-Village can be achieved through differentiation in scale and scope from the concept of Smart City.**
  - The concept of rural development and education should be introduced.
  - It aims for sustainability, economic efficiency, and improvement of residents' quality of life.
  - The reform of the consciousness of village residents and the expansion of technological accessibility have become important issues.

- **The differentiation of Smart Eco-Village.**
  - ICT-based appropriate technology and convergence technology are required.
  - The elements of education and training are emphasized.
  - It is important to introduce education and technological elements that are tailored to the characteristics of the village.

- **Elements of Smart Eco-Village.**
  - Expansion of citizen participation through ICT.
  - Physical environment improvement.
  - Education and health services.
  - Income generation and regional development.

- **Components of Saemaul Undong Movement pilot village.**
  - Strategy, implementation process, and factors according to capacity in Saemaul Undong.

- **There's connection between the components of Smart Eco-Village and Saemaul Undong pilot village.**

- **Cooperation potential benefits to Korea and Africa's stake-holders:** Technological knowledge transfer, Sustainable development, job creation, and climate change mitigation, fight corruption and promote social equity.