



# Social innovation with focus on Maker Living Lab case in Korea



Living Labs Approach for Technologies for Sustainable Natural Resource Management

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# INCLUSIVE INNOVATORS CREATING A BETTER WORLD



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# COMMON TASKS FOR KOREA, JAPAN, AND THE ASIA-PACIFIC REGION



## Joint issues between Korea and Japan

In both Korea and Japan, the proportion of the population aged 65 and over is rapidly increasing, and aging urban infrastructure is a risk factor for the entire society.



## Common issues in the Asia-Pacific region

The Asia-Pacific region is a complex region with war damage, UXO (unexploded ordnance) residues, and gaps in medical care and education, making cooperation between countries essential.



## Future generations need living labs

A demand for living labs where future generations, including youth and college students, actively participate, form networks with various stakeholders, and experiment with problem-solving.



# MAKER LIVING LAB METHODOLOGY AND SOCIAL IMPACT

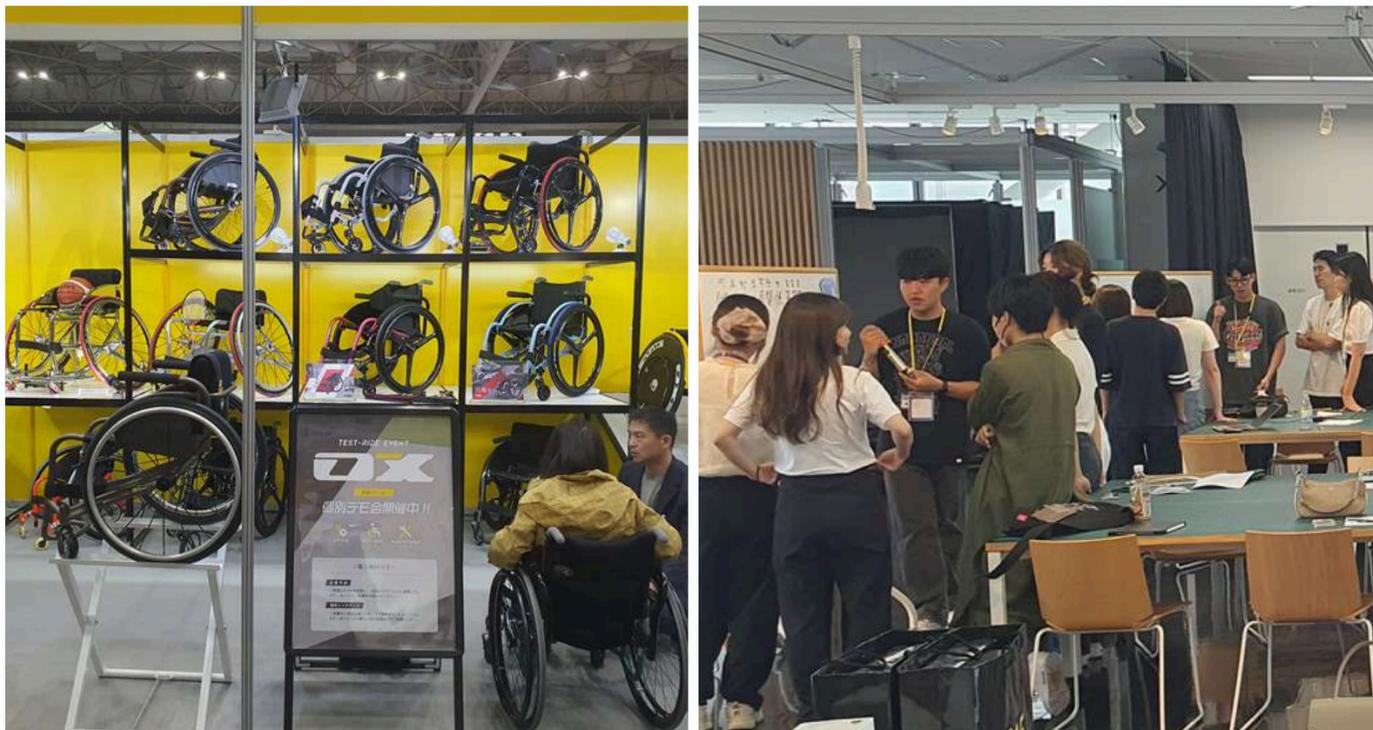


<b>Social innovation achievements</b>	Developing solutions that reflect the user experience, empowering citizens through technical training and data sharing, and establishing sustainable problem-solving strategies.
<b>Impact Vision</b>	Maker Living Labs foster collaboration across countries and cultures, ensure data-driven decision-making and user-centered design are reflected in public policy, and facilitate practical problem-solving.

# 2023 OSAKA CARE TECH & REHABILITATION WELFARE MAKERTHON

## Osaka Care Tech Living Lab

- **Participants:** 12 students from three Korean universities and 15 students from three Japanese universities.
- **Activities:** Participation in the Osaka Care Tech Fair and Hackathon, exploring aging and care issues.
- **Results:** 6 problem definitions, 3 solution sketches, and discussions on field demonstration collaboration.
- **Meaning:** An experiment in empathetic social problem-solving that combines technology, care, and cultural understanding.



## Rehabilitation Welfare Makerthon

- **Participation:** 15 Korean and Japanese university students and youth participated.
- **Activities:** Exploring rehabilitation and care issues, developing assistive device ideas and prototypes
- **Achievements:** Developed four prototypes and two test models.
- **Meaning:** Presenting an innovative model for rehabilitation welfare through collaboration across generations and countries.

Specialized rehabilitation welfare with Japanese assistive device

manufacturing experts **Makerthon**

This is a [Rehabilitation Welfare Specialized Makerthon] open to anyone interested in assistive devices. You can participate in hands-on making and networking with world-renowned assistive device manufacturers. Recruitment is on a first-come, first-served basis, so we appreciate your interest and participation.

# 2024 BIOMEDICAL ENGINEERING EDUCATION EXCHANGE & RIS TOKYO LIVING LAB

## Biomedical Engineering Education Exchange

- **Participation:** Approximately 20 experts and students from industry, academia, and research institutions, including Hanyang University, Osaka University, and Gongsang University.
- **Activities:** Industry-academia cooperation and technology exchange focused on biomedical engineering with Osaka University.
- **Achievements:** Developing a Korean-Japanese biomedical engineering education model and establishing a foundation for joint research and project implementation.
- **Meaning:** Confirmation of the possibility of expanding the Korea-Japan technology and education cooperation platform in the field of biomedical engineering.



## RIS (Regional Innovation System) Tokyo Living Lab

- **Participation:** 30 PoC participants, 10 teams, and Japanese experts and mentors
- **Activities:** Visits to three institutions, including the Tokyo Incubation Base, and mentoring and PoC
- **Results:** 10 teams were interviewed locally, verification data was secured, and suitability for the Japanese market was determined.
- **Meaning:** Establishing a regional innovation and market verification model led by youth entrepreneurship, strengthening global expansion.



# 2025 HIGH SCHOOL LIVING LAB & ESG LIVING LAB

## High School Maker Living Lab

- **Participation:** 20-30 high school students, teachers, youth mentors, and local experts
- **Activities:** Exploring local issues, conducting user interviews, and developing and verifying prototypes based on Makerthon.
- **Achievements:** Developed solutions for 4-6 teams and established a school-local government collaboration model.
- **Meaning:** A youth-led joint Korea-Japan living lab for future generations to collaborate internationally.



## ESG Local Problem Solving Living Lab

- **Participation:** Five university student teams, approximately 100 Osaka University and local Living Lab officials.
- **Activities:** Mizuno Newtown Tour, Japan-Korea Exchange Meeting, and PoC Presentation
- **Achievements:** Identification of five regional ESG issues, presentation of proof-of-concept (PoC), and establishment of a Korea-Japan cooperation network.
- **Meaning:** Exchange and dissemination of youth-led Korea-Japan ESG living lab models.



# 2023 HUAPHAN, LAOS

Demonstration project for self-sufficiency of customized prosthetic limbs and assistive devices for independent living for amputees affected by unexploded ordnance (UXO)



## ① Building a foundation for technical education and self-reliance

- **Activities:** Establishing a manufacturing facility and makerspace for assistive devices in the Sam Nuea area of Hua Phan Province, and training in 3D scanning and digital manufacturing technologies.
- **Achievements:** Approximately 10-15 young professionals and technicians have secured the capabilities to manufacture and repair basic assistive devices, standardize the manufacturing process, and establish a quality control system.
- **Meaning:** Creating a sustainable ecosystem based on digital manufacturing, increasing local technological independence by reducing external dependence.



## ② Promoting welfare and expanding accessibility to assistive devices

- **Activities:** Designing custom prosthetic limbs based on 3D scans, conducting field distribution and usability testing.
- **Achievements:** Provide customized assistive devices to approximately 20 amputees annually to help them regain mobility and daily function, and provide follow-up guidance on using the devices in collaboration with local medical staff.
- **Meaning:** Improving the quality of life of victims of unexploded ordnance, promoting self-care and community reintegration of people with disabilities.



## ③ Contribution to economic growth and revitalization of the local economy

- **Activities:** Step-by-step training in manufacturing techniques to produce prosthetic limbs and assistive devices for daily living within the local community.
- **Achievements:** Increased self-sufficiency in basic assistive devices within the region, alleviated the labor and care burden on people with disabilities, and enabled some technicians to generate income through small-scale service provision.
- **Meaning:** Establishing a local circular economy model for manufacturing and repair, contributing to the return of vulnerable groups to economic activity and regional economic growth.

# 2024 HUE PROVINCE, VIETNAM

Areas affected by unexploded ordnance explosions in Vietnam  
(Binh Dinh Province and the Mekong River area)



## ① Confirmation of the needs of victims of unexploded ordnance

- **Activities:** Visiting areas affected by unexploded ordnance (UXO) in Binh Dinh Province and the Mekong River region, investigating risks and restrictions on living, transportation, and employment.
- **Achievements:** Six key issues were identified, including the risk of exposure to unexploded ordnance (UXO), lack of mobility aids, and livelihood constraints.
- **Meaning:** Establish a stakeholder-based problem definition, not an external one, and structure future solution designs to be 1:1 aligned with field needs.



## ② Problem analysis and solution search

- **Activities:** Interviewing victims of unexploded ordnance (UXO), mapping environmental, transportation, housing, and safety issues, and exploring technology-based solutions.
- **Achievements:** 8 mobility, safety, and welfare-focused problem definitions, 4 mobility, assistive devices, and sensor-based solutions developed.
- **Meaning:** Structuring problems based on data rather than simple ideas (D-thinking model)



## ③ On-site verification of university student team solutions

- **Activities:** Pilot user testing of mobility assistance, risk notification, and convenience improvement solutions in unexploded ordnance (UXO) affected areas.
- **Achievements:** Two of the four solutions (UXO risk alert and mobility assistance) demonstrated field satisfaction and effectiveness.
- **Meaning:** User-centered design based on international collaboration (realization of the Living Lab model)

# 2025 HANOI, VIETNAM

## Youth Bizschool Entrepreneurship Global Link Project Korea-Vietnam Global Innovation Living Lab



### ① Investigation of regional issues in Vietnam

- **Activities:** Exploring Hanoi and the Ethnic Minority Museum, and investigating the living conditions and constraints of vulnerable groups in Vietnam.
- **Achievements:** Six key needs were identified, including lack of support for vulnerable populations, natural disaster response and recovery, and economic and educational gaps.
- **Meaning:** Establishing a field-based demand analysis model that aligns with SDG 10 (reduced inequality) and SDG 16 (peace and justice).



### ② Problem analysis/definition and solution development

- **Activities:** UNDP and KOICA special lectures, problem analysis and definition through design thinking, and brainstorming solutions linked to the SDGs.
- **Achievements:** 8 local issues identified, 4 creative solutions (MVP candidates) developed
- **Meaning:** Creating sustainable social innovation based on SDG 3 (health and well-being) and SDG 9 (innovation and infrastructure).



### ③ Youth and college student team solution verification

- **Activities:** MVP implementation and user testing in Hanoi, conducting in-depth interviews with vulnerable groups and local citizens.
- **Achievements:** Two of the four solutions have been validated for field use, demonstrating initial improvements in safety, mobility, and well-being.
- **Meaning:** Expanding Korea-Vietnam cooperation based on SDG 17 (Partnership) and strengthening peace, rehabilitation, and inclusiveness.

# 2025 SOCIAL INNOVATION & MAKER LIVING LAB EVENT



## 5th Korea-Japan Living Lab Forum

- **Topic:** Seeking to revitalize Korea-Japan living lab cooperation
- **Activities:** Sharing living lab approaches and problem-solving experiences through presentation sessions and panel discussions at universities and institutions from both countries.
- **Meaning:** To concretize a collaborative model that can contribute to solving social problems by utilizing university knowledge resources.



## 1st International War Victims Support Forum

- **Topic:** Support for recovery and technological innovation in war-torn areas
- **Activities:** Presentation on the status of war damage, workshops in technology, medicine, and welfare, and establishment of cooperative networks.
- **Meaning:** Presenting an international technological innovation model for war relief, laying the foundation for SDGs 3, 10, and 16.



## 2nd Global Innovation Conference

- **Topic:** Creating a Global Social Innovation Living Lab Ecosystem
- **Activities:** Presentation sessions, youth maker workshops, local problem-solving idea-thons, and demo days.
- **Meaning:** Implementing a maker-centered local x global innovation platform, presenting a regional-national convergence model.

## Transnational Living Lab

Establishing a transnational social innovation ecosystem that transforms local issues into global value through multi-layered collaboration across borders, generations, and sectors.

# TRANSNATIONAL LIVING LAB ECOSYSTEM

## Four Key Elements for Building a Transnational Social Innovation Ecosystem

"A transnational social innovation ecosystem is built on multi-layered governance, knowledge and data interoperability, capacity building focused on future generations, and a system for experimentation and diffusion across borders."

### 1) Multi-layered governance structure

A governance structure that allows stakeholders across countries, regions, and institutions to jointly participate in decision-making, resource allocation, and experimental design, beyond simple partnerships, is essential.

This enables "distributed agency," which is repeatedly emphasized in global social innovation.

- Mulgan, G. (2006). "The Process of Social Innovation." *Innovations*.
- UNDP (2019). *Scaling Social Innovation through Multi-Level Governance*.

### 2) Interoperability of knowledge and data

Transnational cooperation requires connecting different systems, cultures, and problem structures, so standardizing data, knowledge, and protocols into interoperable formats is crucial.

This improves the quality of co-creation and accelerates the speed of empirical diffusion.

- European Network of Living Labs (ENoLL, 2020). *Interoperability Framework for Cross-border Living Labs*.
- OECD (2021). *Knowledge Co-creation for Global Challenges*.

### 3) Building future generation-centered capabilities

A sustainable social innovation ecosystem must be designed to involve young people, students, and emerging researchers throughout the entire process of "planning, verification, and dissemination."

This is a key element in strengthening "next-generation innovation capital," which is emphasized in global innovation research.

- Westley, F. et al. (2014). *The Evolution of Social Innovation*.
- UNESCO (2020). *Youth as Drivers of Innovation for Sustainable Development*.

### 4) Inter-country experimentation and diffusion mechanisms

A 'pilot-test-adapt-diffusion' system must be linked across national borders so that one country's problem-solving experiments can be transferred to other countries.

At this time, a "localization-glocalization loop" that takes into account technological, institutional, and cultural suitability is essential.

- Howaldt, J. & Schwarz, M. (2017). *Social Innovation—Towards a Globally Actionable Concept*.
- EU Horizon (2022). *Cross-border Living Labs for Societal Resilience*.

# FUTURE NETWORK & VISION

## Participation of future generations

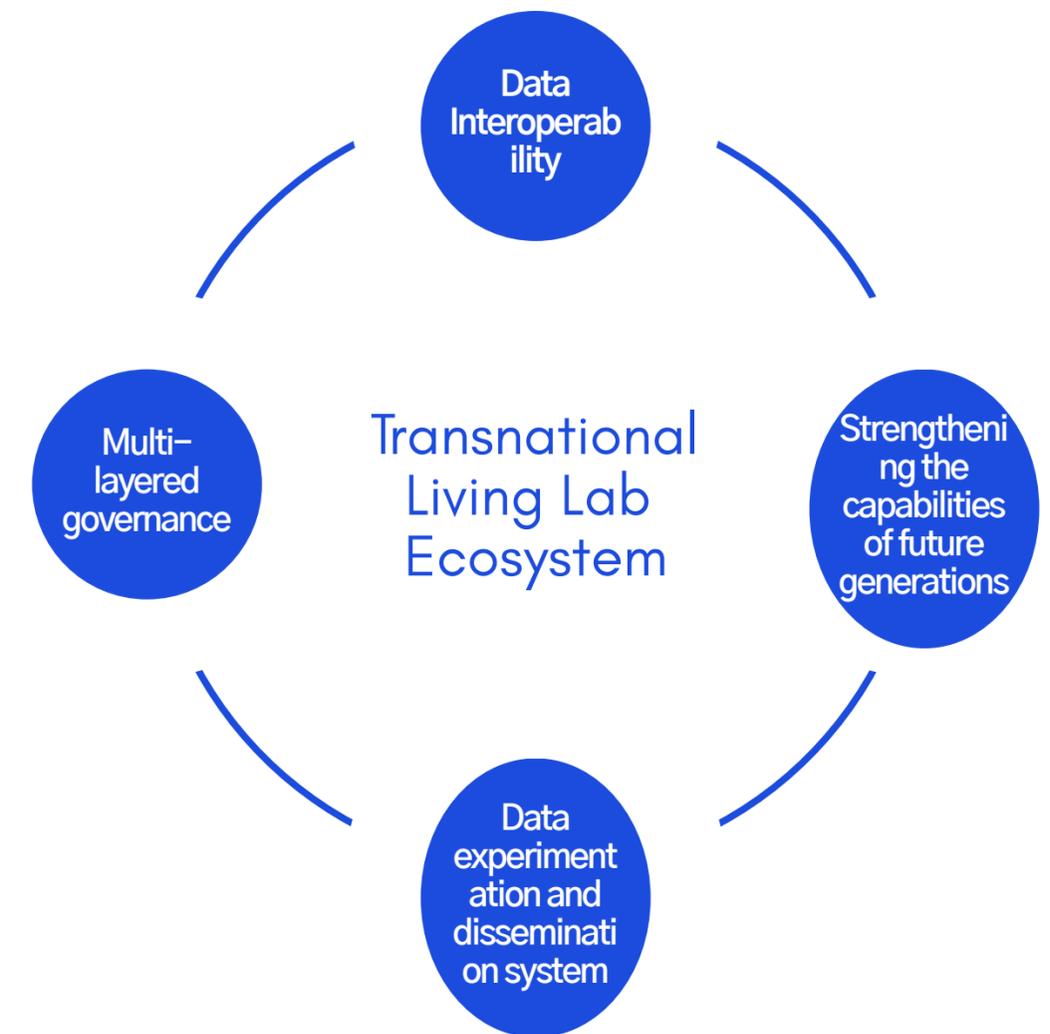
Youth and college students participate in the planning, implementation, and evaluation of living labs to develop sustainable innovation capabilities.

## Transnational Living Lab

Sharing problem-solving experiences from each country through online platforms and open data, expanding participation from diverse stakeholders.

## Maker Living Lab

An open-structure design that allows you to create a big social impact with minimal resources and propose the next project or engage in collaboration.



THANK YOU

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**“Crossing borders,  
creating a better  
future.”**