Technology and Innovation Conclave 2.0 : Transformative R&EI as a Policy Mechanism for AI-Enabled Climate Action

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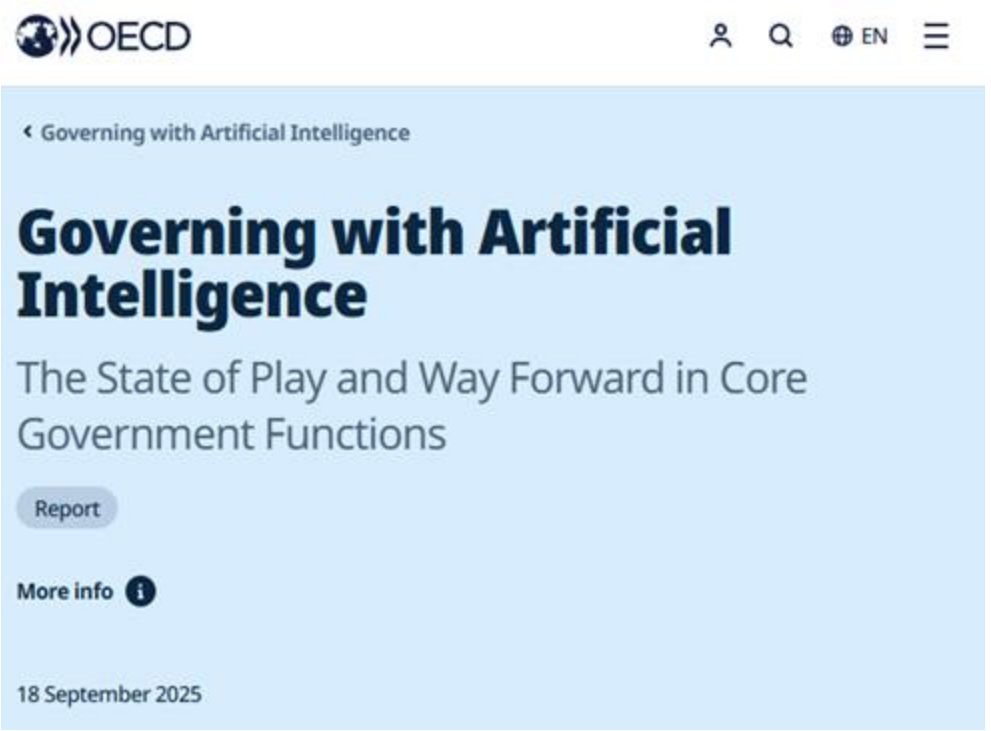
Beyond the Tech-Fix:
Addressing the Human-Institutional Gap

- AI has a potential for climate action and resilience, but many AI-driven climate initiatives may fail frequently.
  - The key limitation is not technological capacity, but human, institutional, and societal readiness.
  - Climate policies must therefore prioritize who understands, adopts, and governs AI-based solutions.



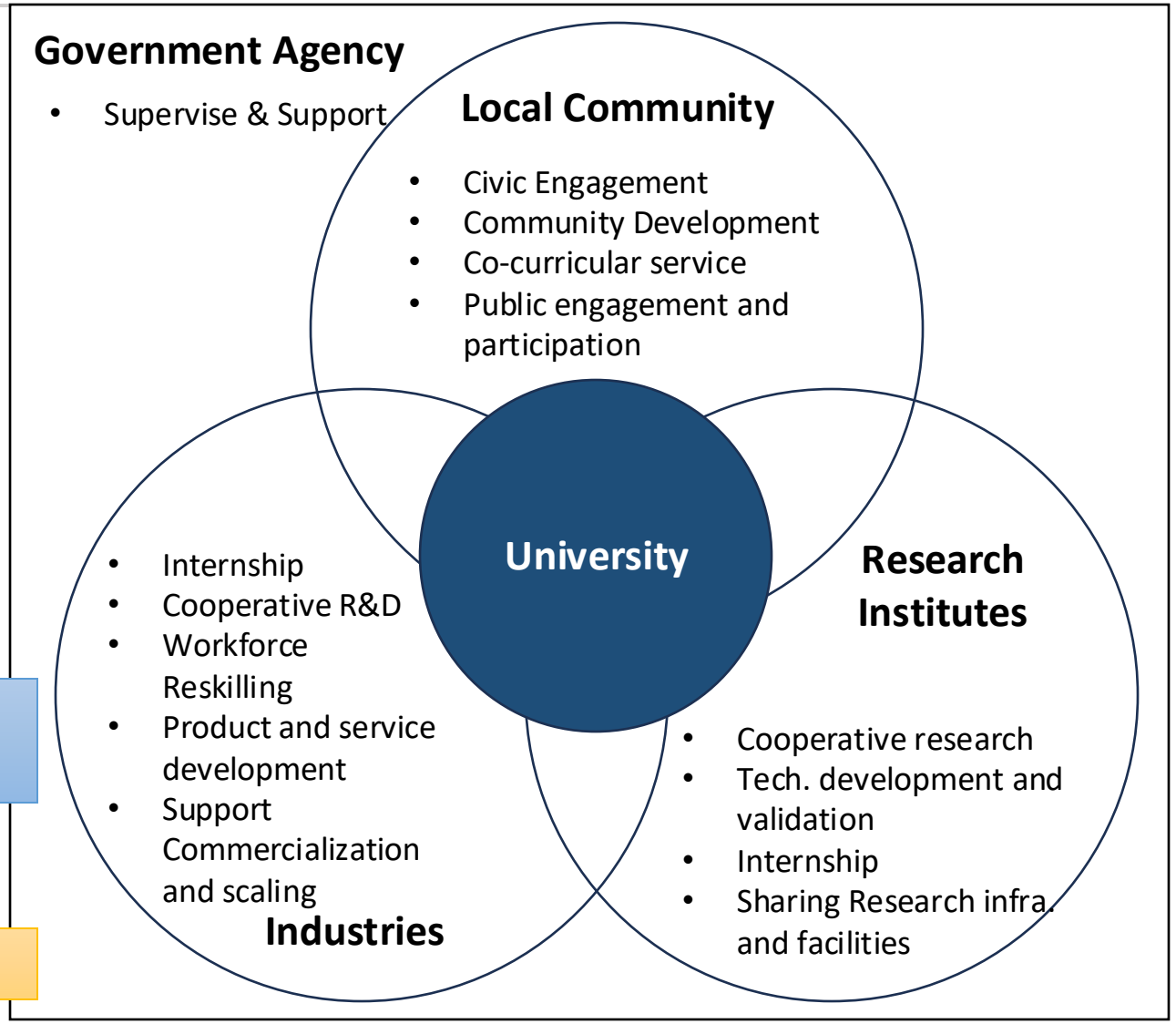
Universities as Institutional Anchors for Transformation

- Existing Functions of University
  - Serving as hubs for integrating research, specialized education, and local community needs
  - Strengthening collaborative synergy with government agencies and research institutes
  - Fulfilling a mandate for long-term community engagement and local capacity building

Ensure policy continuity and social embedding of AI technologies.

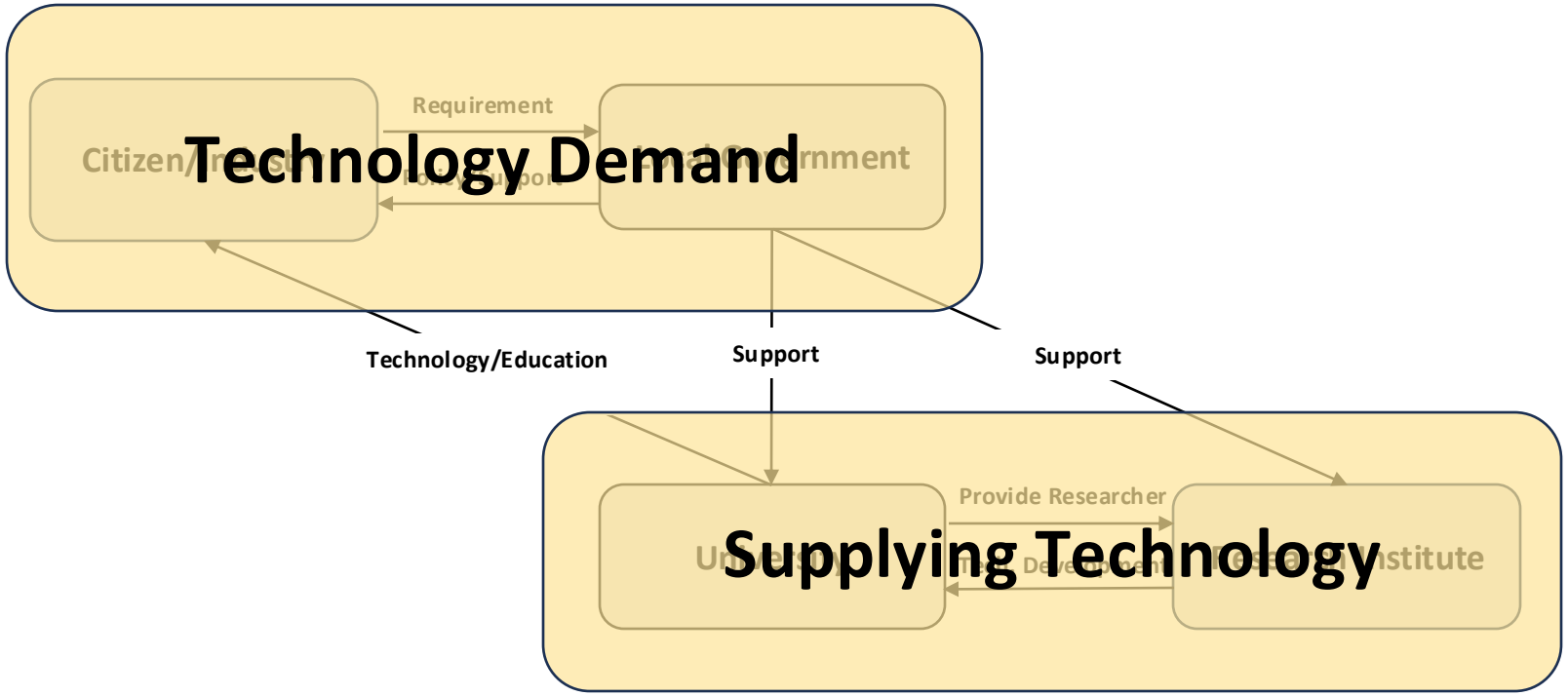
How?

AI based Climate Actions



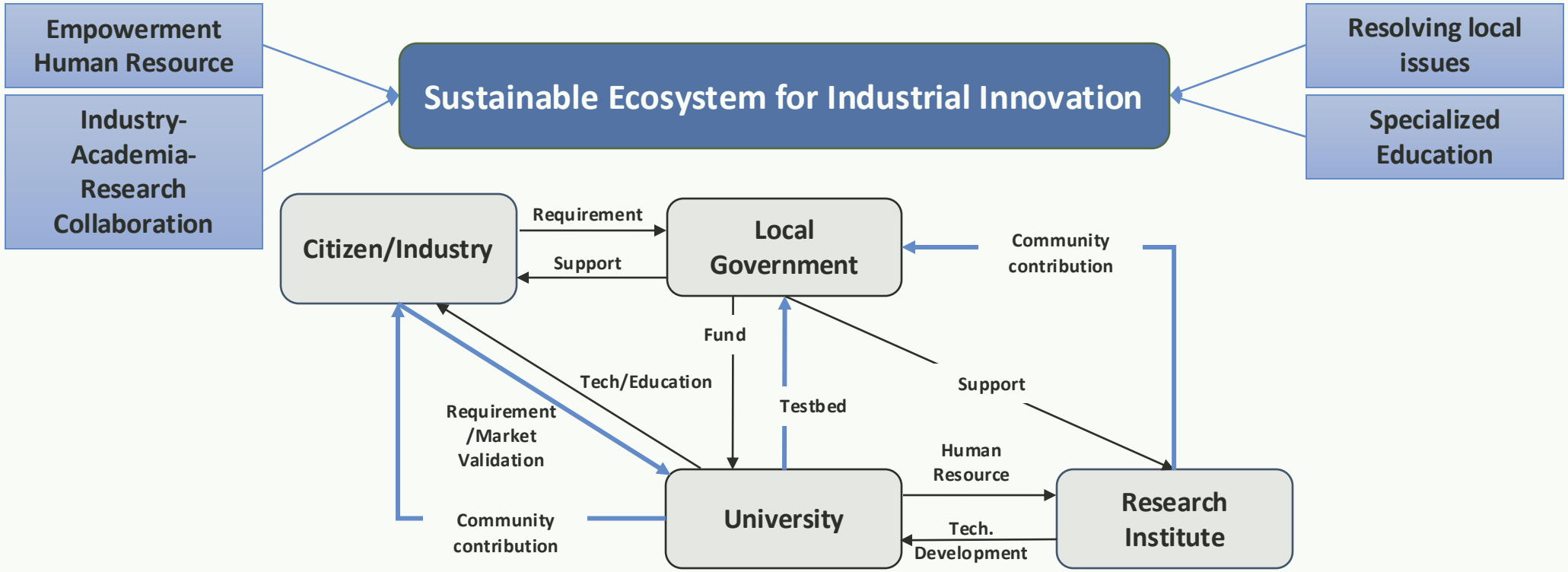
Transformative R&EI (1/2)

- **Technology demand and supply-driven dynamics**
  - Citizens/local businesses, local authorities, universities, and government-funded research institutes engage in limited interaction within their respective domains.
  - Passive relationships are established between each constituent



Transformative R&EI (2/2)

- **To develop a Sustainable Eco-system: Transformative Research & Education Innovation**
  - Both the supply and demand sides of innovation must be considered simultaneously, and inclusive application of science and technology is required.



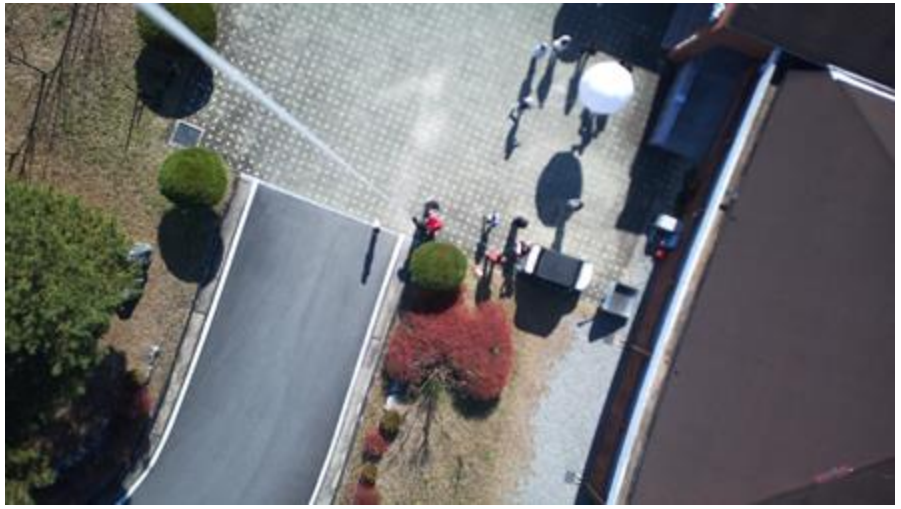
Transformative Research, Development and Innovation

Case Study: Empowerment Program Outline (1/4)

- **University as a Knowledge and Education Hub (Hanbat National University)**
  - Develops satellite systems and services
  - Developing environmental monitoring system using helium-balloon-based small satellites
- **Government Agency as a Policy Authority (The Office of Education of Kyungbuk Andong)**
  - Defines regional education directions and provides policy support
  - Identified the need for inclusive education but lacked science- and technology-based content
- **Public Research Institute as a Regional R&D Actor (KICT River Experiment Center)**
  - Government-funded research institute embedded in the region
  - Conducts joint validation research on satellite systems with the university, requiring local understanding and acceptance

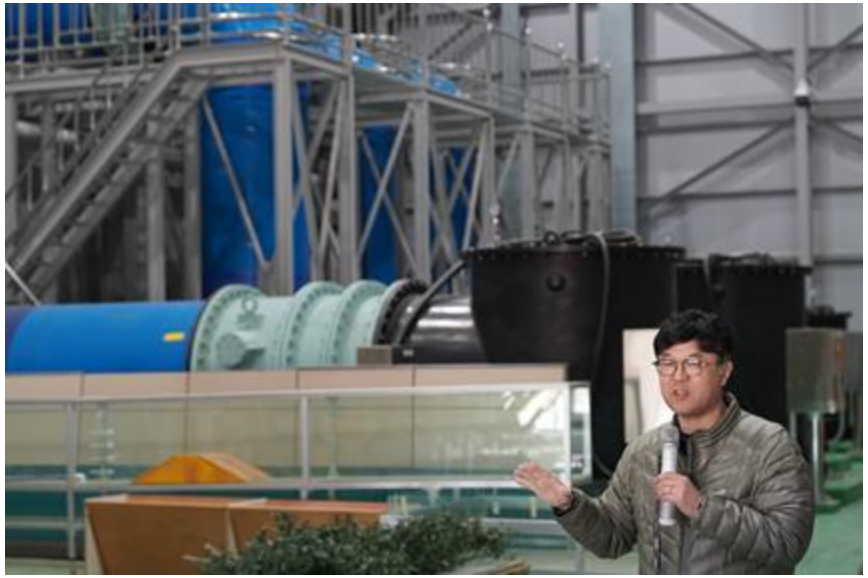
Case Study: Roles and Functions (2/4)

- **University: Content Developer and Program Operator**
  - Designs integrated education content for children of local community members
  - Enables students to build a satellite systems using Raspberry Pi through hands-on activities
  - Reuses student-built helium-balloon satellites for additional experimental validation and research



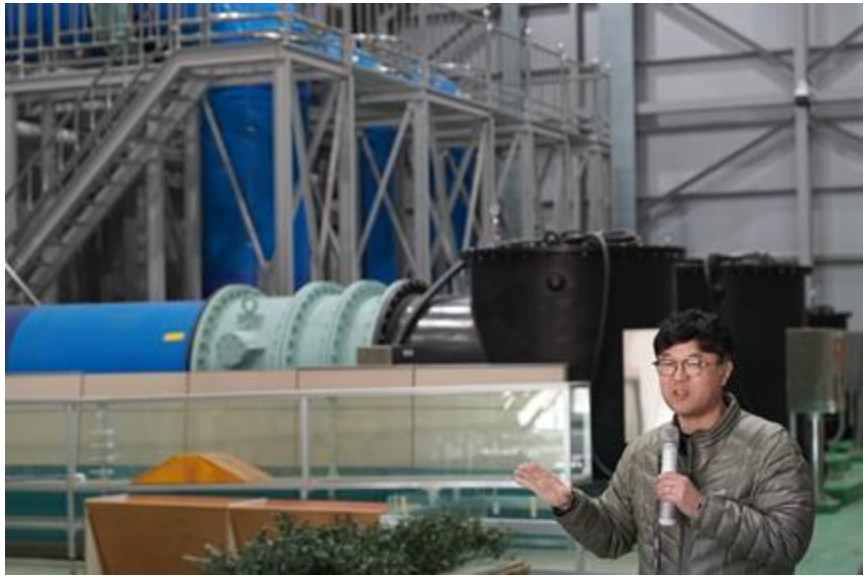
Case Study: Roles and Functions (3/4)

- **Government Agency: Policy Enabler and Coordinator**
  - Supports student recruitment and selection
  - Coordinates collaboration between schools, universities, and public research institutes
- **Public Research Institute: Infrastructure Provider and Validation Platform**
  - Opens research facilities to the local community
  - Supports real-world validation of satellite systems
  - Enhances community understanding to facilitate future living lab and field-based research



Case Study: Policy Significance and Institutional Impact (4/4)

- For Universities
  - Expands the role of universities from education providers to regional capacity-building institutions
  - Integrates education, research, and social contribution into a continuous R&EI framework
- For Government Agencies
  - Translates inclusive education policy goals into implementable science-based programs
  - Provides an evidence-based reference model for education and climate-related policies
- For Public Research Institutes
  - Strengthens social legitimacy and public trust in national R&D infrastructure
  - Secures social readiness for sustainable validation and experimental research



Summary

- The initiative was designed under strong university leadership, in close collaboration with government and public research institutes.
- Funding was provided through a Ministry of Education pilot scheme, structured around activity-based financing and dedicated personnel costs.
- Importantly, the initiative was institutionalized as a university-led regional contribution program, ensuring sustainability beyond a one-off project.