
HIGHER EDUCATION AND REGIONAL GROWTH: THE CASE OF JAPAN

Shin ARITA (University of Tokyo)

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[Plenary Session 2] A Virtuous cycle of University and Regional Growth

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SELF-INTRODUCTION

- A comparative sociologist studying education, labor market, and social stratification in East Asia
- Research interests in socially constructed aspects of socioeconomic inequalities

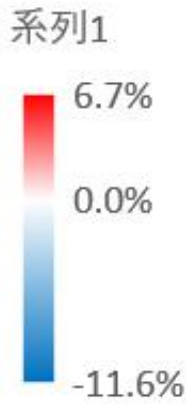
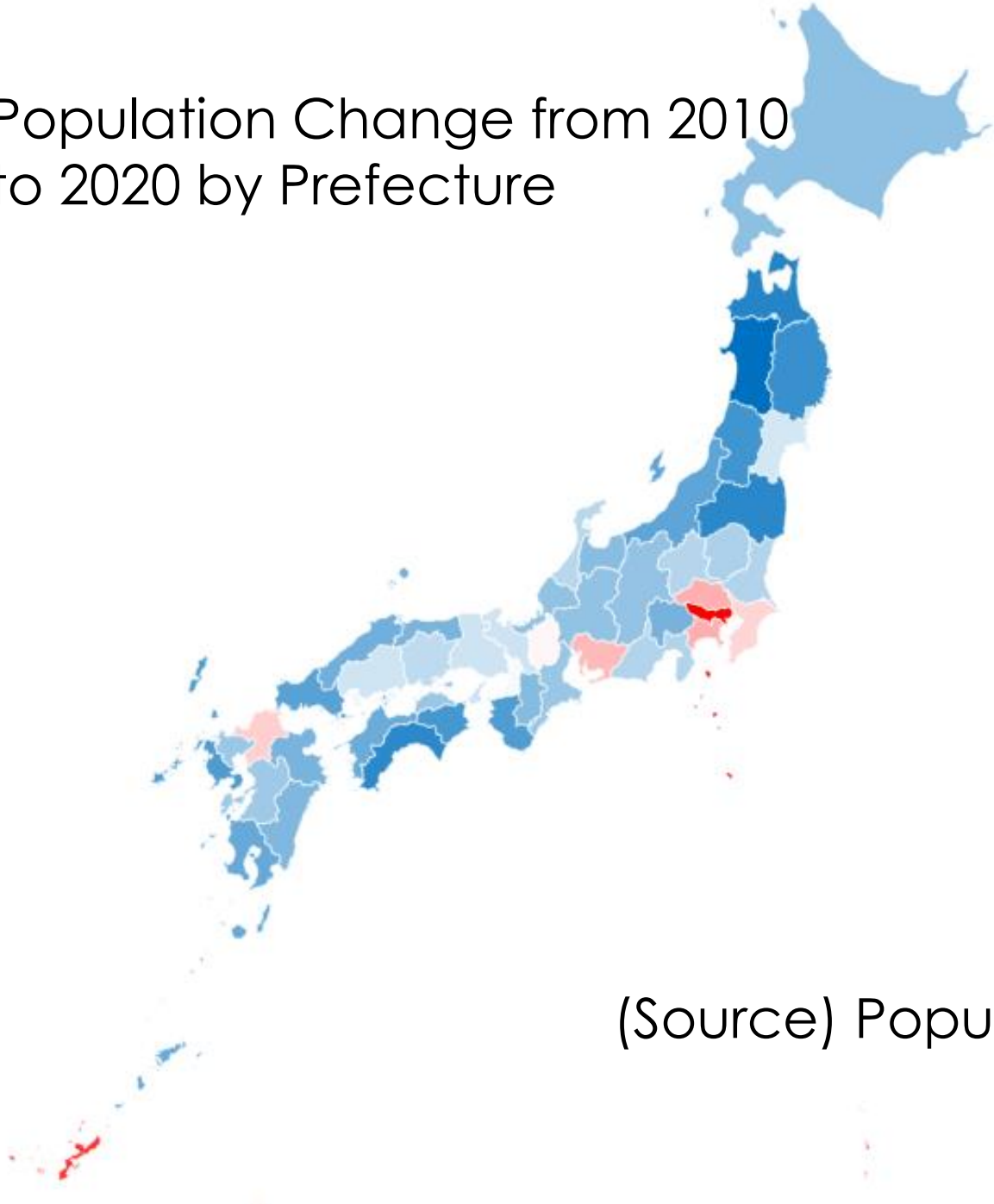
PURPOSE OF THIS PRESENTATION

- Explores the relationship between higher education and regional growth based on the case of Japan
- Introduces the attempts of Japanese universities to contribute to regional growth through human resource development focusing on the similarities and differences in background conditions
- Draws implications from the case of Japan by emphasizing the importance of social circumstances and institutions that may generate trust in local universities' outputs for the success of such attempts.

BACKGROUND CONDITIONS: SIMILARITIES WITH KOREA

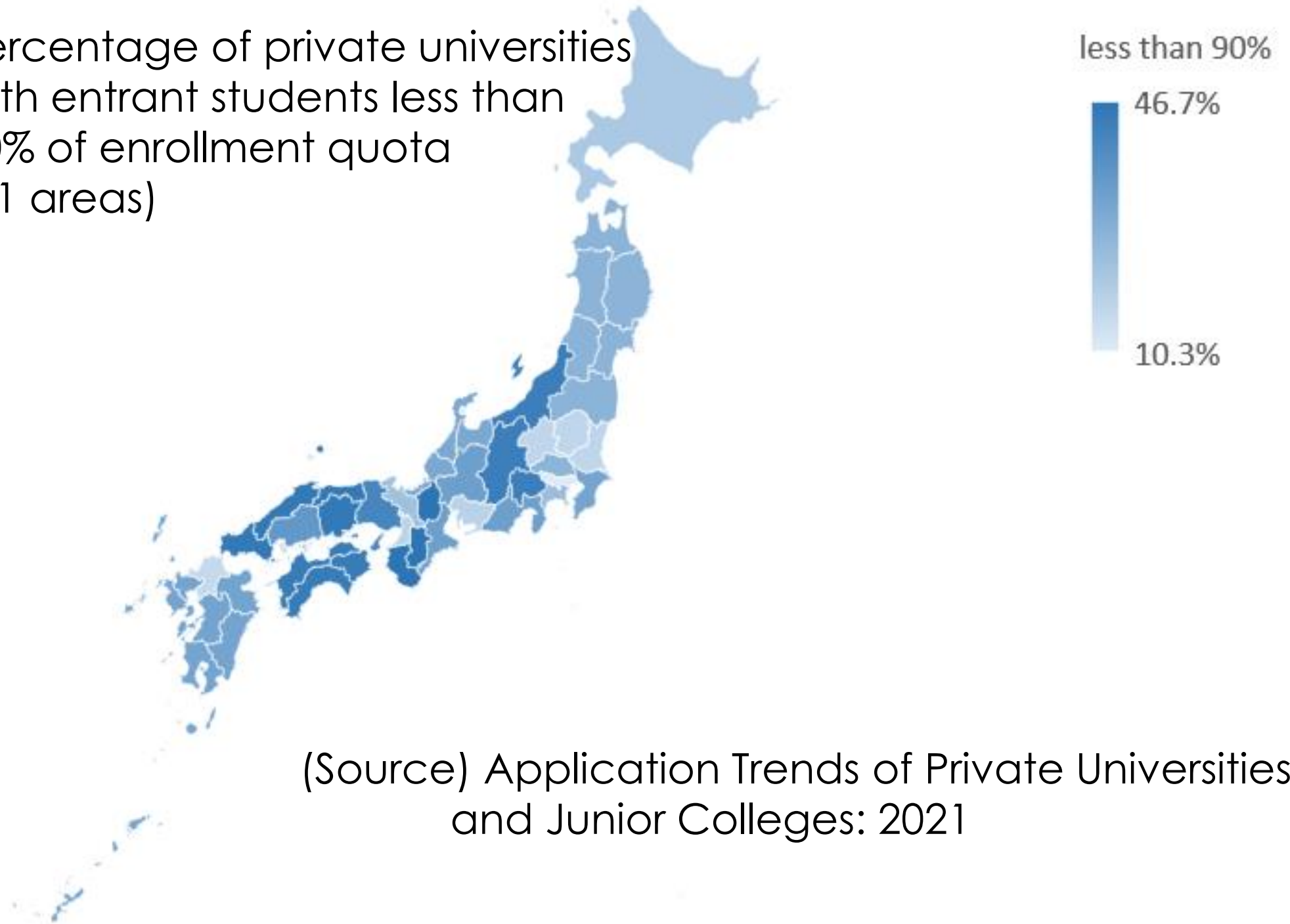
- Rapidly declining birthrate and aging population
- Declining population in local areas
 - Concentration in metropolitan areas is not as severe as in Korea.
- Declining entrant students in higher education

Population Change from 2010 to 2020 by Prefecture



(Source) Population Census 2010, 2020

Percentage of private universities with entrant students less than 90% of enrollment quota (21 areas)



BACKGROUND CONDITIONS: DIFFERENCES WITH KOREA (1)

- Prestige and status system of universities in Japan
 - Importance of the difference between public and private universities, in addition to the difference between metropolitan and local universities
 - On average, public and national universities are more prestigious than private universities in local areas.
 - Several local governments have publicized local private universities to attract more students.
 - However, not all local private universities are subject to publicization; many of them, particularly private junior colleges, face difficulties fulfilling their enrollment quota.

BACKGROUND CONDITIONS: DIFFERENCES WITH KOREA (2)

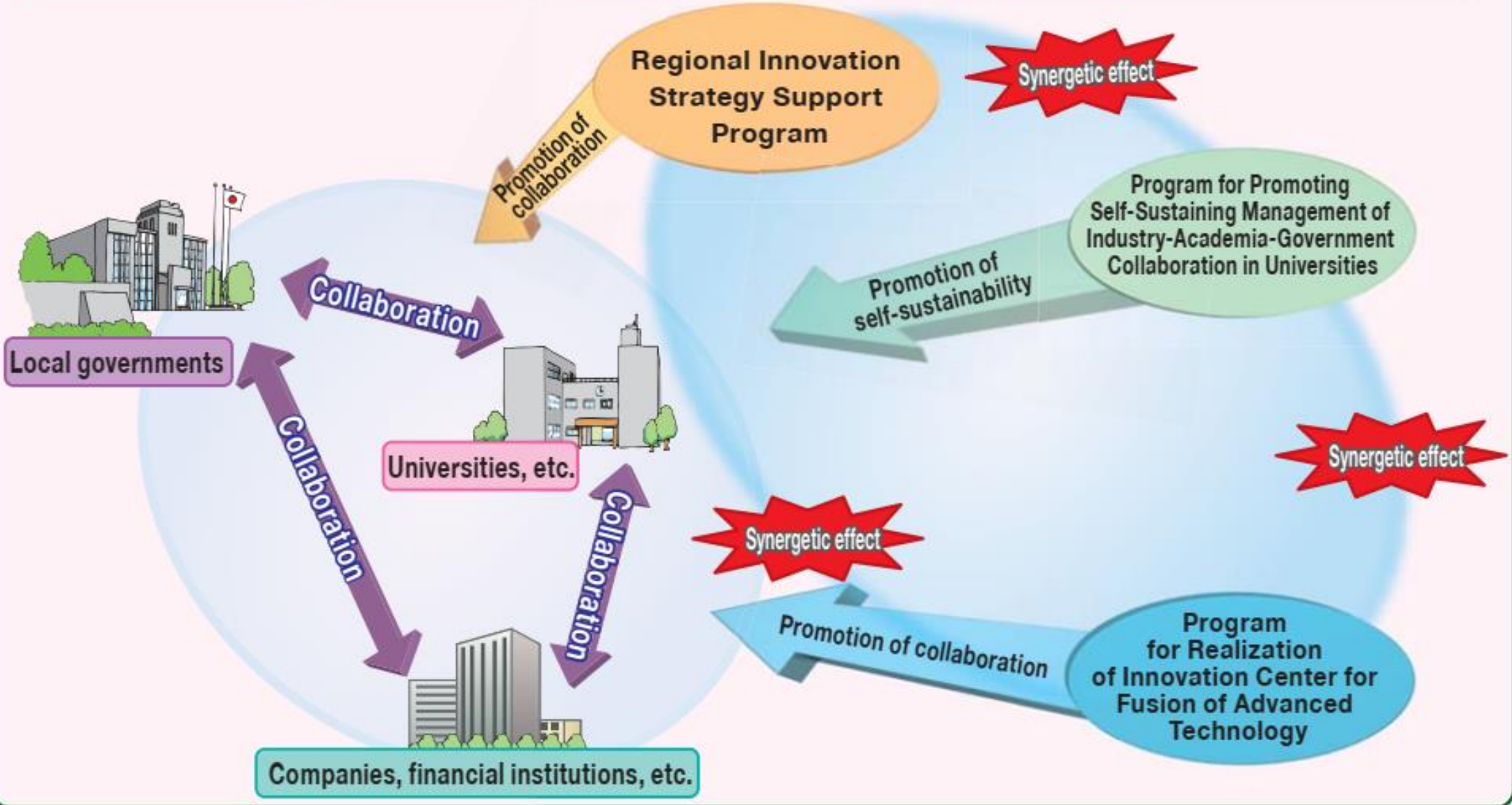
- The relatively low trust of Japanese (large) firms in the human resource development function of higher education, particularly in fields other than technology
 - Japanese firms have eagerly developed the occupational skills of employees by themselves through intense on- and off-the-job training under long-term stable employment. (e.g., firm-specific general skills through job rotation)
 - Japanese firms have used the educational background of potential employees in hiring not to choose those with high occupational skills but to choose those with high potential to be well-trained after being hired.
- Expectations of large Japanese firms toward universities
 - Screening function >> Human capital development function

POLICIES FOR THE CREATION OF REGIONAL INNOVATIONS SUPPORTED BY LOCAL UNIVERSITIES

https://www.mext.go.jp/component/english/_icsFiles/afieldfile/2011/11/18/1313336_2.pdf

- Regional Innovation Strategy Support Program
 - Provides support to the regional innovation strategy promoting regions selected jointly by relevant ministries focusing on the formation of intellectual assets and the human resource development
- Program for Promoting Self-Sustaining Management of Industry-Academia-Government Collaboration in Universities
 - Provides support to the establishment of systems for industry-academia-government collaboration addressed by individual universities and other organizations
- Creation of Innovation Centers for Advanced Interdisciplinary Research

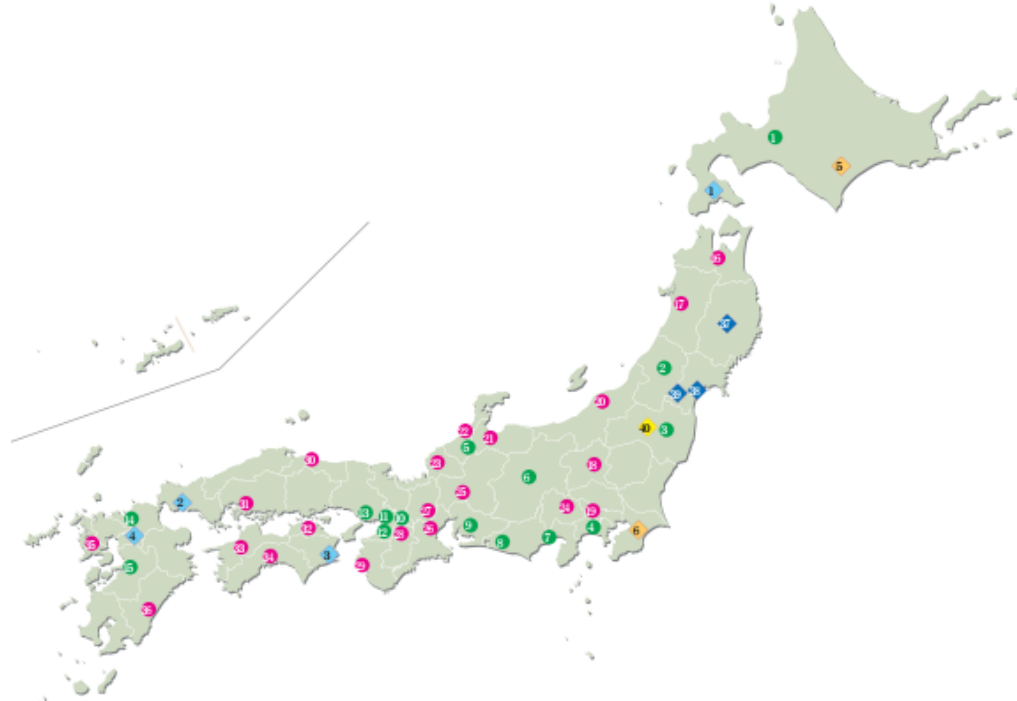
Establishment of Regional Innovation Systems through Effective Industry-Academia-Government Collaboration



Regions Receiving Support Through the Regional Innovation Strategy Support Program

Currently, 15 regions are designated as regions focused on strengthening international competitiveness, and 21 regions are selected as regions focused on advancing research functions/industrial concentration. Among them, the Program for Fostering Regional Innovation provides support for 29 regions where MEXT's assistance is expected to greatly contribute to realizing their innovation strategies.

In fiscal 2012, "regional innovation strategy promoting regions (Great East Japan Earthquake recovery support initiative)" were designated to promote actualization of proactive and outstanding regional ideas toward the creation of regional innovations in disaster-stricken areas. From the target areas including Aomori, Iwate, Miyagi, Fukushima, and Ibaraki Prefectures, MEXT chose four regions where such support was anticipated to contribute to restoration and recovery from the Great East Japan Earthquake and realization of regional innovation strategies, and provides support for these regions.



In the regions that have been addressed since fiscal 2002, the formation of clusters for continual creation of innovations with the support of the Knowledge Cluster Initiative initiated by MEXT will continue to receive support until the end of the projects to continue the Regional Innovation Strategy Support Program.

- Region focused on strengthening international competitiveness
- Region focused on advancement research functions/industrial concentration
- ◆ Region focused on strengthening international competitiveness (Great East Japan Earthquake recovery support initiative)
- Region focused on advancement research functions/industrial concentration (Great East Japan Earthquake recovery support initiative)
- ★ Indicates regions that are implementing Regional Innovation Strategy Support Program
- ◆ Global Type..... Aims to form a world-class cluster that is internationally competitive.
- ◆ City Area Type..... Aims to form a cluster that may be small in scale but that maximizes local characteristics.

	Area names	Theme of regional visions
Regions focused on strengthening international competitiveness	1 Hokkaido University Research & Business Park	Development of "health care innovations", such as the formation of an "integrated center for health science and medical technology" focusing on the functionalities of food
	2 Yamagata Organic Electronics Technology through industry-academia-government collaboration - Establishment of Yamagata model's regional innovates system	Commercialization of Organic Electronics Technology through industry-academia-government collaboration
	3 Fukushima Next-Generation Medical Industry Cluster	Establishing "Fukushima Next-Generation Medical Industry Cluster" as a world-leading hub for design and production of medical devices through Fukushima Model, an integrated industry-government-orientation collaboration
	4 International Life Innovation Center of Kanagawa	Establishment of a center for industrialization of innovative pharmaceutical products and medical equipments as well as creation of healthcare-related industries in the life science field
	5 Hokuriku Life Science Cluster for opening up healthy aging society with fewer children	International Innovation cluster of life science for implementing a healthy society where children can develop given talents and senior people enjoy their lives
	6 Nagano Super Module Supply Hub for Next-Generation Industries (the greater Nagano Prefecture)	Creation of synergy-creating innovators driven dually by research-seeds-oriented and market-needs-oriented industry-academia-government collaboration systems
	7 Mt. Fuji Pharma Valley Strategy Promotion Region	Establishment of a medical and healthcare industry cluster based on the development of innovative cancer treatment technology and provision of support for local companies entering the medical and healthcare industry
	8 Hamamatsu/Higashi-Mikawa Life Photonics Innovation	Promoting creation of core industry in the technology fields of next-generation transport equipment, neo-agriculture, healthcare, photonics, and energy solutions by means of leading edge photonics and electronics technologies
	9 Aichi "Knowledge Hub" Nanotechnology Innovation Strategy Promotion Region	Creation of nanotechnology innovations through the development of highly functional parts and devices utilizing nano-characterization and analysis tools
	10 Keihanna Science City Health Care Development Region	Creation of innovations for achieving healthy and long life through the development of health care systems with smart bio-sensitization and health checkups
	11 Regional Scientific Innovation Hub, KYOTO	Sustainable innovation of science and technology integrating state-of-the-art knowledge and original technologies with the world's highest level
	12 Kansai Life Innovation Strategy Promoting Region	Contribution to realizing a life innovation and health-healthy society based on fundamental research capabilities and industrial activities concentrated in the Kansai area
	13 Hyogo Environment & Energy Innovation Cluster Strategy Promotion Region	Formation of an environment and energy innovation center and creation of new industries for realization of safe, secure and economical urban infrastructure
	14 Fukuoka Next-Generation Social System Creation Hub	Promotion of the progression of regional new growth industries by implementing social-needs-directed development
	15 Kumamoto Area on Organic electronics collaboration	Creation of innovations centering around Organic thin-film technology, back of organic electronics industries, through expansive industry-academia-government collaboration
Regions focused on advancement of research function/industrial agglomeration	16 Aomori Green & Life Synergy Innovation Area	Formation and expansion of the Tsugaru Zone Health & Beauty Industry Cluster based on proteoglycan-related biomaterials
	17 Akita Revitalization Innovation Prompting Region	Revitalization of the regional economy and the realization of a safe and secure society through the creation of Green & Life Innovations that capitalize on Akita's outstanding local characteristics
	18 Gunma Next-Generation Environmental & Medical Innovation Development Region	Formation of a research and development site for the fields of "environment & energy" and "advanced medical technology" by gathering superb manufacturing resources in the Gunma area
	19 Greater Tokyo Smart QOL (Quality of Life) Technology Development Region	Continuous creation and commercialization of SOOL technologies for the realization of energy and resource conservation, safety/security, and comfortable environments by resolving urban issues
	20 Niigata Sky Project Innovation Creation Area	Establishment of new aircraft parts manufacturing systems and creation of new aircraft-related industries by utilizing advanced metal processing technology and small-medium-sized companies concentrated in the region
	21 Toyama Nanotech Connect Core Competence Area	Formation of a core competence area for innovative manufacturing based on the integration of nanotechnology and core technologies
	22 Ishikawa-Style Environmental Value Creation Industry Development Area	Promoter of the development of technologies and products with high added value from an environmental perspective toward the creation of "Ishikawa-Style Environmental Value Creation Industry"
	23 Fukui Smart Energy Device Development Region	Establishment of the Fukui-Style Innovation System for the creation of energy/device industries relating to the environment and safety
	24 Yamanashi Next-Generation Environmental and Health Care Industry Development Area	Creation of next-generation environmental and healthcare industry innovators by utilizing accumulated environmental & energy and life science technologies
	25 Gifu Technology Innovation Promotion Region	Diversification and advancement of regional industries which have high-level manufacturing technologies and know-how, by shifting them to the advanced sector such as aerospace and next generation auto industries
	26 Mie Energy Innovation Creation Region	Provision of new business opportunities for existing industries in the prefecture and creation of new industries with "All-solid Polymer Lithium Secondary Battery" at the core
	27 Circum-Lake Biwa Environmental Industry Development Area	Formation of environmental industry innovation through the creation of new industries in the new energy and energy conservation fields, and water environment business
	28 Nara Functional Plants Application Region	Formation of an agricultural/commercial/industrial cluster that takes advantage of Nara Prefecture's traditional and functional plant-derived materials produced using plant function utilizing technologies
	29 Wakayama Health Care Industry Innovation Promotion Region Utilizing Local Agricultural Products	Enhancement of added values of local fruits and other agricultural products with the cooperation of the medical and agricultural sectors in order to create health care industry that spearheads regional innovation
	30 Tohoku Next-Generation Drug Discovery & Healthcare Industry Creation Region	Challenge of forming a base for linking life science needs such as chromosome engineering technology to next-generation drug discovery and healthcare industries
	31 Hiroshima Medical Engineering Collaboration MONODUKURI Innovation Promotion Region	Promotion of innovation through the manufacture of advanced-function products, such as next-generation assistive (cooperating human medical engineering, with the cooperation of the medical and engineering sectors, as well as development of necessary human resources
	32 Kagawa Life-Science Products Development Region	Boosting competitiveness and creating new industries in the life-science products market by fusing the outstanding technologies developed in Kagawa in the fields of medical, engineering, and information sciences
	33 Ehime Fishery Innovation Creation Region	Creation of a self-sustainable fishery cluster based on systems that integrate Ehime-originated advanced aquaculture technology with new logistics
	34 Kochi Green Innovation Promotion Region	Establishment of sustainable energy communities by maximizing Kochi Prefecture's excellent environmental characteristics and local resources
35 Nagasaki Health, Medical and Welfare Systems Development Region	Development of sustainable and constructive "health, medical and welfare" systems by effectively combining R&D and human resource development	
36 Miyazaki Food Bio Innovation Area	The promotion of food industry and recovery from the food-and-mouth epidemic for the stimulation of the economy	
Global Type	◆ Iwate Center of Development for the Novel Human and Eco-friendly Vehicles	Initiate the Center of Excellence for the development of next-generation vehicles through further advancing technologies, such as metal mold casting, complex devices, information and communication, etc., along with cultivating professional engineers
	◆ Knowledge based Medical Device Cluster / Miyagi Area	Creation of medical device innovations and establishment of an international innovation base through industry-academia-government-finance collaborative systems
	◆ Next-Generation Automobile-Miyagi Area	Challenge of realizing and strengthening the regional business infrastructure through the development of human activities and utilization of research results with the aim of forming a powerful automobile industry
	◆ Renewable Energy Pioneer Fukushima Innovation Strategy Promotion Region	Concentration of industries and establishment of a sustainable recycling-oriented society toward the realization of "Renewable Energy Pioneer Fukushima"
City Area Type	◆ Hakodate Region (from 2009 to 2013)	Formation of a globally expansive marine industry cluster based on the local characteristics of the area surrounded by the sea
	◆ Yamaguchi Region (from 2009 to 2013)	Establishment of a world-leading center (Green Valley) for industry and R&D relating to green materials, natural resources and energy saving materials
	◆ Tokushima Region (from 2009 to 2013)	Establishment of a world-class clinical and research center for diabetes
	◆ Kurume Region (from 2009 to 2013)	Establishment of the world's most advanced medical, research, and development hub focused on cancer precise vaccine therapy to attract companies, researchers, and students to the area
	◆ Tokachi Area (from 2009 to 2013)	To establish "Ag-Info Cluster" through enterprises based on cutting-edge technologies on food functionality and safety
	◆ Kazusa/Chiba Area (from 2009 to 2013)	Bridging the gap between basic researches and clinical/industrial applications for treatment of immunological and allergic diseases and for the creation of new industries

CASES OF CONTRIBUTION TO REGIONAL GROWTH

1. “Plan to produce 100 presidents with Ph.D. in local firms” by Mie University
2. “Kyoto Alliance for Local Public Human Resource Development”
3. Collaboration of the University of Tokyo with local communities in the Sanriku coastal area, Iwate

CASE OF MIE UNIVERSITY (1)

- A national university in Mie prefecture located 60km southwest of Nagoya city
- Established Graduate School of Regional Innovation Studies in 2009
 - Backgrounds: Shortage of human resources, management strategies, and R&D capacity for innovations in local businesses (particularly small firms and primary industries)
 - Specializes in human resource and technology development in collaboration with local industry and local government
 - Attempts to induce innovations in the region by removing obstacles to the growth of local businesses and primary industry

Norihiro Nishimura, "Framework and Human Resource Development for Regional Innovation in the Mie Model"

CASE OF MIE UNIVERSITY (2)

- “Plan to produce 100 presidents with Ph.D. in local firms” by Professor Norihiro Nishimura
 - Provides opportunities for management personnel in local firms to cultivate the ability to develop managerial strategies
 - “The goal of innovations in local areas is the aggregation of small-scale innovations which can occur in the interaction with others and substantially change the society.”



Ureshino Agri CO., LTD. <https://ureshinoagri.com/about/>

Indoor tomato firm utilizing the residual heat from oil refineries for heating

KYOTO ALLIANCE FOR LOCAL PUBLIC HUMAN RESOURCE DEVELOPMENT (1)

- “Consortium for Local Public Human Resources Development” established in 2009
 - Aims innovations in the region through cultivating “local public human resources” who can coordinate local public activities across sectors
 - An organization of universities in Kyoto collaborating with local governments, NPOs, and economic organizations in Kyoto



<http://www.colpu.org/colpu-info.html#2>

KYOTO ALLIANCE FOR LOCAL PUBLIC HUMAN RESOURCE DEVELOPMENT (2)

- “Certificated Manager of Public Policy”
 - A qualification awarded to those who have completed an educational program accredited by the consortium (including field experience)
 - Guarantees the ability to lead organizations and projects for public activities in the region
 - Correspondence with the European Qualifications Framework

COLLABORATION OF UNIV. OF TOKYO WITH LOCAL COMMUNITIES IN THE SANRIKU AREA

- “A School for Marine Sciences and Local Hopes in the Sanriku Coastal Area”
- The joint project by the Atmosphere and Ocean Research Institute and the Institute of Social Science, University of Tokyo
- Regional collaboration project by natural and social sciences to rebuild the regional identity of the Sanriku area and cultivate human resources to foster hope in the region based on the long-term contribution to the community.



DISCUSSION

- Strategies of the universities for the effective contribution to regional growth through human resource development
 1. Targeting the management personnel in small firms in the region
 2. Visualization of the output by awarding the qualification
 3. Based on the long-term collaboration with local communities

CONCLUSION

- Universities' attempts to contribute to regional growth in Japan have been affected by the background conditions.
- Admitting that local universities have significant potential to bring growth to the region, strategies to enhance people's trust in their human resource development function will help to realize their potential under the background conditions of each society.