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THE ROLE OF UNIVERSITIES IN ACTIVATING INNOVATION CLUSTERS IN JAPAN

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In modern conditions, successful competition with leading participants of the world market is unthinkable without the creation and constant improvement of a national innovation system, where the state should act as the main participant and coordinator [1-3]. Specific successes in implementing a national innovation system can vary significantly depending on the traditions of creation and the financial state of the economy.

Japanese innovation policy developed gradually and has deep roots. In the early 70s of the last century, when developing a long-term development perspective, the question arose: in what directions should the economy and industry develop? In Japan, despite the active work of the government in developing strategies and programs for innovative development, most of the applied scientific and technical developments are still carried out in the laboratories of large industrial corporations and remain within the framework of these same corporations, without widespread transfer to potential users on the scale of the relevant industry. State scientific research is predominantly fundamental in nature, the degree of its implementation in practice remains insufficient. The necessary coordination is not always observed between state fundamental scientific research and applied research in the private sector. We can highlight several components of state innovation policy that are usually used to develop a national innovation system: (1) the creation of special organizations and bodies responsible for defining and implementing

innovation policy; (2) active interaction with other countries in terms of technology exchange; (3) the creation of innovation clusters; (4) the implementation of major innovations in large transnational corporations; (5) significant direct budget financing of R&D in various forms; (6) the increasing introduction of tax preferences for small firms that participate in the innovation process.

In 1999, the Industrial Revitalization Act was passed to reduce barriers to cooperation between universities and private enterprises. It allowed companies to acquire intellectual property, including rights to the results of publicly funded research. In 2000, the Industrial Technology Promotion Act was passed, allowing national universities to use their funds free of charge, including to create commercial products. Since 2001, the Japanese government has played a central role in promoting industrial cluster projects based on the status of existing clusters and policy needs. About 20 industrial cluster projects have been launched, working in cooperation with local governments to form a network that serves as a basis for industrial clusters.

In 2000, the Industrial Technology Strengthening Act was passed; technology licensing organizations were allowed to use national university facilities free of charge. In 2001, the Hiranuma 1,000 University Plan was launched; the Ministry of Economy, Trade and Industry launched the Industrial Clusters initiative, and the Ministry of Education, Culture, Sports, Science and Technology of Japan launched the Knowledge Cluster Initiative and the Eco-City Program. Two national programs played a fundamental role in the clustering of the national economy of Japan: the Industrial Cluster Program of the Ministry of Economy, Trade and Industry and the Knowledge Clusters of the Ministry of Education, Culture, Sports, Science and Technology of Japan. The Industrial Cluster Program of the Ministry of Economy, Trade and Industry, Industrial Cluster, introduced in 2001, was designed to promote interaction between economic entities within a regional agglomeration that have complementary technological capabilities and needs. The drive for this programme was driven by a number of factors, including the experience of low-tech SME cluster policies in manufacturing, and attempts to improve the linkages between industry and research.

In 2004, the role of national universities changed significantly when they became independent agencies of the government. Previously, national universities did not have independent corporate status and therefore could not serve as a patent agency or manage intellectual property. After the reform, universities were given the opportunity to own intellectual property, and private companies were given the right to negotiate directly with universities on patents and license fees, which stimulated the growth of licensing offices

at universities. The Corporation for Relations with Commercial Enterprises was established on the basis of the University of Tokyo, whose functions include, among other things, intellectual property management. The corporation ensures joint scientific research with commercial organizations, participates in marketing activities for the licensing of scientific research.

The promotion of clusters in Japan has emerged as an important and visible policy aimed at strengthening regional innovation and competitiveness. Central government ministries, local governments and other groups began to apply cluster models throughout Japan [4]. Government target programs played an important role in the formation of economic clusters in Japan. The Knowledge Cluster initiative of the Japanese Ministry of Education, Culture, Sports, Science and Technology was designed to enhance collaboration between research idea generators and industry. Knowledge clusters were organized by a local initiative around universities and other public research institutions, as well as companies. The goals of the program were to reform and modernize the R&D system in regions, improve the flow of research, bring together key players, and provide seed funding for joint activities. A total of 18 regions were allocated for funding.

Intellectual clusters, unlike industrial clusters, operated in a limited geographic area, at the level of individual prefectures or municipalities. Intellectual clusters were subordinated to the solution of a narrow and specific task related to the activation of scientific and technical cooperation between universities and enterprises. In terms of the cost-benefit ratio, cluster policy was recognized as insufficiently effective for expanding cooperation between scientific and industrial organizations. Most cluster policy measures had regional specifics, which means that they had to be implemented not by national, but by regional governments. The creation of business networks with developed feedback (ecosystems) gained popularity, which began to be considered the most effective method of innovation policy [5]. By 2021, when the sixth Basic Plan of Scientific and Technical Activities was adopted, only three remained out of the variety of cluster, network and scientific and technical support measures, namely: measures to form regional innovation systems, a program to assist the creation of regional research complexes and subsidies for the interaction of local universities with industrial enterprises. In addition to developing domestic innovation and industrial clusters, Japan is also expanding international cooperation in this area. The creation of regional clusters requires not only R&D through cooperation between universities and industry, but also such diverse activities as smoothing the path of financing, supporting the creation of

new businesses, improving the market environment and building joint networks. Therefore, the main goal of the economic cluster development program for the period 2011–2020 was to implement strategic initiatives and long-term programs on a community-wide scale. Most Japanese clusters appear to have international activities, sometimes in the form of international cluster cooperation and often with Europe.

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