


TECHNOLOGY PARKS AS A PUBLIC POLICY STRATEGY IN THE PROMOTION OF REGIONAL DEVELOPMENT IN PARANÁ

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ABSTRACT

The debate on regional development policies in recent decades has been marked by a growing concern with the incorporation of innovation as the main driver of regional development. In view of this, the establishment of innovative environments such as technology parks is an important strategy for boosting and stimulating the economic and social development of cities and regions. In this context, this article aimed to analyze the implementation of the State Policy of Science, Technology and Innovation of Paraná as an instrument to induce local and regional development with the premise of encouraging the creation of technology parks. The methodology adopted in this study was based on bibliographic research and documentary survey. The results showed that the State System of Technology Parks (SEPARTEC) as an articulating and encouraging instrument of the various actors of science and technology and innovation in Paraná, responsible for proposing policies and creating a favorable environment for the development of innovation in the State, accredited 18 initiatives of Science and Technology Parks in Paraná in the most varied stages of maturity, in all regions of the state. With the objective of promoting an innovative culture, these parks encouraged the emergence of startups, incubators, accelerators and coworking, stimulating competitiveness and increased productivity of companies and institutions whose activities are based on research, knowledge and technological innovation, boosting local and regional development, through the attraction of investments, innovative companies and job creation.

Keywords: Innovation. Politics. Development.

INTRODUCTION

The emphasis given to innovation as an agent that promotes economic development has been at the center of discussions both in academia and in the market and in governments. Varied environments can be considered as places that promote the generation of knowledge and technology for innovation, with distinct and complementary roles in the process, such as companies, universities, research centers, development agencies, business incubators, technology parks, among others (HOFFMANN *et al.*, 2010)

According to Cario et al (2017), an innovative environment is constituted by a set of actors who focus on technical training, which stimulates innovation in its broad sense as a product, organizational process, new markets, among others. It can be composed of a network of institutions from the public and private sectors, with the aim of promoting local and regional development.

Thus, these targeted and aggregated efforts in specific locations are classified as innovation environments. Technology parks have been standing out as special environments for innovation, since they are places, par excellence, where collaboration between universities, research institutes and technology-based companies can occur.

In the analysis of Audy and Piqué (2016), technology parks constitute a new model of wealth generation environment, which unites the scientific and technological knowledge created by universities, entrepreneurs and a new vision of governments in relation to development.

A technology park, as stated by Farias et al (2021), can house different types of enterprises such as research centers, business incubators, accelerators, entrepreneurship support entities, educational institutions, among others. In addition, the technology parks in operation in Brazil presented a diversity of programs, which include: Resident Company, Associated Company, Pre-Incubation, Business Incubation and Graduated Company and Acceleration, which are usual nomenclatures in the innovative entrepreneurship movement in Brazil. These programs reflect the parks' efforts to create new businesses.

In this way, the regions seek to develop their innovation ecosystem, based on various strategies with programs, actions, policies, and legislation that drive and direct innovative development in the face of the valorization of knowledge, culture, technologies, and creativity, among other aspects, which impacts the sustainability of the innovation ecosystem (MATOS AND TEIXEIRA, 2022)

From this perspective, the following question emerges as a guiding thread for the reflections of this article: to investigate what is the strategy used by the government of the state of Paraná to create a favorable environment for the development of innovation in the state?

To answer this question, the objective of this study will be to analyze the implementation of the State Policy of Science, Technology and Innovation of Paraná as an instrument to induce local and regional development with the premise of encouraging innovative environments.

In this context, given the relevance of the role that technology parks play as an environment to promote innovation, knowledge transfer, entrepreneurship and collaboration between different actors, they are considered fundamental to induce regional development.

This article is structured in addition to this introduction, which presents the contextualization of the theme, plus four sections. The characterization of the research takes place in the second section, with the description of the methodological procedures that were used in the research, capable of satisfying the proposed investigation, as well as the main data on the State Policy of Science, Technology and Innovation of Paraná. In the third, the results found are presented. Then, the discussion of the results in the light of the researched literature. And, to conclude, the article brings the final considerations, emphasizing the main results of the research.

METHODOLOGY

CHARACTERIZATION OF THE RESEARCH

This research is characterized as qualitative, descriptive and exploratory, being developed through bibliographic and documentary research.

The bibliographic research aimed to explain the theoretical assumptions, concepts and ideas that guide the theme. For the textual and conceptual construction of regional development and, specifically, to demonstrate how innovation is employed to induce public policies for economic and social development in the regions. Using current approaches that relate innovation and regional development, from the perspective of creating innovative environments and in particular technology parks. In order to identify and describe the theoretical conditions necessary for the installation, organization and main characteristics of the Technology Parks, as a public policy strategy to promote the generation of innovation

and economic development in the regions. Based on this framework, it is intended to structure the exploratory analysis.

DATA COLLECTION AND ANALYSIS

The methodological procedures for the collection of data on the State Policy of the State of Paraná were based on the documentary survey based on the analysis of documents and other texts regarding information on the socioeconomic profile of Paraná disseminated through information from the State News Agency AEN, Paraná in numbers and trends and Challenges of IPARDES and Cities and states of the IBGE.

The legislation was sought, the Legal Framework for Science, Technology and Innovation of Paraná, the laws and decrees related to scientific, technological, and innovation activities. Aiming to highlight public policies aimed at innovation in Paraná as an instrument to strengthen the business environment and regional development. The document of the State Policy for Science, Technology and Innovation – PECTI 2024-2030, prepared by the Secretariats of Science, Technology and Higher Education, the Secretariat of Innovation, Modernization and Digital Transformation and the Paraná Council of Science and Technology, was used.

The Identification, location where the technological parks of Paraná were located in the period, information from the technical studies of SEPARTEC was used. In addition to the information on the website inovahub.pr.gov.br of the State Secretariat for Innovation, Modernization and Digital Transformation.

In order to demonstrate the interaction of actors and governance in the creation of technology parks, the information from the SEPARTEC Good Practices Manual will be analyzed, to finally analyze how PECTI 2024-2030 can impact the regional development of the state of Paraná.

To examine the collected data, according to qualitative, systematic and descriptive procedures, the content analysis technique was used

RESULTS

SOCIOECONOMIC CHARACTERISTICS OF PARANÁ

The State of Paraná, whose capital is Curitiba, located in the southern region of Brazil with a population estimated in 2024 by the IBGE of 11,824,665, represents 5.64% of the Brazilian population (IBGE, 2024).

Over the last 20 years, the economy of Paraná has become more diversified, with several regions of the state gaining more proportional participation in the Gross Domestic Product (GDP). As pointed out by the most recent data released by the Brazilian Institute of Geography and Statistics (IBGE), referring to the year 2021, when comparing economic statistics with those of 2002. (IBGE, 2024).

The economy of Paraná has a marked agro-industrial profile, with emphasis on the production of grains such as soybeans, corn and wheat and later stages of value addition in the areas of vegetable oils, dairy products and animal protein, with the emergence of poultry meat. It also has an important industrial activity, which diversifies from the production of non-durable consumer goods, inputs such as wood, pulp and paper, and petrochemicals, and durable goods such as automobiles, to capital goods such as tractors, trucks, and machinery and equipment (IPARDES, 2022)

Data from Ipardes (2024) reveal that in addition to serving the regional and national markets, an important part of the state's production goes to the international market, highlighting products from the soybean complex, meat and automobiles, among others. With these characteristics, Paraná has regularly positioned itself among the top ten exporting states in the country.

Geographically, the economic structure of Paraná is distributed between the metropolitan area of the capital Curitiba, which holds about 44% of the Gross Domestic Product and 34% of the state population, and medium and small municipalities, close to the capital and to the north and west, all with an important concentration of the state's service sector. In addition to these, this structure extends to a large network of small municipalities, characterized by a strong presence of agricultural activity. (IPARDES, 2024)

The sectors that contribute the most to the economy of Paraná are trade and services (60.7%), industry (26.1%) and agriculture (13.2%). In addition, Paraná has proven to be a hub of innovation and economic diversification, which helps to ensure stability and continuous growth, with this, the state has been consolidating its position as one of the main engines of the country's economic development (AEN, 2022).

Therefore, Paraná is recognized as one of the main economies in Brazil. In 2022, the state reached a GDP of R\$ 647 billion, representing 6.5% of the national GDP, which positions it as the fourth largest economy in the country (AEN, 2022)

Economic performance is a necessary, although not sufficient, condition for achieving better conditions for the well-being of Paraná society. However, organic economic growth,

capable of increasing competitiveness, job and income generation and reducing regional inequalities, are considered essential to continue advancing in the economic expansion of the Paraná economy in the search for sustainable socioeconomic development of the State (IPARDES, 2022).

In view of this, the state has the challenge of promoting industrial decentralization concentrated mainly in the metropolitan region of Curitiba, stimulating productive and technological development in different regions of the state in order to create competitive environments, with a significant impact on the economic and social development of less developed regions.

In this context, regions are considered key places for knowledge production and innovation, where regional competitive advantage is based on the ability to attract development opportunities and attract high-tech companies and talents, ensuring greater wealth creation and employability (LOPES; FARINHA, 2018)

Spinosa et al (2015) Apud Teixeira et al (2017) point out that in regions that have decided to induce innovation ecosystems, the attractiveness for new businesses and investments has increased significantly. With this, the creation of a dynamic environment that generates wealth and employment, expands the capacity to attract and retain talent.

Teixeira et al (2017) understand that innovation ecosystems are gaining more and more relevance, providing interaction between actors from government, academia, industry and the community in general, based on the development of technologies and new knowledge from a given geographic location. This interaction contributes to the development of collaboration platforms, prospecting for technologies, establishing strategic alliances between actors, in addition to other actions that seek the convergence of investments for the development of technologies, products and services that increase the economic potential of the region.

In this context, the emergence of various types of innovation environments, among which the technology parks stand out, which have been perceived as valuable instruments mainly for the promotion of regional economic development.

PUBLIC INNOVATION POLICIES AS A REGIONAL DEVELOPMENT STRATEGY IN PARANÁ

According to Serra et al., 2021, to boost economic growth and overcome inequalities, it is essential to promote innovation in different regions. In view of this, the growing interest

in regional innovation policies has captured the attention of government leaders and public policy makers, considered essential to debate issues related to innovation and growth at the regional level.

Having as one of its principles the promotion of scientific, technological and innovation activities as strategies for the economic and social development of the State, aiming at the eradication of poverty and the confrontation of social and regional inequalities, the State Government instituted the Legal Framework for Science, Technology and Innovation of Paraná, which represents a significant effort by the state government to strengthen the innovation ecosystem and foster a more robust entrepreneurial culture in the state.

As a result, State Decree 5,145 in 2016 established the State Council of Technology Parks as the body responsible for the preparation of guidelines and regulations for the formulation, implementation and monitoring of the Paraná Complex of Technology Parks, as a public policy to encourage the development of innovation in the State of Paraná, which, in its justification, brings the importance for innovation in the state (PARANÁ, 2016)

By State Decree No. 9,194/2018, the State System of Technology Parks (SEPARTEC) was established with the purpose of being an articulating instrument of technology parks in Paraná in the context of innovation systems (PARANÁ, 2018)

The legal framework aims to establish measures to encourage innovation and scientific and technological research in the productive, academic and business sectors. The main measures included in this framework are the new Innovation Law (Law No. 20,541/2021) and the Support Foundations Law (Law No. 20,537/2021), which aim, respectively, to boost scientific and technological research and modernize the relations between universities, university hospitals (HUs) and scientific and technological research institutions (ICTs) with support foundations and (PARANÁ, 2024)

To implement the Legal Framework for Science, Technology and Innovation and align the state's regional development strategies, the State Policy for Science, Technology and Innovation – PECTI 2024-2030 was established, developed through the Secretariat of Science, Technology and Higher Education and the Secretariat for Innovation, Modernization and Digital Transformation and built by the people of Paraná, who were able to contribute, through a public consultation, with the definition of the actions necessary for the structuring axes and enumeration of the priority challenges for

the State to move towards a society where economic development is united with knowledge, sustainability and social well-being.

PECTI's objectives, principles and actions were outlined to promote innovation and sustainable development in the state. The implementation of these actions will be the responsibility of Paraná society and the representatives of the triple helix: State and municipal governments, universities and companies.

There is an effort in the literature to divide the actors of the innovation ecosystem into categories, popularly known as helix. The term helix is inherited from the work of Etzkowitz (2009) who created a model based on the interaction of three helixes, disseminated worldwide as the triple helix, defining government, academia and business as the main actors that need to interact to promote innovation. (SOUZA; TEIXEIRA, 2022).

In the triple helix model, the government is responsible for creating an institutional environment that favors collaboration between universities and companies, and can also play the role of financier through its development agencies. In turn, universities provide training and transfer knowledge and technologies. The company participates in this system by applying knowledge to develop products and generate economic value (ABREU ET AL. 2016)

The general objective of the State Policy on Science, Technology and Innovation (PECTI-PR) for the period from 2024 to 2030 is to promote the sustainable development of the state of Paraná through the integration and strengthening of actions in science, technology and innovation, aiming at economic and social transformation based on knowledge (PARANÁ, 2024).

To achieve the proposed objective, the Paraná Council of Science and Technology established five structural priority areas and two transversal areas as key conditions for the government's action in ST&I.

These areas were considered strategic for the planning of actions and policies to stimulate scientific and technological development and the innovation process for the insertion of Paraná in the competitive knowledge economy. As can be seen in Chart 01.

Table 01. Priority and Transversal Areas of the Science, Technology and Innovation Policy of Paraná.

CROSS-CUTTING AREAS	PRIORITY AREAS				
	Digital Transformation	Biotechnology & Health	Sustainable/Renewable Energies*	Smart Cities	Society, Education

Sustainable development	Agriculture and Agribusiness				and Economy
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Source: Prepared by the author based on PECTI-PR 2024 - 2030 (PARANÁ, 2024)

Agriculture and agribusiness is an important segment and can leverage the regional/state economy. Innovation and modernization of equipment and processes can represent a leap forward for the competitiveness of these segments, reducing costs and increasing productivity.

Biotechnology and Health as an economic activity differs from traditional industry, presenting a transversal characteristic over different sectors and having applications in multiple domains such as agriculture, food and beverages, human health, animal health, environment and energy, information technology, among others.

Sustainable Energies focuses on the development and implementation of technologies that promote the use of renewable energy sources.

Smart Cities: this area aims to create urban environments that use technology to improve the quality of life of citizens. This includes implementing smart solutions in mobility, security, healthcare, and public services.

Society, Education and Economy The union between society, education and economy is fundamental for the formation of full citizenship. This area prioritizes socio-environmental transformation and digital inclusion, promoting education and training of the population for the new technological scenario.

Digital Transformation is essential for the modernization of processes and services. This area seeks to integrate digital technologies in various sectors, promoting innovation and efficiency.

Sustainable Development is an approach that seeks to balance economic growth, social inclusion, and environmental protection. This area prioritizes initiatives that contribute to the achievement of the Sustainable Development Goals (SDGs).

Structuring Axes

To develop the priority and transversal areas, 12 (twelve) structuring axes were established. As described in table 03.

Table 03. Structuring Axes Science, Technology and Innovation Policy of Paraná.

STRUCTURING AXES	DESCRIPTION
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1. Scientific and Technological Research	This axis deals with the guarantee of technical, economic, financial and strategic support: 1) to research, development and innovation projects; 2) research in disruptive technologies, 3) the commitment of companies to RD&I, through the financing of projects in priority areas; and 4) innovation ecosystems.
2. Expansion and Consolidation of the Paraná ST&I System	Strengthening collaboration between universities, research institutions, companies and government agencies, aiming to create a cohesive and efficient environment that promotes innovation at all stages, from research to the commercialization of new products and services.
3. Human Capital Training	This axis is aimed at the training and training of qualified professionals in science and technology. The idea is to prepare human resources that meet market demands and that can contribute to innovation.
4. Infrastructure and Cooperation:	It emphasizes the need for adequate infrastructure for research and innovation, in addition to promoting cooperation between educational and research institutions and the productive sector, facilitating the exchange of knowledge and resources.
5. Promotion of the Diffusion of ST&I:	This axis seeks to promote the dissemination of scientific and technological knowledge, encouraging the popularization of science and awareness of the importance of innovation for social and economic development.
6. Internationalization of ST&I	It focuses on expanding international collaboration in science and technology, seeking partnerships with institutions from other countries for the exchange of knowledge, research and innovation.
7. Integration between the Academic Productive Sector and the Business Productive Sector	This axis deals with strengthening collaboration between universities, research centers and companies, promoting technology transfer and the application of research in the market.
8. Innovation and Entrepreneurship	It aims to stimulate the creation and development of innovative new businesses, promoting an entrepreneurial culture in the state and supporting startups and innovation initiatives.
9. Supporting Innovation in Enterprises	This axis seeks to support companies so that they can implement innovations in their processes and products, contributing to the competitiveness of the productive sector.
10. Modernization and Digital Transformation of the State	It focuses on the adoption of digital technologies to modernize public administration and the services offered to the population, promoting efficiency and transparency.
11. Nationalization and Internationalization of Business	This axis seeks to support Paraná companies in the expansion of their business, both in the national and international markets, promoting competitiveness and global insertion.
12. Fostering the Culture of Innovation in the State	It aims to create a favorable environment for innovation, promoting awareness of the importance of innovation and science for the economic and social development of Paraná.

Source: Prepared by the author based on PECTI-PR 2024 - 2030 (PARANÁ, 2024)

The objectives of each axis must have a favorable impact on the State of Paraná, having as a principle the promotion of scientific, technological, and innovation activities as strategies for the economic and social development of the State, aiming at the eradication of poverty and the confrontation of social and regional inequalities (PARANÁ, 2024).

TECHNOLOGY PARKS IN PARANÁ

Technology Parks under the most diverse names have been consolidated as one of the main vectors of development in the context of the Knowledge Society and have become important elements of local and regional innovation ecosystems (ANPROTEC – ABDI, 2008).

A technology park is a planned scientific-technological industrial and service production complex, of a formal, concentrated and cooperative nature, which brings together companies whose production is based on technological research developed in the R&D centers linked to the park. It is an enterprise that promotes the culture of innovation, competitiveness, and increased business training, based on the transfer of knowledge and technology, with the objective of increasing the production of wealth in a region (ANPROTEC-ABDI 2008).

The dissemination of Technology Parks around the world happened due to the interest of many governments, both in developing and developed countries, to consider the parks as an instrument of public policy of technology and innovation, thus contributing to regional development, which reinforces the dynamics of the local economic environment, by attracting technology-based companies (MCTI, 2021).

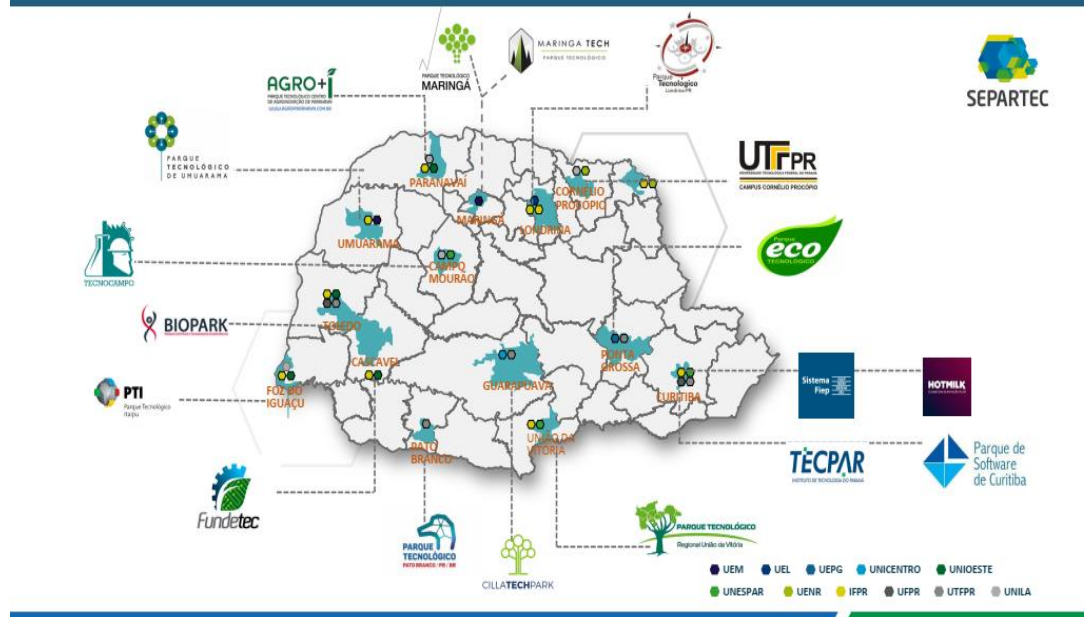
By proposing policies and creating a favorable environment for the development of innovation in the state, in the context of innovation systems and promoting the culture of innovative entrepreneurship, the government encouraged the creation of technology parks by the State.

Thus, 18 Technology Park initiatives in Paraná were identified, in the most varied stages of maturity, which were registered in the State System of Technology Parks (SEPARTEC) until 2022, the period of the last update of the available data regarding the state's technology parks. These parks were linked to a legal personality that maintained or owned them; they had a strategic plan; they had innovation strategies; and maintained institutional articulations with companies and ICTs at the local, regional, national or international level (SEPARTEC, 2018)

Figure 01 below illustrates the distribution of technology parks in the state.

Figure 01. Mapping of the Technology Parks of Paraná-SEPTEC 2019

INICIATIVA DE PARQUES TECNOLÓGICOS NO PARANÁ



Source: SEPATEC, 2019

There is a greater concentration of Technology Parks in the capital of the state of Paraná, Curitiba, with four technology parks already installed. According to Sousa (2021) The condition of excellence of public and private universities in Curitiba, such as UFPR, UTFPR, IFPR, UP and PUC are important contributions to the consolidation of these technology parks with qualified human resources. Another preponderant factor in this analysis is the business density of Curitiba, which had 108,084 companies in 2019.

The State Innovation Policy, having as a strategy the decentralization in the promotion of regional development, aimed to encourage the attraction of investments, innovative companies and the generation of new companies intensive in knowledge and innovation, promoting the interaction between universities, innovative companies and other actors of the Paraná innovation system in the interior of the State.

Thus, it is observed that all regions of the state have technology parks and their headquarters are among the forty most populous cities in Paraná. An important consideration in the distribution of parks is that all municipalities have federal or state

university campuses (SOUSA, 2021). The distribution by region and by cities is presented in Table 04 below.

Table 04. Location of Technology Parks in Paraná – SEPARTEC 2019

REGION	CITY	TECHNOLOGY PARK
North	Londrina	Francisco Sciarra Technology Park
	Cornelius Procopius	UTFPR Science and Technology Park
Northwest	Campo Mourão	TECNOCAMPO Technology Park
	Maringá	MARINGATECH – Technology Park Software By Maringá Technology Park
	Paranavaí	Agro-innovation Technology Park – Agro+I
	Umuarama	Umuarama R&D Institute – Technology Park
West	Rattlesnake	Foundation for Scientific and Technological Development FUNDETEC
	Foz Do Iguaçu	Itaipu Technological Park – PTI
	Toledo	BIOPARK – Science and Technology Park of Biosciences
South	Pato Branco	Pato Branco Technology Park
	Union of Victory	União da Vitória Regional Technology Park
Center	Guarapuava	Cilla Tech Park – Guarapuava
	Ponta Grossa	Professor Sérgio Escorsim Ecotechnological Park
East	Curitiba	Industry Campus – FIEP System
		Curitiba Software Park
		TECNOPARQUE PUC/Pr
		TECPAR – Health Technology Park

Source: SEPARTEC (2019).

Technology parks are strategic to foster innovation, offering infrastructure and services that stimulate the creation of companies based on knowledge and technology, attracting investments and increasing regional productivity, boosting local development. In addition, they have the partnership of Universities sharing the technological infrastructure of universities, such as laboratories and advanced equipment, with companies and research institutes, enhancing the capacity for innovation.

Paraná has a strong scientific and technological research structure, formed by seven state public universities, four federal public universities and a federal institute of education, science and technology, a quality private network that annually forms a considerable number of qualified knowledge assets, and has a network of 16 thousand researchers with

the potential to induce the various regions of Paraná with their intelligent specializations (SEPARTEC, 2019)

In this way, SEPARTEC has the responsibility of coordinating and implementing actions reinforcing the interaction of the triple helix, university, public sector and companies, aligning positions in the construction of partnerships to strengthen Science and Technology Parks as innovation habitats aligned with the innovation policy of Paraná, whether in relation to programs to foster innovation, brain retention, induction of innovative entrepreneurship and attraction of new entrepreneurs. With the objective that these institutional articulations provide innovation to be a driver of regional development.

As a result of this state public policy strategy focused on innovation, according to information on the website inovahub.pr.gov.br of the State Secretariat for Innovation, Modernization and Digital Transformation, data on innovation initiatives in the different regions of Paraná, stimulated by the Technology Parks, are presented in Table 05.

Table 05. Innovation initiatives in the different regions of Paraná.

Category	North	Northwest	West	South	Center	East	Total
Startups	54	69	94	52	22	307	598
Accelerator	7	8	7	5	3	16	46
Incubators	9	12	11	11	10	11	64
Coworking	15	16	8	2	2	60	103

Source: Prepared by the author based on INOVA HUB 2024

The data indicate that innovation environments are still concentrated in the Eastern region, which benefits from a robust infrastructure and support for entrepreneurship. The North and South regions face challenges that require specific development strategies, such as increasing investments, creating more incubators and accelerators, and strengthening local universities. These actions are fundamental to balance the innovation ecosystem throughout the state and the promotion of regional development with sustainability (INOVA HUB, 2024).

DISCUSSION

The analysis of PECTI-PR 2024-2030 revealed a clear commitment to innovation and sustainable development. The interconnection between research, human capital formation, and support for innovation in companies is essential to create innovative environments such as technology parks in the promotion of regional development

In this context, scholars such as Boisier (2000) and Furtado (2009) argue that regional development should be driven by State policies in conjunction with organized civil society. They emphasize that planning is fundamental in the formulation of regional policies, considering geographical particularities, the pressure of the population on natural resources, as well as social, religious, mental and cultural organization. The production and consumption history of the regions is also considered (OLIVEIRA, 2021).

Therefore, the State Policy on Science, Technology and Innovation – PECTI 2024-2030, was developed through the Secretariat of Science, Technology and Higher Education and the Secretariat of Innovation, Modernization and Digital Transformation and built by the people of Paraná who participated in a public consultation to contribute, with the definition of strategies and actions for the challenges that the State follows towards a society where economic development is united with knowledge, sustainability and social well-being.

If innovation contributes to increased productivity, job creation, and improved living standards, regions, in turn, play a decisive role in this process as they are where innovative capacity is forged (SERRA, ET ALL, 2021).

Complementing, Fochezatto and Tartaruga (2015) emphasize innovation and technology as the most appropriate way to promote regional and local development. From the perspective that the creation of innovative environments enables the permanent rooting and updating of economic activities in the region, making the regions more competitive seeking autonomy, making them less vulnerable to external shocks.

With the understanding that innovation is essential to increase both the competitiveness and growth of regional economies, Serra et al. (2021) highlight that it contributes to increased productivity, job creation, and raising living standards. The regions, therefore, play a crucial role in this process, since it is in them that innovative capacity is boosted. Thus, regions that innovate are more resilient and adaptable to economic instabilities and, at the same time, better able to promote sustainable economic growth.

Thus, regions are seen as essential areas for the production and innovation of knowledge, where regional competitiveness is based on the ability to attract development opportunities, in addition to attracting high-tech companies and talents, thus ensuring greater generation of wealth and jobs. (MATOS et al., 2019).

In this context, Souza (2016) mentions recent discussions and contributions on development policies that highlight the importance of knowledge for the country's economic growth. In the Brazilian context, the recognition of the relevance of technological innovation

has caused significant transformations in the approach adopted by the business sector, academic and research institutions, and also in government organizations.

In view of this, it was observed that SEPARTEC implemented planning strategies and good management practices to foster the culture of innovation, increase competitiveness and train companies, especially technology-based and science and technology institutions of a public or private nature, with or without a link between them, stimulate, at the state level, the increase in productivity of knowledge-based companies, in technology and innovation.

The state of Paraná is committed to increasing the rate of innovation through strategic partnerships between science and technology institutions and companies. Therefore, PECTI 2024-2030 plays a crucial role, encouraging the development of strategic areas and promoting integration between the public and private sectors. These actions aim not only to ensure the financial sustainability of the initiatives, but also to foster regional development, attracting investments in activities that demand high knowledge and technological innovation, talent retention, induction of innovative entrepreneurship, or to strengthen the interaction between universities, innovative companies, and other actors in the Paraná innovation system (SEPARTEC, 2024).

CONCLUSION

In view of the importance of innovation for economic development, government participation should be considered a factor that enhances innovative activities, playing an important role in providing incentive policies for technological innovation. Because of this, throughout the work, the importance of innovation for economic development was discussed, as well as the role of the State policy of Science, Technology and Innovation in encouraging innovative activities for regional development.

The present study aimed to analyze the implementation of the State Policy of Science, Technology and Innovation of Paraná as an instrument to induce local and regional development with the premise of encouraging innovative environments. For this, a mapping of the distribution of technology parks in the regions of Paraná was carried out, the results showed the accreditation of 18 technology park initiatives in all regions, showing greater concentration in Curitiba and in the Northwest region.

Paraná is considered conducive to the development of innovation ecosystems. The presence of public Federal and State Universities, private Universities and Research

Institutes, facilitates the dialogue of the academic sector with the various sectors of the economy and the government, strengthening the triple helix. Therefore, the interaction of these actors helps to attract investments and create an innovation ecosystem, promoting the economic and social development of the region.

The results demonstrated the positive evolution of technology parks with the creation of new categories of innovative environments such as startups, accelerators, incubators and coworking. However, in general terms, the policies to support innovation were not able to reverse the evident regional concentration, and it is relevant to continue these actions with a focus on the opportunity to expand to the less developed regions of the state.

REFERENCES

ABREU, Isabela Brod Lemos de; VALE, Fernão de Souza; CAPANEMA, Luciana; GARCIA, Ricardo Camacho Bologna. Technology Parks: Brazilian panorama and the challenge of its financing. *BNDES Magazine*, Rio de Janeiro, n. 45, p. 99-154, jun. 2016. Available at: <https://web.bndes.gov.br/bib/jspui/handle/1408/9414>. Accessed on: 24 Mar. 2024.

STATE NEWS AGENCY – AEN. *Paraná closes 2022 with economic advances and achievements in infrastructure and education*. 2022. Available at: www.aen.pr.gov.br. Accessed: July/2024

ANPROTEC-ABDI. Technology Parks in Brazil – Study, Analysis and Propositions. In *XVIII National Seminar on Technology Parks and Business Incubators*. ANPROTEC – ABDI, 2008.

AUDY, J. L. N. PIQUÉ, J. *From Science and Technology Parks to innovation ecosystems: social and economic development in the knowledge society*. Brasília, DF, ANPROTEC, 2016.

BOISIER, S., In search of elusive regional development: between the black box and the political project. *Journal of Planning and Public Policies, Brasília*, n. 13, p. 111-143, jun. 1996.

CARIO, S. A. F. LEMOS, D. C. . BITTENCOURT, P. F. *Regional System of Innovation and Development*, 2017. Available at: www.researchgate.net/publication/313492532_Sistema_Regional_de_Inovacao_e_Desenvolvimento. Accessed Sep/2023

ETZKOWITZ, H. Triple Helix: University-Industry-Government: *Innovation in Motion*. Porto Alegre: EDIPUCRS, 2009

FARIA, A. F. de. BATTISTI, A. C. de, SEDIYAMA, J. A. S., ALVES, J. H., SILVÉRIO, J. A. *Technology Parks of Brazil I*. – VIÇOSA, MG : NTG/UFV, 2021

FOCHEZATTO, A. TARTARUGA, I. G. P. *Potentially innovative economic activities and regional development in Rio Grande do Sul*.2015. Available at: [:/Users/User/Downloads/6491-Texto%20do%20artigo-30986-1-10-20160519.pdf](http://Users/User/Downloads/6491-Texto%20do%20artigo-30986-1-10-20160519.pdf). Accessed Aug/2023

FURTADO C. *Development and underdevelopment*. Rio de Janeiro: Contraponto: Centro internacional Celso Furtado, 2009, 234p.

HOFFMANN, Micheline Gaia; MORE, Ilisangela; AMAL, Mohamed. Planning and management of science and technology parks: a comparative analysis. *Global Economics and Management*, v. 15, n. 3, p. 89-107.

IBGE. *Cities and states*.2024 www.ibge.gov.br/cidades-e-estados/pr. Accessed: May2024

INOVA HUB. *InovaHub Paraná*. Secretariat of Innovation, Modernization and Digital Transformation. Curitiba, 2024. Available at: <https://www.inovahub.pr.gov.br/>. Accessed on: 22 Aug. 2024.

IPARDES. *Paraná development: context, trends and challenges*. 2022. Available at: https://www.ipardes.pr.gov.br/sites/ipardes/arquivos_restritos/files/documento/2023-09/desenvolvimento_paranaense.pdf. Accessed May/2024

IPARDES. *Paraná in numbers*. 2024. www.ipardes.pr.gov.br/Pagina/Parana-em-Numeros

LOPES, J. N. M.; FARINHA, L.. Measuring the Performance of Innovation and Entrepreneurship Networks. *Journal of the Knowledge Economy*, vol. 9, no. 2, p. 402–423 (2018)

MATOS, Guilherme Paraol de; TEIXEIRA, Clarissa Stefani. PIQUÉ, Josep; XIANGDONG, Chen. Regional innovation ecosystems: an integrative review. *Workshop 2019 - The Future of Innovation Environments | Innovation Summit Brazil 2019* Available at: www.ecossistemasregionais-de-inovacao_Anprotec-2019.pdf. Accessed: Mar/2024.

MCTI. Ministry of Science, Technology and Innovation. *Technology Parks of Brazil*. Available at: <https://anprotec.org.br/site/wpcontent/uploads/2022/01/ParquesTecnologicosBrasil-2021-Final-vr.pdf>. Accessed in: 10/31/2023.

OLIVEIRA, Nilton Marques. Revisiting Some Theories of Regional Development. *GEPEC Report, [S. l.]*, v. 25, n. 1, p. 203–219, 2021. DOI: 10.48075/igepec.v25i1.25561. Available at: <https://e-revista.unioeste.br/index.php/gepec/article/view/25561/17076>. Accessed on: 02 May. 2024.

PARANÁ. *Decree No. 5,145, of September 22, 2016*. Establishes the State Council of Technology Parks – CEPARTEC, responsible for the implementation of the Paraná Complex of Technology Parks. Official Gazette of the State of Paraná, Curitiba, 2016. Available at: <https://www.legislacao.pr.gov.br/legislacao/pesquisarAto.do?action=exibir&codAto=162590&index=1&totalRecords=6&dt=27.9.2019.9.53.8.571>. Accessed on: 27 out. 2019.

PARANÁ. *Decree No. 9,194, of April 5, 2018*. Establishes the State System of Technology Parks – SEPARTEC and provides other provisions. Official Gazette of the State of Paraná, Curitiba, 2018. Available at: <https://www.legislacao.pr.gov.br/legislacao/pesquisarAto.do?action=exibir&codAto=195658&index=1&totalRecords=3&dt=27.9.2019.11.23.22.234>. Accessed on: 27 out. 2019.

PARANÁ. Secretariat of Science, Technology and Higher Education; Secretariat of Innovation, Modernization and Digital Transformation. *GOV_SETI - Pecti Booklet: State Policy for Science, Technology and Innovation of Paraná 2024-2030*. Curitiba: [s.n.], 2024. 68. p.

SERRA, Mauricio; GARCIA, Renato; MASCARINI, Suelene; MACEDO, Rafael; BASTOS, Letícia. New Directions of Regional Innovation Policies: recent developments and implications. *Text for Discussion, [S. l.]*, n. 417, p. 1–19, 2021. Available at: <https://www.eco.unicamp.br/images/arquivos/artigos/TD/TD417.pdf>. Accessed on: 09 May. 2024.

STATE SYSTEM OF TECHNOLOGY PARKS (SEPARTEC). SEPARTEC Project: Accreditation and evaluation system of Technology Parks in the State of Paraná. State of Paraná, 2018

STATE SYSTEM OF TECHNOLOGY PARKS (SEPARTEC). *Manual of good practices*. State of Paraná, 2019. Available at: http://www.seti.pr.gov.br/sites/default/arquivos_restritos/files/documento/2020-10/separtecmanual_de_boas_praticas.pdf. Accessed in: April. 2024.

SOUZA, Ana Lúcia de. *Evaluation and accreditation system of technology parks in Paraná: analysis of the implementation process of the 2019 cycle*. Curitiba: UFPR, 2021. 66 p. Dissertation (Master's Degree) Graduate Program in Intellectual Property and Technology Transfer for Innovation, Federal University of Paraná, Curitiba, 2021.

SOUZA, Vanusa Maria de. *Innovation and Regional Development in Brazil: performance indicators and financing mechanisms*. São Cristóvão: Universidade Federal de Sergipe – UFS, 2016. Dissertation (Master's Degree) Post-Graduation in Intellectual Property Science, Federal University of Sergipe, 2016.

SOUZA, R. K. de; TEIXEIRA, C. S. *Innovation habitats: Conceptual alignment*. São Paulo: Perse, 2022. 68p. v. 2.

SPINOSA, L. M.; SCHLEMM, M. M; REIS, R. S. Brazilian innovation ecosystems in perspective: some challenges for stakeholders. *REBRAE*, Curitiba, v. 8, n. 3, p. 386-400, Sep./Dec. 2015. APUD Innovation ecosystem: Conceptual alignment [electronic resource] / Clarissa Stefani Teixeira; Dorzeli Salete Trzeciak; Gregório Varvakis (Orgs.) – Florianópolis: Perse, 24p.: il. 2017 1 e-book Available at: < <http://via.ufsc.br/> > Accessed Jan/2024

TEIXEIRA, C. S.; TRZECIAK, D. S.; VARVAKIS, G. *Innovation ecosystem: Conceptual alignment* [electronic resource] / (Orgs.) – Florianópolis: Perse, 24p.: il. 2017 1 e-book Available at: < <http://via.ufsc.br/> > Access/Oct2023.