Development Planning Science and Technology Park in Education Strategic Area Jatinangor: An initial study of the institutional forms and governance

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Abstract

Jatinangor is an area that is located in Sumedang district administratively, West Java Province, There are some colleges in Jatinangor Region that being made as strategic education area of Jatinangor. As an special area should be able to provide added value to the surrounding community. Development plans for the Science and Technology Park in Education Strategic Area Jatinangor provide opportunities for communities to get the benefit from the research results generated by universities in the region Jatinangor. Issues that arise in the initial plan is a matter of institutional and governance. This is because the region Jatinagor administratively managed by the Sumedang District, but also a strategic region of the Province (KSP) and the National Strategic Area (KSN), so there is the impression of overlapping authority. The study is planned to assess the institutional and governance models suitable for Jatinangor region. The study used a qualitative approach, by mapping the data that exist so far. Data collection was done by interview, observation and documentation secunderly. The informations or Data analysis with qualitative methods. The results show that the institutions that govern the special region during the Jatinangor are all SKPD in Sumedang unless the secretariat of Parliament and villages. For that we need the initiative of universities in this regard as a pioneer in the Padjadjaran University (UNPAD) at Jatinagor area that can be developed into a Science and Technology Park.

keywords: Institution, Governance, Science and technology Park

Introduction

The need for science and technology today is a necessity. Where the growth and development of the economy also led to the need for technology is also increasing. Technological developments should also be able to provide added value to the society so that the development of existing technologies can improve people's welfare. In some developed countries like the United States and Japan in science and technology was created in the scope of integrated, so it can be viewed science and technology parks (Science and Technology Park) was created on the campus of Stanford University over 50 years ago which has changed the Silicon Valley area of one of the poorest regions in the United States into a global center of technology, finance, education and research. Since the beginning of Silicon Valley, the phenomenon of high-tech clusters have seized the imagination of the public policy makers. Hundreds of similar high-tech clusters have been created in various parts of the world, and their number continues to grow as the establishment of an integrated cluster of national or regional innovation system.

A science park is an organization managed by specialized professionals, whose main purpose is to increase the wealth of society by promoting a culture of innovation and the competitiveness of related businesses and knowledge-based institutions. To enable this objective to be met, a science park stimulates and manages the flow of knowledge and technology amongst universities, R & D institutions, companies and markets; facilitating the creation and growth of innovation-based companies through incubation and spin-offs; and provides other value-added services together with high quality space and facilities. IASP definition also goes on to say that the expression "science park" may be replaced in this definition to the expression "technology park", "Technopole" or "research park" (International Association of Science Parks, 2002).

Science parks according to Kingdom Science Park Association of America (UKSPA), is a business support and technology transfer initiative that has benefit for:

1. Encourage and support start-up and incubation of innovation-led, high-growth, knowledge-based businesses.

2. Providing an environment in which larger businesses and international can develop specific and close interactions with a particular center of knowledge creation for their mutual benefit.

3. Has a formal and operational relations with the creation of knowledge centers such as universities, higher education institutions and research institutes.

The term "science and technology park" covers all types of cluster of high technology such as: Technopolis, science park, science city, cyber park, hi tech (industrial) park, innovation center, R & D parks, university research, research and technology park , science and technology parks, the city of science, technology parks, technology incubators, technology park, technopark, technopole and technology business incubator. However, there are differences between some of these terms as technology business incubator, science or research parks, science city, Technopolis and regional innovation systems.

This is because the Science and Technology Park term referring to various innovation infrastructure, with common characteristics. As defined by the IASP (International Association of Science Parks) "science park and technology is Initiative-property based on the following elements:

1. Has an operational relationships with universities, research centers and institutions of higher learning;

2. Designed to encourage the formation and growth of knowledge-based industries or high value-added tertiary companies, usually local residents;

3. It has a stable management team is actively involved in encouraging the transfer of technology and business;

4. Generally it is a physical property, often laid out like parks, research-based new or existing small firms or larger are interested in working conditions, both physical proximity of universities or research institutes;

5. The park is managed by specialized professionals whose main objective is to improve the welfare of the community by promoting the culture of innovation and competitiveness of businesses related to knowledge-based institution.

6. The main purpose of the park is innovation in terms of research, development and design, new products and develop them to the stage of marketing. Research and development (R & D) work performed by companies in STP is often limited to designing prototypes, while the manufacturing side of the business is located elsewhere, although some of the companies involved in the production of one-off items advanced, and some parks have manufacturing facility.

Such as the definitions proposed, STP is a system with different partners. Networks created and / or participate in the STP which aims to create interaction with the enterprise, SME, skilled people, universities and funding bodies such as governments, Venture capitalists (VC) or private companies (Meyer 2006).

See from the examples above, the development plan of science and technology parks (STP) in the region Jatinagor education is a matter that needs to be considered because STP is a priority for future development as set out in the National Medium Term Development Plan (RPJMN) 2010-2014 , science and technology development strategy implemented through two development priorities is "Strengthening the National Innovation System (SINas) that serves as a vehicle for the development of science and technology towards the vision of science and technology development in the long term; and Improving Research, Development and Application of Science and Technology (Science and Technology P3) are carried out in accordance with the directions outlined in RPJPN 2005-2024. "In addition, the national science and technology development is also outlined in the MP3EI particularly in terms of human resource capacity development and science and technology.

Relating to the priority of science and technology development, the focus of science and technology development policy conducted by the Ministry of Research and Technology (KRT) aimed at strengthening SINas in order to enhance the contribution of science and technology to

national development. Regional scale (area), is to build regional innovation systems (SIDA) based on the excellent potential of each region, thereby expanding opportunities for local people to play an active role fit the spirit of development that is inclusive and in line with efforts to promote the establishment of knowledge-based society (knowledge -based society. In connection with SINas, KRT instrumental create a space that serves as a "stage" of innovation, so that the interaction and good collaboration between actors in the innovation-both lead actors, namely science and technology providers and technology users, as well as actor supporters in the atmosphere conducive.

Other roles are accelerating the coordination and intermediation between providers with technology users and encourage the utilization of the results of research, development and engineering to solve problems of development, improve competitiveness, also provide services to the community and achieve national independence. To implement KRT role in creating an innovation platform and establish collaboration between providers with technology users, the KRT has had a number of program activities. One KRT program to encourage collaboration and interaction between the actors of innovation is through revitalizing Puspiptek as a science and technology park (STP) as set out in MP3EI and development of intermediary institutions.

STP revitalization Puspiptek be expected to become a hub that facilitates establishment of cooperation between providers with users of science and technology. Efforts are being made to stimulate or accelerate the diffusion of technology is to establish an intermediary institution. Task intermediary institution is directing academic research on market demand; on the contrary, commercial issues be visited from the academic standpoint.

At this time, an intermediary institution was essentially initiated by the government, such as the Business Innovation Center (BIC) and Bussiness Technology Center (BTC). Since 2010, BTC-run Agency for the Assessment and Application of Technology (BPPT) has been merged into the organization BPPT Engineering. In 2008, KRT has facilitated the establishment of the Business Innovation Center (BIC). The main goal of BIC is to optimize the empowerment of innovation in Indonesia in order to enhance national development. Since 2008, the BIC has published a catalog of the annual results of the research were considered likely to be commercialized, through a series of publications' 100 Indonesia Innovations' (2008), '101 Innovation Indonesia (2009),' 102 Indonesia's Innovations' (2010), and '103 Indonesian Innovation' (2011). KRT continue to enhance the role of BIC and BTC, so it is expected to become a gateway for the participation of the institute of technology, especially technology-based industries.

Correspondingly, the area Jatinangor a provincial strategic area it is accordance with the Medium Term Development Plan 2013-2018 of the West Java-based development scenario mentioned that the territorial (regional thematic) which is based on the Regional Government Coordination and development mentioned one of them is WKPP IV is Priangan region which explains one pointnya is to develop the area of higher education and research integrated in Jatinangor (RPJMD, p. 106).

it is also within the framework of formation of the STP 100 in 2015-2019 and formation of 1 SP In every province and 100 TP In the district / city, until 2025 (Total Until 2025 STP 233 Formed in Indonesia), the other reason is why Jatinagor inappropriate in STP development because STP must be physically close to universities and polytechnics, R & D institutions or centers of excellence in science and technology so that the presence of universities / R & D institutions in

the regions have the potential to form the STP by utilizing the data of local governments that already have RTRW, where the establishment of a center of excellence / regional innovation will be implemented.

Research Methods

This study is a qualitative research approach used descriptive interpretative method (Denzin Norman K. and Yvonna S. Lincoln (ed), (1994: 266). The choice of this qualitative approach is based on the formulation and the goals to be achieved in this study (Lawrence Neuman, W. (1997: 15). Based on the phenomenon under study, this technique is able to create a model of categorization, propositions and arguments were found to develop new concepts (Babbie, 1983, Neuman, 1997, Denzin and Lincoln, 1994).

Data collected by a variety of existing data sources are primary data and secondary data. As for making informant done purposively. While the data analysis done by classifying the data or the data compiled for the coding, make a survey of the validity of the data then analyzed the data for reporting (Miles and Huberman, 1992: 16)

Overview of Jatinangor

Sociologically and geographically, the region is an area Jatingangor periphery (periphery), the region is seen aspects of distance there is even a short distance of the city center on the border with the jurisdiction of another county. Meanwhile, from the aspect of personal or group political relations, this area is far enough away from power and sources ekonomi.Oleh Therefore, a number of the problems described above indicate that Jatinangor as if no man's land because it consciously or not, this region uncategorized suburbs.

Jatinangor initially is one area which is located in District Cikeruh Sumedang Regency. Determination Jatinagor as the city of higher education has been planned since 1980 - in accordance with the concept of developing an area of development (PWP) Bandung Raya. The designation carries the risk of changes in the status of the District Cikeruh of districts in a rural setting with a predominance of agriculture into a crowded city areas by region woke up and built structures.

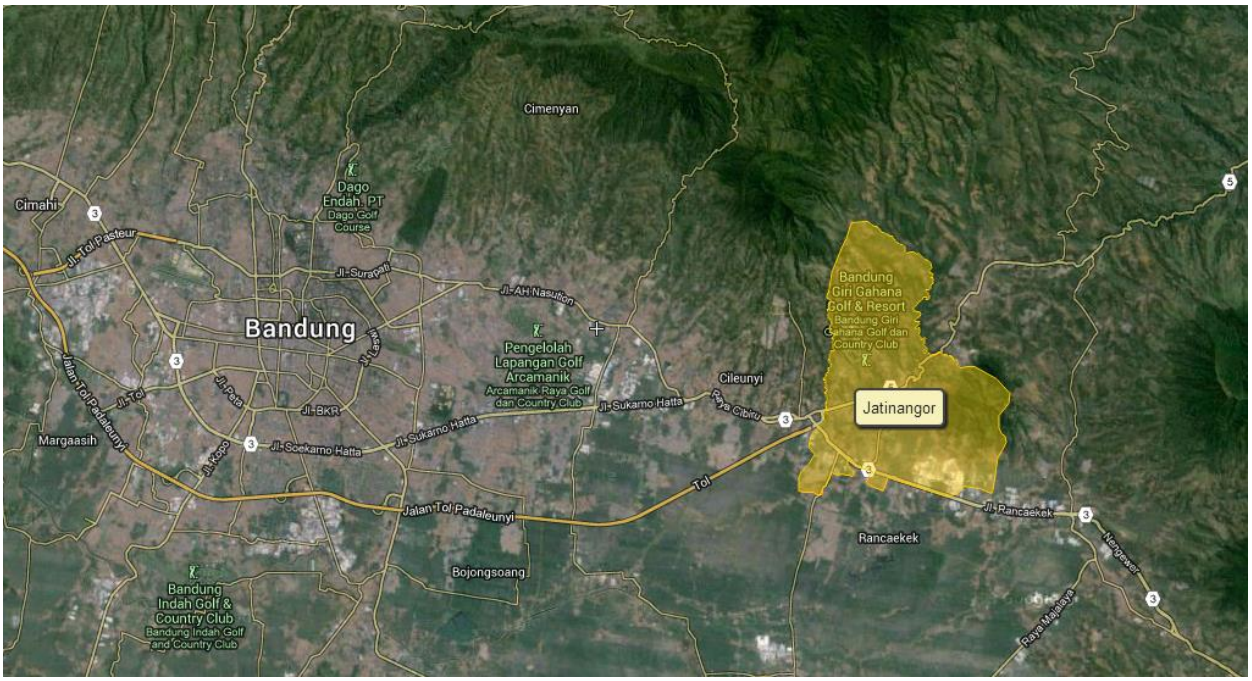


Figure 1st. Location Areas Jatinangor
Source: Wikimapia.org

Jatinangor hierarchically defined as a sub-center (sub-center) that has the function as a generator of local growth and structuring pusatpendidikan in Bandung Metropolitan Area. To support these functions, defined as the area Jatinangor pendidikantinggi by Decree of the Governor of the Province jawabarat No. 583 / SK-PIK / 1989. College currently has campuses in Jatinangor namely:

1. Universitas Padjadjaran (ubuntu) in the Village and Village Hegarmanah Cikeruh.
2. Institute of Public Administration (IPDN) in the village of Cibeusi. This institute previously named the College of Public Administration (STPDN).
3. Institute of Cooperative Management Indonesia (IKOPIN) in the village of Cibeusi.
4. Institute of Technology (ITB) in the village of honey. Previous ITB Jatinangor complex is a complex of University Campus Winaya Mukti (UNWIM).

Along with the presence of those campuses, Jatinangor also suffered physical and social development rapidly. As well as affecting other agricultural land in Java, many farms in Jatinangor which changed into a rental house for students and a shopping center.

The Jatinangor Development directives

Park development plan of science and technology will be implemented due to the very high educational potential in the area of planning, that some universities. Elements of this science will be complemented by other aspects such as the aspect of education, research storefront presence

as a forum for the publication of research results, as well as storefronts and research on the culture of western Java.

Aspects of education developed in the interest of the public, especially people (children and families), so that not only the college who can doing activities and to enjoy the presence of science and techno park. Storefronts research conducted as a form of public information related to the results of research each college. The results exhibited because the resulting product is a product that is beneficial to the surrounding community. The other aspect is the storefront and research on the culture of western Java, is expected this aspect will become a place of cultural preservation in terms of different, and not through the performing arts.

The development of science and techno park area are based on certain themes (thematic) which refers to the challenges and issues of ongoing national (such as bio-energy, food security, and others).

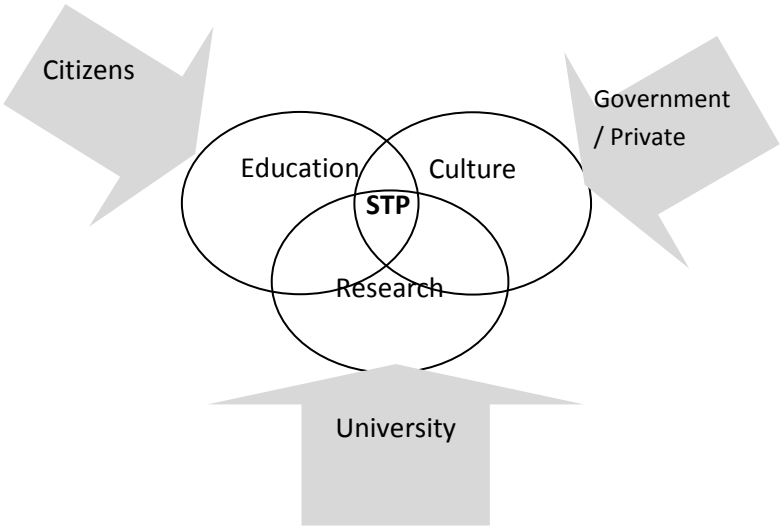


Figure 2nd. Scheme of The Development Tutorial Jatinangor

Discussion; The initial concept Technopark Science and Development in Indonesia

One strategy to increase the capacity of human resources and science and technology outlined by MP3EI is to revitalize Puspiptek into Science & Technology Park or Science Technopark (STP). It is the task of the KRT to revitalize Puspiptek and directed that in the regions are also formed STP. According to the International Association of Science Park / IASP (2002), STP is an area that is organized in a professional manner with the goal of improving the welfare of communities around the region through utilization of science and technology and culture of innovation that is integrated with business and educational activities.

STP is used as a means to initiate and flow of knowledge and technology between R & D institutions, universities and industry. STP facilitate the growth and development of innovation-based industries through incubation and the 'spin-off' while providing jasajasa high economic value in an area that is equipped with high quality facilities. There are several other similar terms with STP are used, among other things "Research Park", "Science Park", "Bussiness Park", "Innovation Center", and others.

Some STP that has been developed in foreign countries such as Daejeon Science Town in Korea, Zongguanchun Science Park in China, Tsukuba Science City in Japan, and the Technology Park Malaysia (TPM) in Malaysia. Daejeon Science Town in Korea have service facility research and development, experimentation and production capacity, high-tech business incubation and supporters, recreation and parks, and other supporters of the administration. Zongguanchun Science Park (ZSP) in China is an area in which there are National University, Research Institute, and Hitech Company engaged in the Information Technology sector. One of the pillars in the ZSP is Beijing International Business Incubation (IBI), which was established in 1994. IBI is committed to supporting innovation and start-up company, industry with high technology, international cooperation in the development of Science and Technology-based industries, accelerate the commercialization and promotion of high-technology industries in China. Another STP abroad namely Tsukuba Science City in Japan Technology Park Malaysia in Malaysia. Tsukuba Science City has 5 regions which is the location of the center of research institutions (research), and there are 40 educational and research institutions, as well as 33 government and private organizations that are located in this region. Technology Park Malaysia in Malaysia is an area that is developed to accelerate the transformation process improvement science and economy of Malaysia. TPM is managed by professionals who have the primary objective to improve the welfare of the community by promoting the culture of innovation and competition in aspects of science and industry.

Examples STP abroad has been some success in creating interaction between providers and users of technology. STP development in Indonesia is expected to also be a vehicle that really can create interaction between providers with technology users. Currently, several regions in Indonesia have been established at the initiative of STP both governments, universities, and private. Among them there Solo Techno Park in Surakarta, Sragen Techno Park in Sragen, Central Java, Bandung Techno Park Research Center in Kota Jababeka Jababeka Independent West Java, Agro Techno Park in various provinces, as well as Puspiptek in South Tangerang, Banten. Some places following form the region, including Cibinong Science Center belongs LIPI in Cibinong.

Some examples Tecnopark in Indonesia

Solo Technopark

One form technopark ongoing sustainable adala Solo Teknopark. Can be explained bahwasana initially Solo Teknopark hierarchically positioned regarded as one unit or portion under Bappeda Solo. The starting position is due to a lot of R & D activities are then put under Bappeda Solo as a new Board of Technical Implementation Unit in 2010 is integrally Solo Teknopark changed its status into a form of Regional Public Service Board. Description dihimpin explains that this

change is done because if it is UPTB the scope to be less extensive as well as inflexibility management as well as the interests of cooperating with the industry, so it can be said to be semi-private, to support their own households, only facilities in support PABD, then we carry out wear BLUD , financial expenditure patterns BLUD, considered the most flexible and has had clear guidelines for appropriate regulation of the Minister of the Interior No. 61 Year 2007 on Technical Guidelines for Financial Management of Regional Public Service Board.

Results of the research interview jug describes the obstacles encountered in the course of managing Solo Teknopark as one portion of the structure of the City Government of Solo namely the difficulty to establish cooperation with the industry and determine service rates. Experience has shown that the difficulties encountered as hard to find the same vision and mission with teknopark for development purposes within the framework of regional potential lift. The business mindset is different from teknopark industry as a portion of the local government. So the desire to put a balanced position towards the industrial world in Teknopark Solo structures still difficult to implement. Therefore, as a consequence of this form of institutional offers solutions that provide the direction of development of Solo Teknopark as the service provider unit of human resources ready to be used by the industry particularly has cooperated previously.

In terms of land use Solo Technopark received full support from the government of the city of Solo and an area of land of ± 7 Ha. Deikian area provided but of a whole new land of about 3 hectares.

Cikarang Technopark

The research also seeks to collect data and information on the institutional benttuk alternative that can guarantee the sustainability of the STP if developed in the area Jatinangor, by carrying out interviews with the manager of Technopark Cikarang. The goal that is to get a comprehensive picture of the options actually betuk institution different from the previous data source Solo teknopark.

Historically Cikarang technopark founded in 2011 by industry players cikarang, especially PT. Trimitra Citrahasta and ATMI (Akademi Mechanical Engineering Indonesia) Cikarang. Pebentukan was motivated above aim to synergize the four leading role in technological innovation that the academy, industry, government and the general public. With the establishment of cooperation between the various results of its fourth innovation can be transformed into an industrial-scale and profitable.

Services in Cikarang technopark has begun to provide the most basic concern is the development of human resources by increasing creative capacity. Furthermore, greater attention to the development of innovation into the industry will be realized. Based on information gathered through interviews these studies also described that Cikarang Technopark choose betuk as a company and initiated by the company is also using resourches share with private universities such as ATMI. Institutional management models tend to be flexible and business oriented. It is understood that institutional forms as practiced in Cikarang pure Technopark megadopsi values contained in the management system of private enterprise as in human resource management and

business budget plan. Until now Cikarang Technopark still developing various development programs, particularly education and training for workers from various companies.

Bandung Technopark

BTP inception are under Telkom University, but in its development now since 2010 has been under the foundation Telkom. So the position parallel to the university Telkom. BTP its early inception of this, the problem is how to explain to the board's internal foundation to make the BTP, because BTP is a bridge between the university with the community of users of technology produced by Telkom itself.

In the institutional aspects of the management of BTP has been separated from Telkom university starting in 2011. With the model management agency outside the university-owned Telkom Yayaasan, Bandung Techno Park (BTP) has more flexibility to function as an intermediary and synergy between the development by Academia, Business Sector / Industry, government and society or community in his statement shortened to ABGC. As the Business Incubator, the main activity of BTP grow new start-ups or tenants with some services as follows: (1) Business Mediation. BTP connect start-up / tenant with its own products to potential markets; (2) Production Support. BTP also supports startup with production facilities in cooperation with the industry as the main perpetrators of production; (3) Innovation Center. BTP provide some facilities for the community to grow and discover new innovations in the field of ICT; and (4) Training and Consulting. BTP provide training and consulting services specialized in the field of ICT. This service is open to the public. There are four main parties involved in the activities of BTP. This party government, industry, universities, and BTP itself. BTP perform as an intermediary and synergy between the actors of this builder to develop the ICT industry in Indonesia.

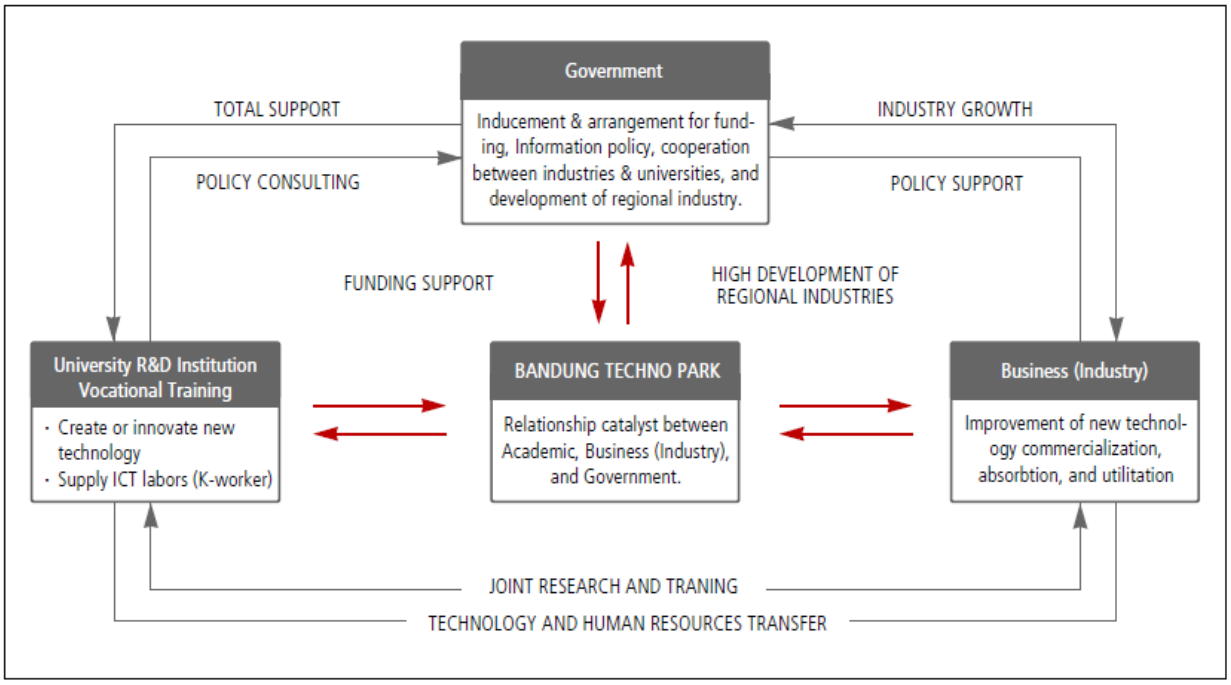


Figure 3. Linkage between Triple Helix at Bandung Techno Park

Source: Presentation Bandung Techno Park's Delegation at UNESCO – WTA Training Workshop 2012 (httpwww.wtanet.orgds_imgssub04wtr5WTR02010505BP.pdf)

Institutional and Alternative Financing Model Cluster

There are two possible financing alternatives for the development of Regions Sience and techno park in Jatinangor, namely

1) The concept of BLUD

BLUD concept is the concept of joint management between the government, private sector, employers, and educational institutions. At this concept usually there are some directors who became a representative of each party who will jointly manage the area to be set up, as happened in Solo Techno Park. This concept tries to provide alternatives of any management problems are left entirely to the government or private. The advantages of the application of this concept is able to cover two constraints, namely:

1. complicated bureaucracy dipemerintah cause business opportunities, opportunities in education can not be caught.
2. private Generally do not have sufficient funds to finance the development of the region that require government intervention, especially related funding.

BLUD concept is able to cover both these shortcomings so as to encourage the collaboration between the different actors to jointly develop the area. The function / cooperative relationships that occur between each actor in this concept are:

BLUD concept is despite government elements in it, but it has a self-financing system, in which the parties present in the region work together to find regional funding opportunities. Therefore, the most important thing about this concept is that there is a business element that must be developed, namely by collaborating lembagan education and private / enterprise. However, BLUD is not allowed for profit alone, but must be independent and create efficiencies of operating costs implemented. Moreover, in BLUD all budget allocations such as salaries / wages, purchase of equipment, the maintenance has to be clear designation / her HPP to ensure operational cost efficiency region.

BLUD concept generally have some constraints when applied, among others:

1. Combining the common interests among the various parties who so far has the working mechanisms and administrative systems are different, misalahnya between the government and private sectors.
2. The funds available from the budget generally are not able to cover the cost of maintenance / routine such as employee salaries.

2) The concept of "Hybrid" / Mixture

Hybrid / mixed a coordinating body are semi-structural. This institution is an adhoc addition serves to coordinate programs and funding from central government agencies involved, also has a fixed apparatus inside the secretariat to coordinate the planning, implementation, and monitoring programs, including for directing and managing the budget. The authority to direct and manage the budget is intended to give full authority to the agency in coordinating and effective control of the implementation of development programs conducted by different sectors, so that the implementation of the development in the region in accordance with a predetermined plan. Thus this institution can be effective, there should be a special allocation of funds intended for development of the area TBIT Jabar.

The following will describe some of the advantages and disadvantages of this form:
Advantages:

1. Characteristically mutualism symbioses between the two parties
2. The system is run professionally and proportionately
3. There is a working unit which is binding on both parties

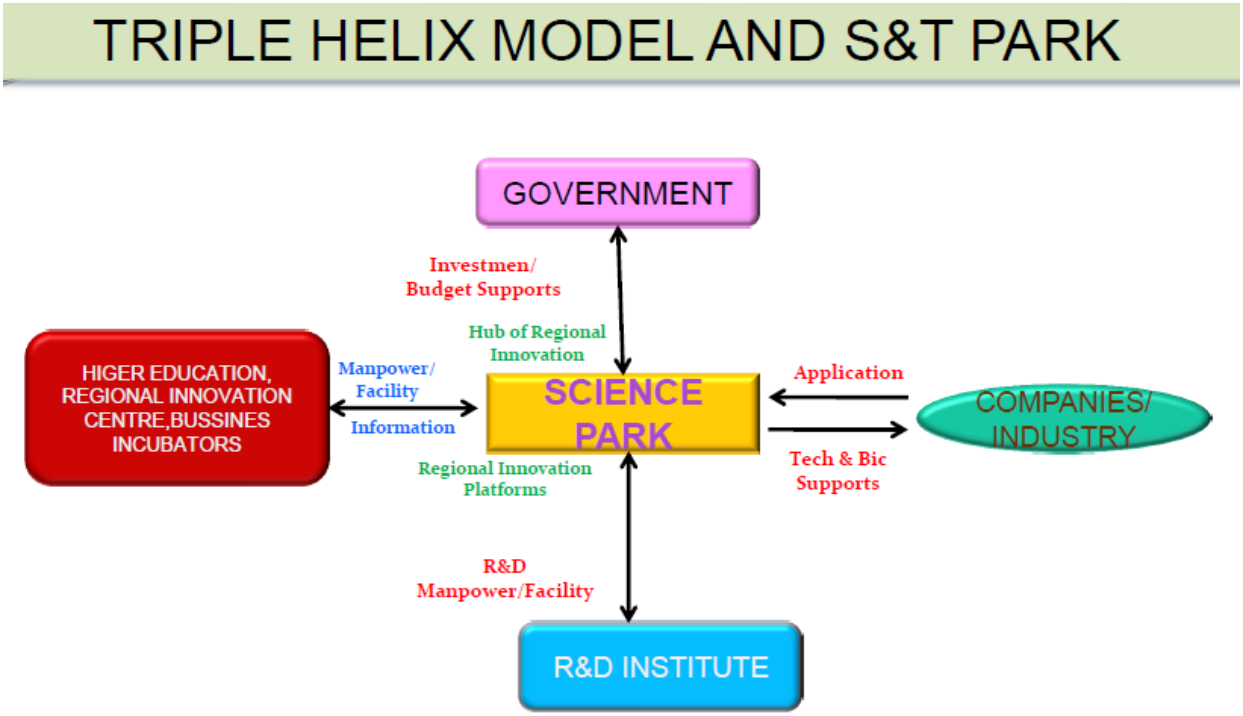
Deficiency:

1. Relies heavily on mutual trust between the two sides, if one party does not believe in the other party, then the system does not run into the maximum
2. Sharing will not be optimal, it will still depend on the budget

Institutional Management of Sience technopark

Actors involved

Sience and technopark Park area generally involve three main actors, namely local governments, higher education and research institutions, and industry groups / private.



Source : Prof. Deog-Seong, Oh, 2013 on **Wisnu Sardjono Soenarso(** SCIENCE AND TECHNO PARK : Supporting Regional Economic1 Development, Synergy Academics, Business and Local Government, httpwww.britishcouncil.idsitesdefaultfilesparallel_b_-_wisnu_sardjono_ristek.pdf).

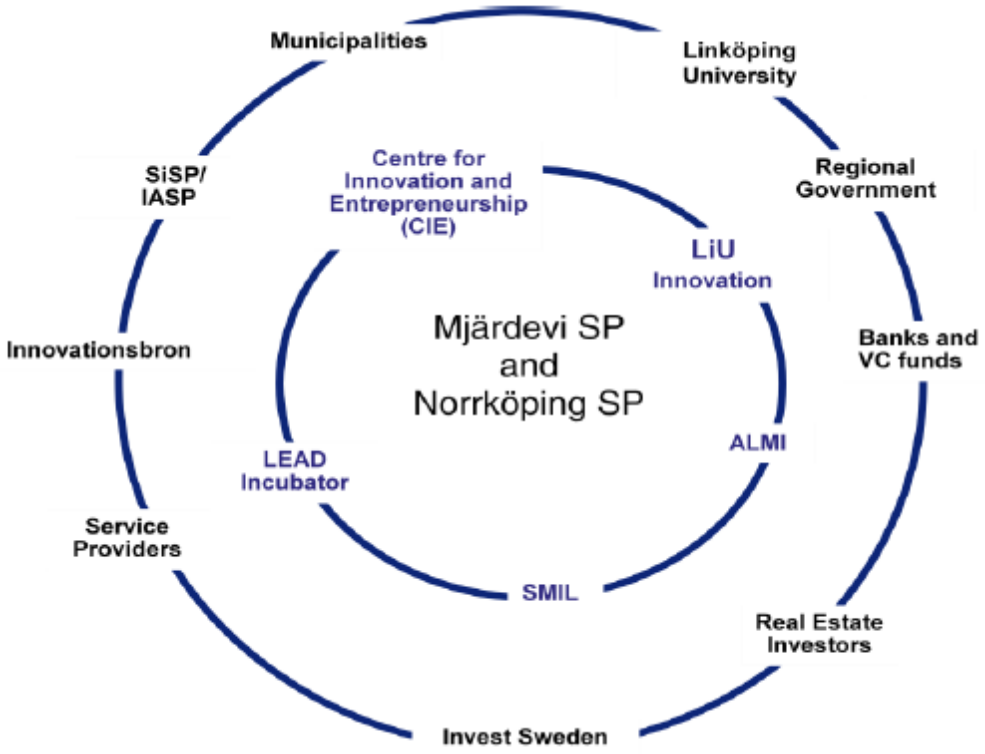
The roles of each actor in the region is as follows sience park.

Table 2 Actor involved

Number	Actor	Role
1.	Local Government	Provide land for the development of the area The main actors who unite all actors and define general governance

Number	Actor	Role
		principles Provide land for the development of the area The main actors who unite all ator and define general governance principles.
2.	Higher education and Research Centre	Creating a new benefit from their resources
3.	Industry	Improve competitiveness through strengthening the network

Each actor to perform its role in accordance with the functions set forth in the collective agreement. In addition, the actors involved are also grouped into an organizational structure in accordance with their respective roles, and the relationship is based on the principle of mutual trust, and if there is a dispute, then the government as the main actor who will deal with various issues in the region. Here are examples of actors are involved in the Regions Sience Park in Mjärdevi Science Park (MSP).



Figur 2nd Actors Involvements at *Mjärdevi Science Park (MSP)*

Resourches: Albahari, dkk, 2011

Issues and Problem in Region

Technopark area management science and can not be managed by one party, but by some parties and has an organizational structure as well as financial contributions artifacts together boosted by the agreement / contact cooperation (MoU). In the management area, the government is the main actor who will monitor keberjalanan region as well as the actors involved.

In general, the formation of sience park area requires a long time about 10 years until the well-established stage (establishment). Moreover, in its management, must set up a coordination path capable of promoting the development and sustainability of the region. The form of effective coordination to do in managing the park sience (Plan and Manage Sience Park in the Mediterranean. 2010) is:

1. There should be a division of tasks and coordination clear
2. An agreement must be made between associations, developers, contractors planning, and related partners, which connect the various aspects of the project, such as the prospect of the company, the development of installations and facilities, coordination, and promotion;
3. Consultation procedures and coordinating body should be established to encourage the development of mutual trust;
4. There is an important political arbitration body to settle disagreements between partners;
5. Policy makers should not be involved in the association. There shall be established a board of directors, founding partner groups, elected representatives of the founding partners: the economic and financial actors, researchers and academics (to be grouped into the body of relevant organizations).
6. After the association is established, the next stage adalam recruiting managers who have appropriate experience in the field of regional development sience park. Sience park coordinator should also be able to accommodate the public and private interests that exist in the area of development, because both of these are often difficult to go hand in hand and they will be involved in various activities such as: promoting new companies, research development, and creating and developing companies.

Conclusions and recommendations

As a strategic area of education, then Jatinangor has great potential to be developed, especially supported by the presence of several universities that are able to contribute to the development of the next Jatinangor region. Jatinangor Region development plan as an area of Science and technopark, provides opportunities for universities to be able besinergi in building Jatinangor area. University Padjajdjaran can be as a pioneer in this development and will be able to contribute to the advancement of science and technology and boost the economy in the region Jatinangor.

Institutional Science and technopark in the Jatinangor dipelopiri by unpad can create special institutions that manage this area, which in the future management of this area can besinergi with other universities in the region and local government Jatinangor Sumedang Regency.

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