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**THE MASTER PLAN FOR THE SCIENCE & TECHNOLOGY PARK OF VIÇOSA:
A MEETING PLACE FOR SCIENTIFIC INNOVATION,
ENVIRONMENTAL STUDIES AND PEOPLE**

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ABSTRACT

The present paper intends to highlight the most important characteristics of the Science & Technology Park of Viçosa's master plan. In addressing this aim, it first looks at the town where it will be located, followed by the role of the local university in this endeavor, and additionally it goes over the basic points of its theoretical conception, since it is being designed not only as an "habitat of excellence for science, technology and knowledge-based organizations", but also as a meeting place for scientific innovations, environmental studies and people, entirely integrated with the local community.

INTRODUCTION

Changes of paradigms from an industrial society to a service orientated information society are bringing new challenges to the local governments all over the world. The rapid development of technology coupled therefore with huge global shifts are pushing the local administrations to adopt new strategies in order to drive a permanent creation of jobs to maintain the economic activity running in an acceptable level.

The local competitiveness, consequently, is being affected since a conflicting relationship between globalization and regionalism is linked with a world economic trend towards becoming a “knowledge economy”. As this new model requires dynamic companies, which are being themselves extremely dependent on a positive regional environment, the presence of effective scientific facilities, like renowned universities, and/or research centers is critical to safeguard and to improve their competitiveness.

In consideration of that, an extensive international literature on this issue has shown that high-tech agglomerations, such as science and technology parks are especially suited for providing means of promoting a relevant and lasting form of regional development in terms of “systemic competitiveness” because:

- They offer the necessary surroundings for starting and successfully running high added value companies;
- The companies located in these places have a considerably broader knowledge base and are far better geared to provide services rather than to produce only, and
- These companies work towards the environmentally friendly further development of existing products.

This strategy, however, claims towns with a consolidated R&D infrastructure. On account of this, a geographical proximity to any kind of scientific facility is mandatory, since undertakings in high-tech agglomerations are especially suited to convert scientific findings into marketable products.

THE TOWN AND REGION

Viçosa, a 65,000 inhabitants university town, is located about 200 km southeast of the Minas Gerais State capital, Belo Horizonte.

The state of Minas Gerais together with the states of Espírito Santo, Rio de Janeiro and São Paulo make up the southeast region of Brazil. This state occupies a privileged position among all other Brazilian states in relation to the country capital, Brasília, and the most important Brazilian economic centers.

Concerning the state population, it is the second largest in comparison with the other Brazilian states,

with approximately 18 millions inhabitants. Regarding the population of Viçosa, its high increasing rate level (2,4%) is notable, bigger than the Minas Gerais State (1,4%), and even the country's increasing rate (1,6%). This is attributed to the accelerated expansion of the undergraduate and graduate programs of the Federal University of Viçosa (UFV) occurred in the last decade.



Figure 1 – Minas Gerais State and Viçosa

Viçosa is also a regional pole for 14 small towns, and its main economic activity is based on the service sector. The 554 Viçosa's business and offices offer a quite large range of products and services. It is on the educational sector that this town has become especially well known. The Federal University of Viçosa - UFV - a public institution with approximately 8,000 students is remarkable not only as an important educational center, but also because it plays a central role for the local economy. Confirming this tendency of being a "learning town", two private faculties were set up in the last three years, and a third one will start to enroll new students in August this year. As result, in the next five years the number of undergraduating students in these three new institutions will be about 6,000.

The local commerce figures 1,104 stores spread in four shopping centers, all located in the central area, as well as in a large pedestrian area, which are responsible for making sales not only for the local population, but also to people from the surrounding region.

The local airport is located about 8 km from downtown. A regional airport, placed about 100 km south, is now under construction, and the closest international airport is in Belo Horizonte. Good roads connect this place to the state capital and the rest of the country.

As a result of an accelerated increase of Viçosa's population, the conditions of its infrastructure are facing some problems at the present time. Among them it is worth mentioning the lack of alternative to expand its urban area. This deficiency has an effect on the Science & Technology Park of Viçosa, once the most important urban expansion axes points exactly to the place where it will be implanted. Because of this, the Park's coordination is making a huge effort in order to advise the local authorities about the risk of having a high-level real estate speculation in a vast neighborhood, as the surrounding properties will become extremely valorized in a short period of time.



Figure 2 – Aerial view of Viçosa

UFV: THE MOST IMPORTANT PARTNER

The Science & Technology Park of Viçosa (STPV) is an initiative based on a joint effort of the Federal University of Viçosa (UFV), Local Government of Viçosa, Minas Gerais State Government, through its Minister of Science & Technology and Commercial Association of Viçosa.

The UFV is traditionally known for its constant pursuit of excellence traced by a balanced development in teaching, research and outreach. Conveniently located in a beautiful highland, this university was founded by the former President Arthur Bernardes in August of 1926, patterned after American land grant colleges, including methods, research and outreach services.

Originally an agricultural and technical institution, UFV offers nowadays undergraduate degrees in 35 fields of study, and it is also known for its outstanding graduate programs,



Figure 3 – UFV's aerial view

counting with approximately 1,500 graduate students registered in one of the 31 graduate level courses (19 master's and 12 doctoral degree).

Its teaching staff consists of about 1,200 professors. From this total, approximately 500 have, at least, PHD level. This extremely high concentration of qualified professionals in comparison with many other places in Brazil raises Viçosa to a position of an important "learning town".

Internationally known, the UFV is ranked among the top Brazilian universities. It is one of the most prestigious agricultural institutions in this country, noted for its excellence in teaching, research, outreach and international programs, mainly on the agribusiness chain.

It is notable the great technological advances that UFV has got in several fields of knowledge contributing to a better standard of living in the country. As a result of its high-developed researches programs, new products with high technology has been constantly introduced in the Brazilian market through the UFV's researches, ensuring its outstanding position on the frontier of knowledge.

Since the last decade the UFV's administrations have made an enormous effort in order to set up the entrepreneurship into academic culture. The main assumption behind this effort is that endowed high education coupled with marketable skills give an indispensable framework to promote a quick transference of knowledge and/or technology spawned from the UFV's research projects to the market. To accomplish this goal, teachers, researchers and students are being permanently stimulated to get involved with the new enterprises coming out from the University's spin-off activity.

The main UFV's entrepreneurial activities that raise this university to the position of the most important partner for this undertaking, can be summarized in the following actions:

- Creation of undertakings leaded by undergraduate students with professors advisory;
- Support to the municipal development policies;
- Training of faculties members on technological innovation, transference of technology and Incubator;
- Creation of new courses on entrepreneurship through the Entrepreneurship University Teaching Net;
- Creation of UFV's Disk Technology - an university call center to make public the UFV's researches on technological issues;
- Creation of a Partnership Affair Office to provide extensive support services to the university entrepreneurship activities;
- Creation of a University Software Pole;
- Creation of a University Business Incubator;
- Creation of Technological Center for Regional Development (CENTEV), and recently,
- Creation of UFV's Technology Park (STPV).

SCIENCE & TECHNOLOGY PARK OF VIÇOSA: ARRANGEMENTS AND BASIC ARGUMENTS

Science & Technology Parks (STP) and incubators as a strategy of fostering the innovation activities of SMEs and settlement of new technology based on firms (NTBFs) in the neighborhood of the universities is to some extent a recent movement in Brazil.

According to ANPROTEC (Brazilian Association of Business Incubators and Science Parks) sources of supporting to disseminate technological innovation and entrepreneurial practices came out in this country only in the early 1990s.

The pioneering initiatives were based on the European and American Science & Technology Parks' (STPs) models in a shared effort of public and private local players (academy, municipalities, enterprise associations etc.). State and Federal government did not play a significant role, at least in the beginning of this process.

Ever since, the number of STPs has grown rapidly. At the present time, they are thirty-four: eight, implanted and working, and twenty-six are being planned (most of them supported by public funds from federal and/or state agencies which are now financing projects and/or building constructions).

The Minas Gerais State Agency for Research (FAPEMIG) is supporting four new STPs master plans, including the Science & Technology Park of Viçosa (STPV). There are, however, other six parks being planned at this present time in this State.

Despite this rapid increase, it is notable that a great number of STPs here and abroad are (or were) planned as closed places without any connection with the community surroundings. As consequence of this theoretical conception, they are becoming an urban ghetto, while most of them have physical barriers like fences, gates and etcetera, which disconnects the private space from the public space.

In addition to this, people from the border communities who are not directly involved with the Parks' undertakers activities are also not welcome to visit them, or they even do not have a chance to go for a stroller in these places. So, vast urban areas, very well served, with beautiful landscape are not integrated with the surroundings. Based on this reality, and as a great number of STPs are located in the suburbs, some authors classify these areas as a "suburban scrap".

Contrary to this trend, the theoretical conception for this project is based on the followings arguments:

- As the STPV is located in the extremity of one of the most important Viçosa's axes of growth, its master plan will take in consideration that this urban region must be strongly linked with its undertakers and leisure activities;
- The area where the STPV will be implanted belongs to the UFV. That means: it is a public property and it will continue public after the implantation of this Park. In this way, the future SMEs and NTBFs that will settle in this area, will be tenants, not owner of their lots;
- A Center of Environmental Studies (CES), supported by the UFV budget, is also being planned for this same area. As there is a great lack of public spaces for leisure in Viçosa the CES will play a very important role to attract visitors to the STPV. An "environmental orientated leisure", coordinated by this Center, will be an original and innovative way to integrate people with science, as well as with the Park enterprises activities. This Center is focused on the following motto: "environmental education to keep the area clean and alive";
- The STPV master plan is being designed as a model of "environmental sustainable undertaking"; where the bucolic and rural aspects of this area match perfectly with the activities pertaining to the Agribusiness Chain, the emphasis of their future SMEs and NTBFs, as well with the emphasis of the most important UFV's researches.

SCIENCE & TECHNOLOGY PARK OF VIÇOSA: MASTER PLAN'S PURPOSES

This park will be settled in a 214 hectares area. Due to the specific natural characteristic of this place and under the Brazilian environmental legislation, approximately 140 hectares must be preserved and only 74 hectares can be divided into lots. Under the proposed division, it will be about 80 lots with an average area of 1,000 square meters each.

The three main STPV's master plan purposes are:

- First: to preserve the existent natural and built patrimony. Concerning to the natural characteristics from this piece of land, it has a tremendous potential for leisure given by a very beautiful landscape bordered by 40 hectares of Atlantic Forest intersected by an unruffled stream, hills and flat grounds. Concerning to the built patrimony, the most important construction is a seventy-five years old building, known as “main building”, with 5,114 square meters, initially built to host young delinquents from the big cities. Since 1991 it remains empty, as the federal government - its sponsor - suspended this program. To attend new functions as companies condominium, food court etc., an intense reparation in the electrical net, telephone net, and hydraulic pipe net must be made in order to update them, as well as it will also be necessary some lay out changes, whereas the function of the internal spaces will be deeply changed.
- Second: to maintain the Nucleus of Community Support (which is already running very well in this same area) as an alternative of involving people from different social layers. On the other hand, this program can also play an important role to attract private funds, since in this country, the “corporative citizenship”, is becoming a successful way of bringing the private sector near to the public sector.
- Third: to transform this area in a made-to-measure “environmental sustainable park”. This means, to couple business with environmental leisure activities. In this sense, the Center of Environmental Studies (CES), as the coordinator of the “environmental orientated leisure activities”, will be in charge of carrying this out.



**Figure 4– Science & Technology Park of
Viçosa - Environmental Patrimony**

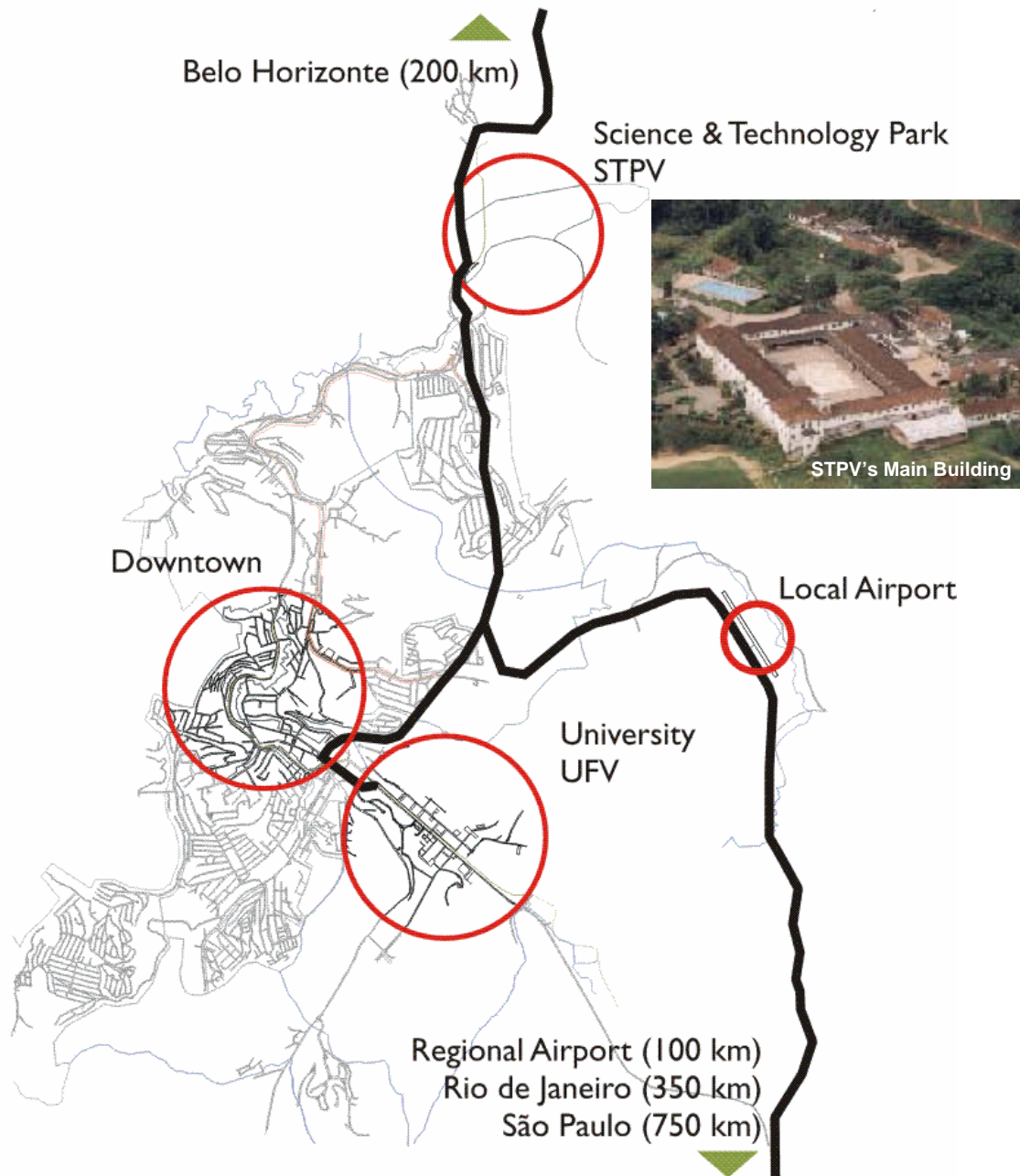


Figure 5– Location of the Science & Technology Park of Viçosa



Figure 6 – Science & Technology Park of Viçosa Master Plan

CIENCE & TECHNOLOGY PARK OF VIÇOSA: CENTER OF ENVIRONMENTAL STUDIES (CES)

This Center is being especially designed to match an UFV's Environmental Studies Unit with an Interactive Science Museum in order to integrate spaces for scientific, pedagogic and funny activities, which are addressed to researchers, teachers, students and people in general. Its main purpose is to publish the science knowledge making it more understandable for everybody. In

this way, as knowledge never ends, the internal lay outs and the consequent external shapes must be in constant changes bringing all the time news and surprises.

To accomplish such purpose, it is being organized as a funny game of perceptions and emotions, whereby visitors could be in touch with some of the most important human discoveries, following paths that go from the rustic to the technological, from the empiric to the scientific, from the past to the future, which is the same sequence of the human knowledge's evolution.

Three different zones: The Empiric Knowledge Zone, The Knowledge Zone and The Technological Zone will display everything that is to be shown.

In the Empiric Knowledge Zone, four paths specially designed to touch emotionally the visitors will show the primary relationship between man and the surrounding environment. Each of these four paths will be organized according to the four elements (water, earth, fire and air) characteristics. So, in the water path, earth path, fire path and air path, assemblies relating to the characteristics of each one, and designed to create a bucolic introspection will involve the visitors emotionally. In addition to this, people will also be motivated to think about the importance of some environmental issues, for instance, how to preserve the life and the planet environment.

The Scientific Knowledge Zone will show how practices become a scientific knowledge. In this case, the assemblies will be based on the conception of "*minds on*", which is an evolution of the conception of "*hands on*", or, in other words: not only touch, but also think about what is being displayed. Here, some vernacular patterns like: *water comes from the faucet*, or *electricity comes from the outlet etc.*, will be undone.

Finally, the Technologic Zone is where the scientific knowledge becomes technological knowledge. For this reason it is considered to be the core of the center. The assemblies displayed in this zone will show that, although recent technologies may seem very complex, most of the time it is based on very simple principles as, for instance, the computer - an icon of the modern technology - is based on the binary system. So, the purpose of this path is to stimulate each person to create.

After the visitor has been through all these four paths and zones he will be invited to make the return path in the opposite way. That means, he will leave the technology, go through the knowledge and finally reach the empiric zone. The purpose for these sequences is to force the visitor not to forget how everything started. This is to avoid an exacerbation of the technology conquests and the propagation of dogmatic values, which are in the opposite side of the real scientific values, holding back the idea of science as a factory of easy and immediate solutions, like: "press the button and wait a minute for the solution".

CONCLUSION

As regards to the role of the local environment (town and university) plays to this Science & Technology Park, the paper evidenced that:

- Although there are some infrastructure lacks in the town of Viçosa, the available R&D facilities, mainly those concerning the offering of high-qualified workers, assure to this place the necessary conditions to become a future techno polis. So, the impact of the STPV, as a development policy on the local competitiveness can be perceived right through on the enhancement of the local and even the regional economic activities, since it attracts technology based on firms, which will contribute to improve the offering of high-qualified employments to this town.
- As UFV, its main partner, has already embedded a vigorous entrepreneurship culture into its academic activities, ample opportunities for creativity and innovation can also

be created in the STPV. After all, it is a common view that “people who are taught about entrepreneurship are more likely to build on new companies and to take advantage of opportunities designed for entrepreneurs”. Such arrangement will play an important role in the process of transfer of technology from the university researches to the STPV’s technology based on firms. Besides this, the emphasis on agribusiness chain of these firms matches perfectly with the UFV’s tradition.

Finally, concerning to the STPV master plan, empirical studies have already shown that there is an enormous expectation from the local community about its implantation exactly in the way it has been proposed. The reason is that it can bring new perspectives for two of the most important local lacks: jobs and leisure space, and this endorses the principal purpose of connecting enterprise and leisure activities for the whole community in this area.

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