HIDS

Hub Internacional para o Desenvolvimento Sustentável

Analysis Report

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Sociedade Portuguesa de Inovação

International Association of Science Parks and Areas of Innovation

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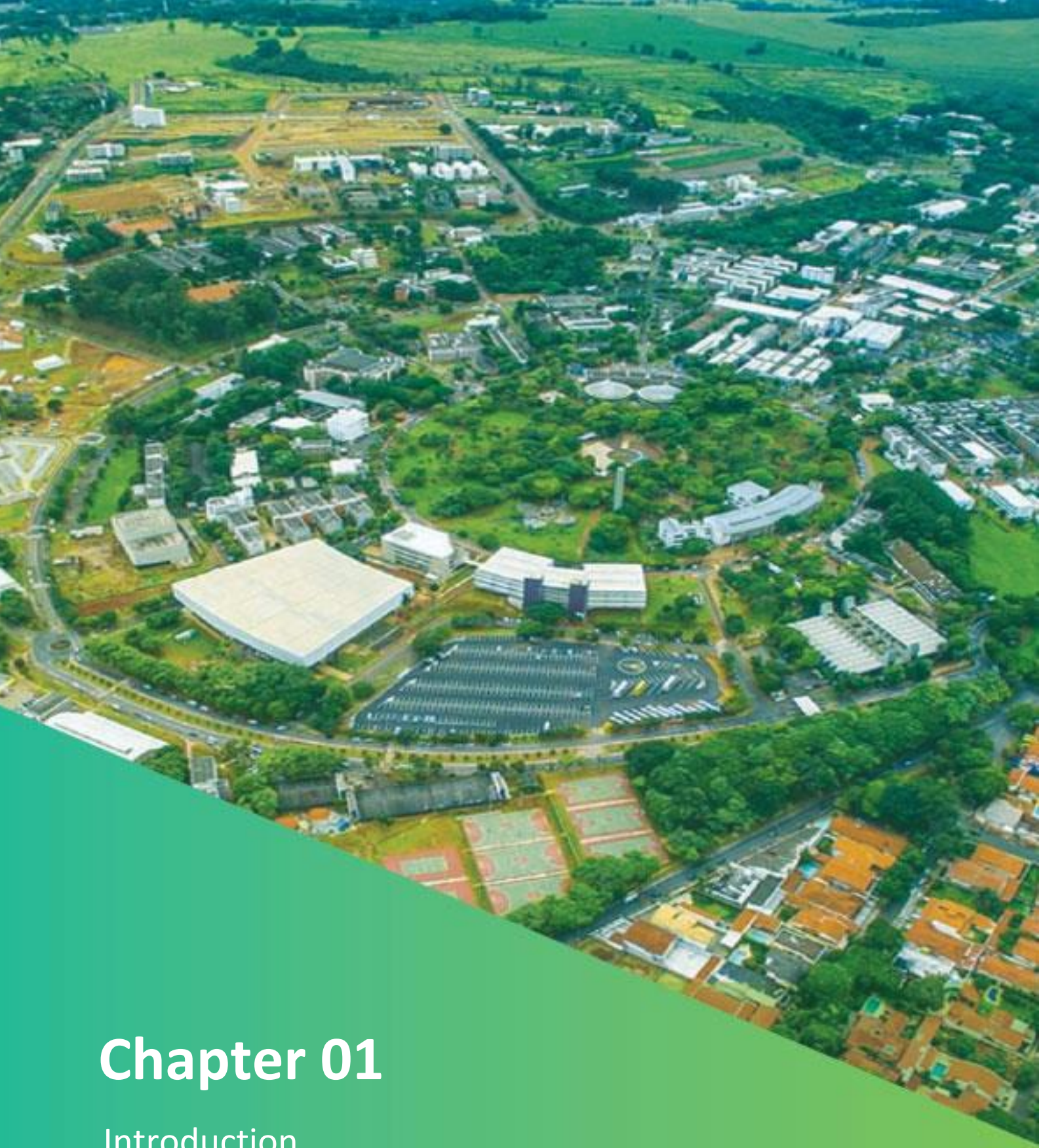
Index



Chapter 01

Introduction

1. Introduction

The present Analysis Report was developed by the consortium of companies SPI – Sociedade Portuguesa de Inovação, IDOM and IASP - International Association of Science Parks and Innovation Areas, and is the second product of the BR-T1430 Technical Cooperation, settled between the Inter-American Development Bank (IDB), the Municipality of Campinas and Unicamp - State University of Campinas, with the financing of the Korean Partnership Fund for Knowledge for Technology and Innovation (KPK).

This report will contribute to the Business Model work component from the Master Plan of the International Hub for Sustainable Development (HIDS) by organizing key information on the current state of the Campinas Innovation Ecosystem (CIE), and its possible implications to HIDS development. It aims to provide inputs for its business model to be leveraged due to greater strategic assertiveness of its proposals and actions, and facilitate the definition of HIDS and its stakeholders profile, mission and strategic position.

The strategic organization will have contributions arising from efforts to frame the mission, vision, and positioning of HIDS in relation to its activities, taking into account, in addition to its territorial situation, the multiple perspectives and expectations of stakeholders interested in its development, which will contribute to reinforce the interaction of HIDS with local stakeholders, and consequently, increase its competitiveness and capacity to promote results aligned with the Sustainable Development Goals (SDGs).

HIDS' strategic alignment process will take into account the perspective of all members of its Founding Advisory Council, which is composed of São Paulo State Government, Campinas City Hall, Unicamp, PUC Campinas, FACAMP, CPGD, El Dorado, CNPEM, Embrapa, TRB, CARIBA, Cargill and CPFL Energia.

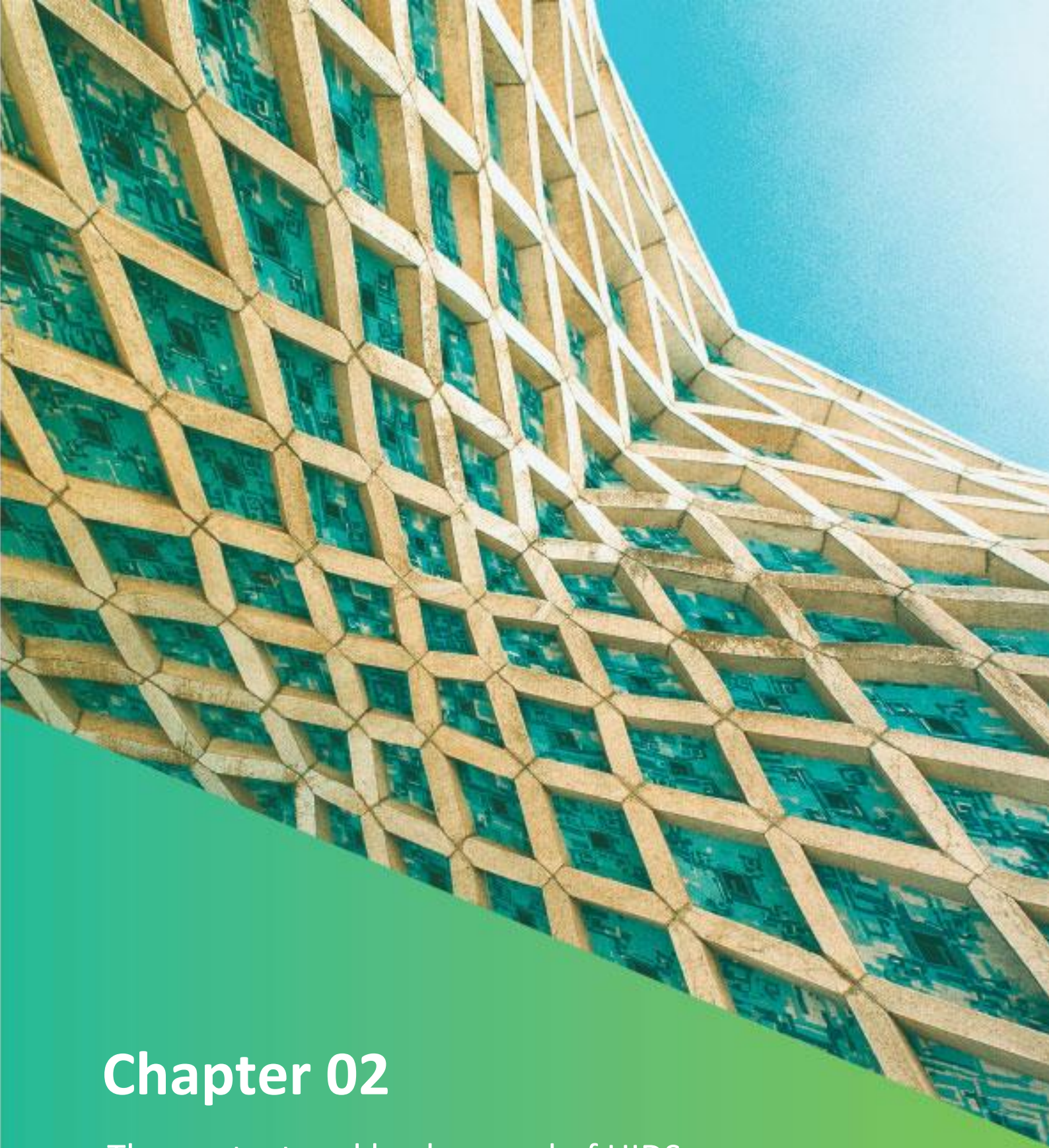
Consultations and perspectives from the local society, present in the information already organized by HIDS will be incorporated in the analysis, together with products and knowledge generated by the working groups from the HIDS Masterplan, and the socioeconomical data, available in the literature regarding the CIE.

Based on such perspectives, it will be possible to identify key areas in which synergies between actors can be achieved, in order to promote a solid, participatory cooperation environment, capable of generating business opportunities, which contribute to the development of the local community and are aligned with the HIDS sustainable development guidelines and objectives and thus the SDGs.

Prominent actors and instruments present in the CIE, such as Higher Education Institutions (IES), technology parks, incubators, legal instruments, among others. will be referenced by this analysis, aiming to demonstrate the ecosystem's ability to support and foster innovation, as well as to identify possible interactions and cooperative relationships from the perspective of HIDS.

Through the application of the SWOT Matrix and PESTEL Analysis methodologies (Task 1,5), key information on the strengths, weaknesses, opportunities, and threats of HIDS development process were identified, taking into account political, economic, social, technological, economic, and legal inputs. The SWOT analysis will highlight the main internal strengths and weaknesses of the HIDS, as well as the opportunities and threats that should be considered, having as a background the local context and innovation ecosystem analysed. Further, the PESTEL analysis will look at the potential of each variable: political, economic, social, technological, environmental and legal, all of which have to be considered in detail given the mission focus of the HIDS in responding to the SDGs. The thorough analysis provided will clarify the competitive advantages of the HIDS, which will be key for the development of the business plan.

In practical terms this document will report the (i) Context and background of HIDS; (ii) The Innovation Ecosystem in Campinas; (iii) SWOT and PESTEL analysis; and the (iv) Conclusions and critical aspects formulated by the analysis.



Chapter 02

The context and background of HIDS

2. The context and background of HIDS

2.1 Initial conception and first steps

2013 – 2016: The inception

The creation process of HIDS originates from the joint vision of local actors, interested in the promotion of science, technology, and innovation, who joined forces to enable the development of a structure capable of fostering cooperative relationships between suitable institutions to generate value and knowledge aligned with sustainable development. The performance of this structure would be oriented to generate positive impacts on the local social, economic and environmental situation, and to internationally promote models, technologies, products, and processes aligned with sustainability.

By analyzing the HIDS timeline, is possible to identify that in 2013, Unicamp expanded its territory to 3.8 million square meters through the acquisition of land related to the Argentine Farm[1], although there were no clear definitions regarding what type of activities and structures would be implemented on-site. The interest in creating a sustainable development hub refers to the Conceptual Article: International Hub for Sustainable Development, presented in 2016, which conceptualizes the HIDS proposal, in relation to the relevance of supporting the development of technologies capable of positively influencing the economic fabric and the planet's social and global needs to promote the 2030 Agenda of the United Nations (UN) and its 17 Sustainable Development Goals (SDGs). The ambition for Brazil to assert itself as a protagonist in relation to such needs is also described, with the HIDS as a structure capable of promoting these objectives through synergy between national and international institutions.

Since the promotion of sustainable development is one of the conceptual bases of HIDS, the presentation of its concept is relevant. On January 1rst, 2016, the UN resolution “Transforming our world: The 2030 Agenda for Sustainable Development” came into effect, consisting of 17 goals and 169 targets, which was unanimously approved by the 193 UN member states, including Brazil. The agenda aims to promote the well-being of individuals and societies, through sustainable development, which can be defined as the development “that meets the needs of the present without compromising the ability of future generations to meet their own needs”[2]. The need for concerted efforts among nations towards building an inclusive, sustainable and resilient future for people and planet, by the harmonization of three interconnected core elements of sustainable development: economic growth, social inclusion, and environmental protection, is also one of its key elements.

The agenda also reinforces the importance of sustainable, inclusive and equitable economic growth, creating greater opportunities for all, reducing inequalities, raising basic standards of

[1] www.hids.depi.unicamp.br/unicamp-e-puc-estudam-compartilhar-projetos-sustentaveis-em-campus-inteligente-com-potencial-internacional/

[2] www.un.org/sustainabledevelopment/development-agenda/

living, fostering equitable social development and inclusion, and promoting integrated and sustainable management of natural resources and ecosystems.

The 17 SDGs defined in the 2030 Agenda are listed below and will be referenced in the next chapters.

Image 1 - Sustainable Development Goals

With the intention of organizing itself as a structure able to contribute to such guidelines, the HIDS proposal is based on the concept of a HUB, which, according to Toivonen & Frederici (2015), are identified as spaces for knowledge exchange, construction of communities and the place where professionals from different backgrounds meet to materialize their ideas, which may have the following characteristics: (1) Hubs build collaborative communities in which groups of entrepreneurial individuals are at the center; (2) Attract diverse members with heterogeneous knowledge; (3) Facilitate creativity and collaboration in physical and digital spaces and; (4) Concentrate global entrepreneurial culture.

Following the conception of HIDS, the bases for framing its strategies and intentions were formulated in the already mentioned conceptual paper, which can be observed in its vision:

> *"Contribute to the process of sustainable development, bringing together national and international efforts to produce knowledge, innovative technologies and education for future generations, mitigating and overcoming the social, economic and environmental weaknesses of contemporary society"*[3]

And for its mission, which is composed by five components:

[3] www.hids.unicamp.br/wp-content/uploads/2019/03/HUB-Conceptual-Paper-Portuguese-V16.pdf

1. *Attract and add, national and international, efforts and skills for the construction and implementation of a collaborative agenda of knowledge generation in all areas relevant to sustainable development;*

2. *Promote the generation of knowledge in relevant themes, such as energy, food, health, urbanism, environment, economy, and social relations that allows the full, permanent, and sustainable human development;*

3. *Evaluate existing processes and technologies, incubate new ventures and propose, through research and education, innovations that allow the necessary transformations for sustainable development;*

4. *To be an innovative cell, having Unicamp as the radiating centrality of knowledge to promote, within Campinas and its region, the creation of a sustainable district model (a seed for a creative city) with local and regional directing impact;*

5. *Define and operationalize a governance that enables its mission, through a model that makes it financially and economically sustainable.*

Initial inspirational cases:

The model described by the Conceptual Paper of HIDS development mentioned above, was inspired by other international initiatives organized to promote sustainability and sustainable development, among which, from the territorial perspective (mission component 4), the HafenCity neighborhood project is mentioned.[4] Established in 2008 in the city of Hamburg – Germany as a proposition for the revitalization of the Port of Hamburg, this initiative takes into account the implementation of trends and innovations aimed at integrated and sustainable urban development, consequently enabling a harmonious architectural and structural model between different social actors, which promotes the mixed occupation of local space and enhances interactions with labor and activities such as leisure, education, culture, innovation, tourism and retail located in its territory.

HafenCity's urban development implies the concept that the totality of human actions must be taken into account in the elaboration of districts and sustainable urban projects, integrating the activities of the local population with its economy, design and environment.

Other initiative referenced is the Silicon Valley, the California's well-known agglomeration of high-tech firms, which is one of the most relevant examples of innovations systems based on synergies. The rise of Silicon Valley cannot be associated to a singular event or plan, as it is a result of a series of independent circumstances. Its history started at the first decades of the 20th century when the Stanford University decided to build a new institutional vision where learning

[4] www.hafencity.com

capacities and institutional resources were mobilized to change the fact that Stanford's graduates had to migrate to find jobs. In this context, students were encouraged to start their own firms and in 1951 the Stanford Industrial Park was founded aiming to create a connective tissue between the university and local companies. Varian Associates was the first company to move its research center there and start hiring young Stanford's graduates. Over the next few decades companies such as Intel, IBM, XEROX, among many others, moved to the Silicon Valley. From its origins to nowadays, Silicon Valley has consolidated its world-leading position in the technology sector and is nowadays an inspiration to the development of innovation systems platforms all over the globe.

The University of Houston's Schlumberger Headquarters project is also referenced. As a way of positioning itself as a leading center in subjects related with energy, in 2008, the University of Houston has expanded its infrastructure to the Schlumberger Headquarters, to create the Energy Research Park. Since its creation, the Energy Research Park has been a central hub for rapid development in academia, industry, and entrepreneurship. Nowadays this park hosts educational programs, incubator facilities, among other useful services. Through the cooperation between the research and entrepreneurship synergies, in this park many programs, products and solutions are been created to fuel the United States of America's energy industry.

Taking these initiatives as a source of inspiration, the HIDS concept was based on its potential to transform the area, of the Argentine Farm and Unicamp surroundings, into a sustainable district model, where the university, together with companies, institutions and civil society would act to consolidate the local space as a center for the production of knowledge and technology with the goal to contribute to sustainable development, and consequently with the alignment of the territory to such innovations. This role of knowledge producer is described in component 2 of the HIDS mission, which emphasizes its orientation towards relevant issues such as energy, health and the environment, in favor of full, permanent, and sustainable human development.

Acting as a link of national and international cooperation capable of attracting efforts and multiplying skills to consolidate a collaborative sustainable development agenda (mission component 1), together with its function of diagnosing processes and technologies, fostering research and education, incubating enterprises, and generate innovation (mission component 3), describes the orientations of its activities, which are clearly associated with education, science, technology, competitiveness, and innovation, through the support and interaction with different actors.

Mission component 5, presents the need to define a governance model capable of enabling the pursuit of the HIDS mission and achieving financial and economic sustainability. Since its proposal compels the interaction with various types of organizations, its governance must be participatory and collaborative, taking into account the various interests of the institutions that participate in the initiative and other actors formed by the business network, government sector, non-profit sector and local community, which will be directly or indirectly influenced by its development.

Still regarding the guidelines formulated during the initial stages of its conception, it is worth highlighting the comprehension of sustainability as a cross-cutting theme. This fact is exemplified by the impact that technological progress promotes on society, where innovations originating from different scientific lines directly influence human development and the social, environmental, and economic relations of our society.

In this context, the need for HIDS to have a wide range of activities was perceived, what implicates in the alignment of its contributions to different areas of sustainable development. For this purpose, its organization into Thematic Centers was proposed in the Conceptual Paper, which, integrated and in synergy, will enhance the creation of solutions aligned with the SDGs.

Image 2 - HIDS organization from Thematic Centres[5]

It should be noted that the Thematic Centers mentioned in the Conceptual Article are oriented towards areas of knowledge with a high potential to influence society, focusing on the prospect of a sustainable and equitable future, and that Unicamp and the organizations in its surroundings have specific capabilities in relation to such themes, including Research & Development (R&D).

In its initial concept, HIDS' financing structure would be based on attracting the interest of national and international institutions from different segments, promoting itself as an environment of interaction and mutualism between these stakeholders in order to foment their synergy, which leads to the sharing of the results and necessary investments among the participants of the initiative, therefore, it is foreseen for the proper functioning of the HIDS, the shared responsibility for the contribution of financial resources both for its construction and for the maintenance of its activities, being also possible its complementation by the access to public resources, mainly in relation to its research and development activities.

[5] www.hids.unicamp.br/wp-content/uploads/2019/03/HUB-Conceptual-Paper-Portuguese-V16.pdf

2017-2020: The Masterplan basis and IADB Technical Cooperation

The subsequent HIDS planning actions, which took place between 2017 and 2019 and had the support of São Paulo Research Support Foundation (FAPESP), resulted in the maturation of several aspects of its initial conception, including structuring the bases for the elaboration of the master plan.

The expansion of the territorial area of HIDS to 11.3 million square meters, which now encompasses not only the area of Unicamp and Fazenda Argentina, but also its surroundings, with the addition of the 8.8 million square meters area of Ciatec II High Technology Pole, which is identified as one of the Strategic Development Poles of Campinas, and the area of the Pontifical Catholic University of Campinas – PUC Campinas, due to clear synergies between these territories, the activities of their respective actors and HIDS goals[6].

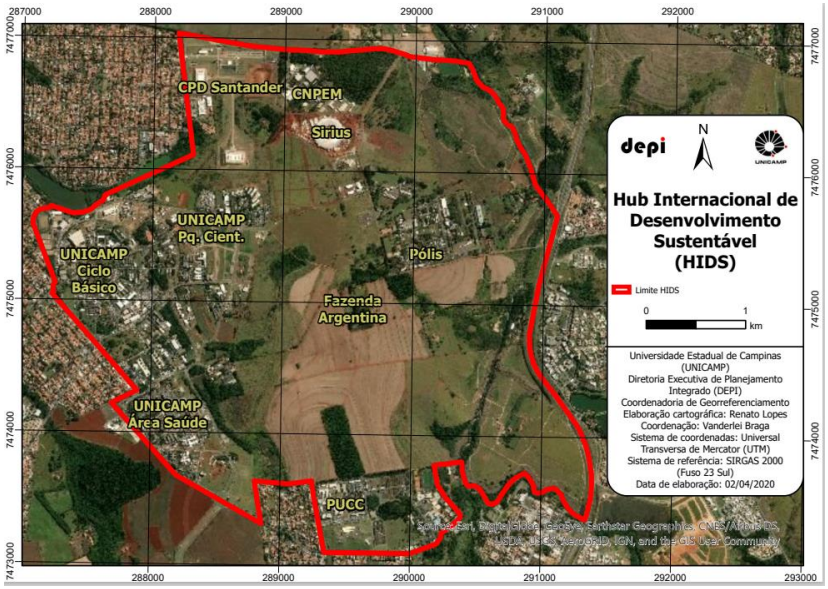


Image 3 - HIDS map[7]

In December 2019, the BR-T1430 Technical Cooperation formalized between Unicamp, the Municipality of Campinas and the Inter-American Development Bank (IDB), made available US$1,000,000.00 through the financing of the Korean Partnership Fund for Knowledge in Technology and Innovation (KPK), aiming to support the conceptualization and construction of the strategic framework and development of a master plan for HIDS. This action resulted in the organization of 7 work components, which are formed by a multidisciplinary group of people and companies that work to consolidate the HIDS master plan, namely: 1. Physical-spatial project; 2. Legal Strategy; 3. Business model; 4. Heritage; 5. Sustainability assessment; 6. Communication; 7. Governance.

[6] www.hids.unicamp.br/ainda-sem-projeto-unicamp-efetiva-compra-de-terreno-a-r-157-milhoes/

[7] www.hids.unicamp.br/mapas/

As a conclusion of its initial design stage and first steps, it is worth mentioning that in order to promote the participation of local actors in its development process, strengthen their representation, and to leverage synergies, in March 2020 the Founding Advisory Council of HIDS was created, with the responsibility to contribute to HIDS decisions, activities and plans, being composed by 14 institutions: Campinas City Hall, São Paulo State Government, Unicamp, PUC-Campinas, Facamp, CNPEM, Embrapa, CPQD, TRB Pharma, Cargill, Cariba Empreendimentos e Participações, Instituto Eldorado, CPFL and Sanasa.

The concept of HIDS has also matured, resulting in the vision of constituting a living laboratory, with the intention of becoming an international smart and sustainable district model, in its holistic (social, environmental and economic) sense[8].

Image 4 - Founding Advisory Council[9]

2.2 Current steps of the master plan

Based on the context and definitions presented, in this topic an analysis of the situation is carried out regarding the current development stage of the different work components of the master plan.

The development of the activities stipulated by the Technical Cooperation with IDB is under the responsibility of its seven work components, which are partially or fully financed by the IDB. Based on this division, it was possible to identify the products delivered to date and the next steps to be developed, based on information available on the project website and published minutes of meetings with the Founding Advisory Board.

1. Physical-Spatial Design

Starting with the Physical-Spatial Design component, the concept presented by the responsible team guides its activities, methodology and objectives is that this component has the challenge

[8] www.hids.unicamp.br/sobre/

[9] www.hids.unicamp.br/visao-do-conselho-para-o-hids/

of defining an Urban Project for the entire area, which should take into account the most advanced concepts in terms of territorial sustainable development.

According to the material available for consultation, the work under this component is split among three different group of experts. These three groups are:

I. The Korean Research Institute for Human Settlements (KRIHS). The work from KRIHS has not started yet. It will be following the Technical Cooperation stipulated not only by the Inter-American Development Bank but also by Unicamp and the Municipality of Campinas;
II. Unicamp and PUC-Campinas academic taskforce. It encompasses professors from the Architecture and Urbanism courses at Unicamp and PUC-Campinas, assisted by researchers from the postdoctoral, doctoral and specialization courses at Unicamp. This group is also supported by the Executive Board of Integrated Planning (DEPI), at Unicamp;
III. Urban Planning Consultancy Company. With the support of the IDB, this group will be responsible for supporting both KRIHS and the academic taskforce.

As main products already delivered in this component, the following can be listed[10]:

- Exploratory meetings with SANASA, CPFL Energy, UNICAMP units and Campinas City Hall secretariats. Research on the area and reading of the territory from a historical, topographical, geological, legislative and urban perspective;
- Development of a Benchmarking document, which addresses 5 themes (landscape, morphology, water management, mobility and energy infrastructure) and 21 solutions involving studies of biophysical aspects, the history of territory occupation, urban legislation and the current situation of HIDS. All topics were built under the sustainable perspectives aimed at by the project;
- Study of urban projects around synchrotrons with similarities to HIDS. The cases studied were: SOLEIL synchrotron, located in Saint-Aubin, France; European Synchrotron Radiation Facility (ESRF), located in Grenoble, France; and ALBA synchrotron, located in the Barcelona Synchrotron Park in Cerdanyola del Vallès;
- Development of urban project proposals for Parque Anhumas and two strategic areas for HIDS;
- Creation of a website composed of all research and studies, with a repository, references, proposals and events developed in this component.

In addition, the physical-spatial design comes into the agenda concerning municipal legislative issues, demonstrating the extreme importance of the active participation of the Municipality of Campinas to legally support the territory that will be incorporated into the project, in addition to the Fazenda Argentina. This issue is intertwined with a new concept created by the local

[10] www.hids.unicamp.br/master-plan/projeto-fisico-espacial/

government, called PIDS (International Sustainable Development Pole). The discussion is intended to cover a broader innovation area, that would include HIDS territory, where incentives for innovation would be developed, based on the laws that underlie Polo II CIATEC, which considers its complexity in environmental perspectives, as well as their contributions to the economic development of the region, requiring more precise studies resulting in an innovative urban setting. This topic is under discussion in the short-term agenda of the city hall, which intends to have definitions regarding this proposal to the Campinas' Municipal Chamber in 2021.

2. Legal Strategy

The legal component, which PUC-Campinas is responsible for, "aims to develop regulatory models that institutionalize HIDS as an entity capable of acting autonomously, and of organizing the urban space of its territory."[11] Of the activities carried out and products delivered, the following are highlighted[12]:

- Meeting to better define the HIDS legal entity structuring model. The options presented were the Association, Foundation, and Social Organization. In a meeting with the Founding Advisory Board, on March 31, 2021, the proposals presented to legally institutionalize the project continued. It was proposed, in a more objective way, the creation of a non-profit Civil Association, which is characterized as OS, is it the most used legal entity in Brazil to support the governance of technological parks and smart cities;
- Defining and approving of product 1, Workplan;
- Creating a Governance Design Proposal;
- Forming the legislative proposal as Special Economic Zones and Technological Park;
- Law proposal, aiming at tax benefits, to the City Hall, which is responsible for the verdict on the definition of the form of land occupation[13].

As next steps, the component will:

- Comply with the other components, aiming as a result of the foundation to develop proposals for bills on the rules of land use and occupation of the HIDS area, as well as establishing the entity responsible for promoting the urban development of the project area[14];
- Identify continuous objectives in the management contracts that HIDS seeks to propose, which are the strategy for implementing living laboratories aimed at R&D and urbanization of the area.

[11] www.hids.unicamp.br/wp-content/uploads/2020/06/comp-juridico-objetivos-e-metodologia.pdf

[12] www.hids.unicamp.br/master-plan/modelo-juridico/

[13] www.hids.unicamp.br/sexta-reuniao-do-conselho-consultivo-do-hids-16-03-2021/

[14] www.hids.unicamp.br/wp-content/uploads/2021/03/2021-01-28-HIDS.pdf

However, obstacles were identified in the component, regarding its structuring as a legal entity, considering that the Municipality of Campinas is a fundamental actor for this consolidation, like the bills that will make the development of the project viable are a public responsibility. After a meeting held in July 2021 between the City Hall and the UNICAMP team, fundamental legal points were clarified, in addition to making the creation of a specific regulatory framework a priority on the municipal agenda, to approve the rules for land use and occupation.

3. Business Model

The Business Model component, corresponds to the consortium formed by the companies Sociedade Portuguesa de Inovação (SPI), IDOM and the International Association of Science Parks and Areas of Innovation (IASP), which are responsible for this respective document.

The activities planned for this component are:

- Conducting an analytical framework of the HIDS by analysing information to understand the perspectives of key stakeholders and institutions for the development of the area and identifying potential advantages of the HIDS for startups and innovative ventures;
- Identifying demand for the HIDS including the types of firms, infrastructures and services;
- Developing and building consensus of the vision and strategy for the HIDS;
- Conducting a benchmarking study of sustainable development hubs and innovation hubs;
- Developing a business and governance model of the HIDS including a plan for implementation and operation for the first two years of operation.

As next steps, the consortium will i) Develop the benchmarking of innovation and sustainable development hubs; ii) Build the future vision of HIDS based on strategic foresight; and iii) Organize the HIDS' value proposition and strategic positioning.

4. Heritage

Moving on to the Heritage component, the general objective presented is: "Establishing a reference base for the territory's biodiversity and ecosystem services (vertebrate inventory; inventory of invertebrate groups that can be used as an environmental indicator, tree inventory, as well as such as current connectivity between remnants; below-ground and above-ground carbon baseline inventory). Evaluate the succession stage of current remnants, along with Permanent Preservation Areas (PPA) and biological corridors to establish the best restoration method to be applied".[15]

Among the activities carried out and products delivered, there are:

- The search for a rapprochement with Non-Governmental Organizations following the projects developed by the environmental heritage;
- The inclusion of undergraduate and graduate students in HIDS biodiversity projects;

[15] www.hids.unicamp.br/master-plan/patrimonio/

- The organization of activities focused on environmental heritage issues, such as a workshop, mapping of trees on campuses and development of a biodiversity database;
- The subsidy for the development of historical, archaeological and cultural diagnoses, coming from the UNICAMP-FUNCAMP rectory.

For the next steps of the component, it is planned to contract and start fieldwork to obtain environmental, historical and archaeological diagnoses, in addition to proceeding with the planning of sociocultural issues.

5. Sustainability assessment

Continuing with the Sustainability Assessment component, its objective presented is: “Assess, in a disaggregated way, all actions and activities planned for HIDS in terms of their alignment with the 17 Sustainable Development Goals proposed by the UN. In this component, a methodology will also be proposed to enable this assessment, which will be based, essentially, on the concepts of Life Cycle Analysis"[16].

In this context, some products have already been finalized:

- Product 2, which consists of a "Descriptive report addressing the Sustainability Assessment methodologies exposed by the institutions that make up the Founding Advisory Board of HIDS". From this, a preliminary analysis of the activities organized and in execution in the project was developed, considering the sustainable theme[17];
- Product 3, referring to a "Report describing the recommendations on sustainability assessment derived from the United Nations Global Compact applicable to HIDS", a study that was appropriate to the context of HIDS, highlighting its activities from the perspective of the Sustainable Development Goals (SDGs)[18];
- Product 4, which resulted in a brief description based on two methodologies: “Process Life Cycle Assessment” (LCA) and “Environmental InputOutput Life Cycle Assessment” (EIO-LCA). Both are being used, among other fundamentals, as part of the development of the HIDS sustainability assessment platform[19];
- Product 5, referring to the development of a "Methodology (model) for the HIDS Sustainability Assessment, taking into account (i) the principles based on life cycle assessment (LCA), through an input-output model (Economic Input-Output Life Cycle Assessment - EIOLCA) and (ii) the practices recommended by the United Nations Global

[16] www.hids.unicamp.br/master-plan/avaliacao-de-sustentabilidade/

[17] www.hids.unicamp.br/wp-content/uploads/2020/12/HIDS-BID_Produto-2_Metodologias-Compartilhadas_vgeral2.pdf

[18] www.hids.unicamp.br/wp-content/uploads/2020/12/HIDS-BID_Produto-3_Recomendacoes-do-Pacto-Global_vgeral.pdf

[19] www.hids.unicamp.br/wp-content/uploads/2020/12/HIDS-BID_Produto-4_ACV-e-EIOLCA_vgeral.pdf

Compact". Several support tools were used to build the Platform, namely: a collection of methodological references; interaction with experts; external workshop and internal workshops; choice of preliminary indicators and creation of evaluation questionnaires; preparation of online systems, to collect and analyse data, based on four modules (Institutional Assessment; Greenmetric; Life Cycle Assessment; Input-Product)[20];

- Product 6, which consists of a presentation of the methodological model developed for the sustainability assessment, including a conceptual proof using the system. The result presented in this product were the definitions, characteristics and how to fill the modules present in the first version of the Sustainability Assessment Platform. To this end, a bilateral partnership was established between this component and the Unicamp Computing Institute, also counting on the participation of students from the same institution. Four modules were formed, in which responsibilities were shared, namely: Module 1 – Input-Output; Module 2 – Life Cycle Assessment; Module 3 – Institutional Assessment; Module 4 - Greenmetric.[21].

The next steps identified for the component are:

- The selection of living institutions and laboratories to apply as a test evaluation, based on the developed methodologies. Activity that will be carried out jointly with the HIDS Founding Advisory Council;
- The presentation of the activities carried out, those in progress, and the platform developed for the HIDS team and the Founding Advisory Council.
- In this context, the sustainability assessment component presents in its structure the possibility of testing the developed methodology. In support of this platform, Embrapa Environment is also studying the possibility of testing this system in the context of creating a live laboratory for farmlab.[22].

6. Communication

The Communication component seeks to define its general objectives as: "The objective of this working group is to establish a communication strategy at the service of the Founding Advisory Council of HIDS to promote the HUB and engage different audiences (the communities of the institutions that make up the HIDS ; companies, entrepreneurs, media and civil society) focusing on the dissemination of knowledge about the project, generating a positive image from a narrative about sustainability, value creation and the concept of a living laboratory."[23]

[20] www.hids.unicamp.br/wp-content/uploads/2021/04/HIDS-BID_Produto-5_Modelo-da-Plataforma-de-Avaliacao.pdf

[21] www.hids.unicamp.br/wp-content/uploads/2021/07/Produto6-Avaliacao-de-Sustentabilidade-HIDS.pdf

[22] www.hids.unicamp.br/setima-reuniao-do-conselho-consultivo-do-hids-16-06-2021/

[23] www.hids.unicamp.br/master-plan/comunicacao/

In this context, the activities carried out so far have been:

- Product 1, which aimed to collaborate with the development of a work plan, aiming at the promotion of HIDS and the dissemination of its relevance, based on innovative communication that enables its broad prospection[24];
- Product 2, which presents a Strategic Plan as a result. The purpose of this product is divided into several topics, namely: increasing knowledge about the project by stakeholders and communities; consolidate HIDS' mission, vision and values; to encourage articulations among the members of the HIDS Advisory Board; bring activities closer to media disclosures; attract new stakeholder interest; develop the visual identity of HIDS; institute systems to monitor and evaluate component actions; provide advice to the General Coordination of the project;
- Product 3, which consists of the development of the layout of HIDS publications. The document presents the templates created for the standardization of all content published by the project, such as institutional presentations, the master plan, live laboratories and meeting minutes. The result of this product is to help define a well-structured visual identity[25].
- Product 4, which presents the development of a brochure for the project.

As next steps, the component will:

- Define an action plan with FACAMP;
- Create and improve HIDS social networks;
- Produce the newsletters;
- Develop an article about HIDS for the Sustainable Campus book.

Finally, the status of HIDS communication, according to information published on the project website and research carried out in the HIDS' Founding Advisory Council meetings, is within the schedule stipulated by the component. However, the challenge faced by the team is to convey the content produced in languages other than Portuguese, such as news, agendas and meeting minutes. Thus, the search for aligning with the demand for material in English follows from the access indicators provided by the website[26].

7. Governance

To conclude with the Governance component, the objective presented is: "The governance component is responsible for defining, establishing and putting into operation the HIDS governance model, from its conceptualization stage to its proper operation, ensuring rhythm and

[24] www.hids.unicamp.br/wp-content/uploads/2021/04/APOIO-A-CRIAC%CC%A7A%CC%83O-DO-HUB-INTERNACIONAL-PARA-O-DESENVOLVIMENTO-SUSTENTA%CC%81VEL_v4.pdf

[25] www.hids.unicamp.br/wp-content/uploads/2021/06/Produto-3_layout-template.pdf

[26] www.hids.unicamp.br/master-plan/comunicacao/

assertiveness to the project's objectives. This component is coordinated by Inventta, an innovation consultancy contracted by the IDB.[27]"

The activities developed so far are:

- The preparation of quarterly reports to September/2020, October/2020, December/2020 to February/2021, and March/2021 to April/2021. The purpose of these reports is to present the overall status of the project and its components;
- The beginning of the planning of the diagnostic study activities, which consisted in the identification of criteria for the selection of target actors for the research;
- The connection between the components, through monthly meetings, in addition to facilitating individual meetings with the Sustainability and Communication components.

Furthermore, this component has presented challenges regarding the alignment of multiple action fronts, a problem that is being reduced with monthly meetings held together with teams from other components. In addition to this issue, other points that should be considered are also present in the quarterly report from March/2021 to April/2021, and they are the importance of working with the identity of HIDS, coherent presentation of activities with what is presented on the website, documenting fully the work done so far, seek to understand more concisely the perspective of investors, and structure a dialogue that presents the project as something that is not exclusively related to Unicamp[28].

The overview of the project components steps has enabled it to identify common synergies between them, such as the search for better conceptualizing and developing living laboratories, practising the Sustainable Development Goals, transforming the Campinas region into a technological and innovative hub of international reference, among others. Besides this, HIDS presents an evolution regarding its development of researches and studies on the region and its actors, creating the necessary material to better understand the main objectives and expected results, however still presenting other steps that need to be taken to have a definitive concise structure.

2.3 Perspectives, interests and priorities of involved stakeholders concerning the HIDS

The framing of HIDS in relation to its activities, definition, and territory is an ongoing task. Taking into account the proportions of the initiative, the difficulty of putting the concept of HIDS in practice is identifiable, which can be exemplified by the use of different terminologies for its reference

[27] www.hids.unicamp.br/master-plan/governanca/

[28] www.hids.unicamp.br/wp-content/uploads/2021/06/PORT-202104_BID-Quarterly-Report-3.pdf

during its development process, and the following terms can be cited as examples: hub, district, neighborhood, cluster, city, etc.

To better understand HIDS identity, it is necessary to carry out an analysis of the vision, impressions, and perspectives of the stakeholders, together with their expectations, interests, and priorities. Since the possibilities of action, objectives, and framework of HIDS are extensive, the absence of a common and well-defined vision results in the dispersion of the efforts made. In this sense, the need to align expectations and objectives within the context of HIDS development is evident, where each key actor must strive to find points of intersection between their respective missions and objectives, and those of HIDS, taking into account its guidelines and principles, mainly in relation to the promotion of sustainable development.

This topic is intended to present (i) the inputs provided by the members of the Founding Advisory Board, which were recorded through the consultation carried out in December 2020 by the company Inventta, in charge of the governance work component. To this end, their perspectives on the topics will be presented: Vision; Assets and Capabilities, Future Image, and Value Proposition. (ii) The HIDS' development priorities from the perspective of the academic community at Unicamp, which were gathered in the survey carried out in 2019 by the Executive Board of Integrated Planning at Unicamp (DEPI).

I. Founding Advisory Council vision for HIDS

The composition of the Founding Advisory Council and its areas of activity is diverse as: 2 of them are government agencies - Campinas City Hall and São Paulo State Government; 3 are teaching and research institutions covering different scientific areas – Unicamp, PUC-Campinas and Facamp; 2 are research institutions – Embraba, which operates in the agricultural area, and CNPEM, which develops the thematic area of energy, materials and biosciences; 5 are companies – CPQD focused on information and communications Technologies (ITC), TRB Pharma which operates in the health area, Cargill in the food area, Cariba Empreendimentos e Participações in construction, Eldorado Institute in fostering innovation and technology, with emphasis on ITC, Energy, Agribusiness, Oil&Gas, Health, and Automotive industries; and 2 concessionaires – the first being in energy, CPFL - Energia, and the second in water and sanitation SANASA. Bearing this in mind, it is worth analyzing their vision regarding HIDS[29]:

[29] www.hids.unicamp.br/visao-do-conselho-para-o-hids/

Stakeholder	Vision	Image of the future	Value proposition	Assets and capabilities
SÃO PAULO GOVERNO DO ESTADO	Centre of excellence in sustainability	Sustainable economic development model Open architecture model	Attracting investment from international funds Intersection between sustainability and technology Waste processing projects Bionanotechnology	Management model Political representation
PREFEITURA DE CAMPINAS	To work in search of innovative solutions for society's major challenges To be a HUB that articulates and coordinates actions among institutions with competences for sustainable development	Smart City A showcase model to promote Campinas as a "city of knowledge and innovation	Leverage for regional development Strengthen Campinas assets and capacities for the 2030 Agenda Environment for new form of urbanization - Smart Cities Attraction of investments for regional development Strengthening of the ecosystem	Technical knowledge of legislation Strategic and political articulation Actions for financial viability Human Resources Knowledge of city management
UNICAMP	To contribute to sustainable development, aggregating national and international efforts to produce knowledge, innovative technologies and education for future generations, mitigating and overcoming the social, economic and environmental fragilities of contemporary society	Model of integration nature/urbanism Ideal place for technological development within the culture of sustainable development	Fostering institutional synergies Living laboratories within the SDGs themes Choose one/two that "dialogue" with the Brazilian GDP Be a city and state management tool with Public/Private integration	To provide and integrate its human resources into the HIDS Attracting and working with the interested international community
PUC CAMPINAS	Free knowledge zone	World reference in solutions for society Known throughout society in the region Open system Present society	Tax exemption Connection between institutions' assets Connection with the MRC Rescuing Campinas' attention and self-esteem	Law and legal model Architecture Human resources

FACAMP	Innovative in public management	Ensuring the right to mobility Better teaching technologies Cannot be limited to current stakeholders Cannot be an ivory tower	New models in mobility New teaching technologies Living lab Disseminating technologies	Communication, advertising and marketing Law and legal model International relations Energy
cpqd	New relationship model in search of sustainability District that replicates a city 15 minutes city	Must not be a real-state model Must be occupied by people living in the area Smart City	Ecosystem engagement Design and experimentation of new business models Technologies aligned to the SDGs	Pilot projects for smart city Electric mobility Digital agriculture Blockchain IoT
ELDORADO INSPIRAÇÃO PELO NOVO	Innovation cluster	Business Generator Resource catalyst Start-up generator	Generate business Articulate ecosystem assets and agents Fill gaps in the ecosystem Attracting investments	Microelectronics Information and Communication Technology Resource Management for HIDS
CNPEM	A planned city	Inspired by innovative and sustainable cities Brazilian Silicon Valley Focus on biotechnology	Going CO2 neutral Living labs Aggregator of companies and research institutions Attraction and generation of start-ups	Unique biotechnology equipment Construction of living labs
Embrapa	Sustainable development model district	People-centred Public, private, people and partners (4P's)	Urban Farming Real life environments Social innovation	Digital farming Urban farms Blockchain IoT Artificial Intelligence
TRB Pharma Indústria Química e Farmacêutica Ltda	Enabler of the relationship between university and private sector	Fears that rules will impede today's activities	Expanding the relationship capacity of the HIDS agents Flexibility in the generation of patents	Health and medicines

CARIBA Empreendimentos	Expanded GlobalTech vision (with more resources, equipment, activities, infrastructure)	Viable, profitable and self-sustaining	Concentrating equipment, resources and activities in the same region	Land situation management Property issues
Cargill	Nourishing the world in a safe, sustainable and responsible way	Pole of sustainable technology development World reference	Development Indicators in Brazil Talent pool	Experience in the food and agribusiness area
CPFL ENERGIA	A smart and sustainable city model City of the future	Access to the entire population in a democratic, inclusive way Inspiration for new generations	Integration among actors Capacity building and talents	Electric energy Renewable sources

Taking the Founding Council members perspective in consideration, the initial weighting of inputs is valid, so that the main points of agreement between the stakeholders, as well as the most discrepant ones, are identified.

The HIDS' role:

In general, it is appropriate to elucidate that the orientation for the promotion of sustainable development and efforts aimed at building assets and capacities capable of solving human development challenges, which represent the guidelines of the SDGs and 2030 Agenda, is referenced directly or indirectly by 11 of the 13 of the interviewed stakeholders.

The role of HIDS as an actor who is able to promote the articulation of efforts between companies, universities and/or the public sector to generate science, technology, and innovation, at national and international levels, catalyzing business and resources and strengthening the local innovation ecosystem, was assimilated by most actors. The same occurs with references to the expectation that HIDS is a participatory territorial model of economic development, sustainability, knowledge production, and mobility, integrating urbanism with nature, and ensuring the integration of local society in its territory.

Although not consensual, it is understood that the perceptions presented by the stakeholders, about their orientation to the promotion of sustainable development, their articulation role in favor of the production of knowledge, and the relevance of configuring itself as a model of territory, where new technologies are applied, aiming at the common good, are quite convergent with each other, and also with the mission and vision defined for HIDS.

Assets and capabilities:

Among its capabilities, it is worth observing the mentions about HIDS relevance in strengthening its governance and the ability of strategic articulation, and generating knowledge aimed at public management, especially on new models of urban management, in addition to the study and

development of new technologies (eg. industry 4.0, IoT, bionanotechnology) and their application to face societal challenges (eg. energy, food, mobility, health).

Territorial model:

On the other hand, the definition of the way in which this territorial model will be organized ends up having quite different perspectives, what can be exemplified by the use of the terms: smart city, district, cluster, pole and city model. It is worth mentioning that the clear definition of the territorial model is not directly necessary, as all of these can be classified as areas of innovation, which are special spaces for fostering innovative businesses, linking scientific and technological resources, and which have the goal to implement strategies for promoting innovation. It is also noteworthy that such areas of innovation are somehow organic, and can expand or be directed according to opportunities of development.

II. Priorities of the Unicamp community

Through efforts made by DEPI and by the Physical-Spatial work component, several interactions were carried out with the Unicamp community, aiming to understand their perspectives and priorities related to the development of HIDS. Among them, the consultation carried out in the first half of 2019 covered the opinion of 353 people, mostly students (39.1%), employees (32.3%), and professors (23.2%) at Unicamp.

Such research, carried out through an online form directed, among others, the following questions to the community:

A) Of the 17 Objectives for Sustainable Development (SDG), which do you consider to be priorities in the construction of the HIDS content?

B) Considering the possibility of building, in HIDS, a living laboratory to test more sustainable solutions for both the university and the city, which areas do you consider to be a priority to be explored in HIDS?

As a result of the consultation, it was possible to verify that for the Unicamp community, among the 17 SDGs are prioritized: Quality education; Clean and affordable energy; Sustainable cities and communities; Clean water and sanitation; Responsible consumption and production.

The themes considered most relevant for the creation of living laboratories at HIDS were identified as: Environmental conservation and preservation; Energy; and sustainable urbanism.

Chapter 03

The Innovation Ecosystem in Campinas

3. The Innovation Ecosystem in Campinas

The concept of Innovation Ecosystem:

In order to facilitate the analysis of information regarding the Campinas Innovation Ecosystem, its contextualization is valid.

Innovation is understood as an essential factor in economic development, enabling increased competitiveness and the generation of new knowledge. This process results in the creation or significant improvement of products, services, methods, and organizational or marketing processes, which directly influence the quality of life and productivity of people, companies, and organizations.

In order to be consolidated and enhanced, the innovation process needs specific instruments and procedures, oriented to different stages of the innovation process, which can be characterized as I. Research and Development, where efforts are put together to generate new knowledge, methods or processes; II. The stage of innovation itself, where such knowledge is applied in the economy or society; and III. Diffusion, which can be understood as the process of disseminating innovation in the market or society.

The economic and social relevance of innovation and the specific needs in each of its stages results in a growing willingness of efforts by companies, public institutions, and the third sector, in order to organize policies, instruments, structures, and capacities, which are able to foster and facilitate the innovation process.

The activities to foster innovation, carried out by different actors and operationalized during the relationships between people and organizations, develop their own capacities and specificities, which are associated with their territorial conjuncture and the characteristics of the social, business and institutional fabric.

Over time, the formal or informal, material or immaterial practice of such activities and capabilities, which occurs in different circumstances, such as: I. The implementation of an innovative process in a company, II. The creation of a public policy for innovation at the local level, III. The publication of a scientific article, VI. The creation of new companies, products or services, V. The relocation of people between companies, etc. results in the formation of artifacts, which can be defined as:

> *"Products and services, tangible and intangible resources, technological and non-technological resources, and other types of system inputs and outputs, including innovation"*[31].

The interconnection environment between actors, products and processes, which share knowledge and experiences with each other, in order to facilitate the innovation process is

[31] Innovation ecosystems: A conceptual review and a new definition

strengthened due to locality aspects, which can consolidate a local arrangement, which can be defined as an ecosystem of innovation:

> *"An innovation ecosystem is the evolving set of actors, activities, artifacts, and the institutions and relations, including complementary and substitute relations, that are important for the innovative performance of an actor or a population of actor." (Granstrand; Holgersson, 2019)*

This definition can be associated with the Campinas Innovation Ecosystem (CIE), which, through a series of consequent events in its history, created structures and resources capable of positively influencing the innovative performance of its population and business network.

In this sense, it is necessary to present key aspects of the socio-economic situation of Campinas and region, in order to demonstrate its role as an Innovation Ecosystem, as well as clarify the perspectives and situations related to the context of HIDS.

The mention of some historical facts is valid, which were essential to consolidate the socioeconomic bases of Campinas, enabling the current context of its innovation ecosystem.

> *"The first, in the 1960s, was the creation of the State University of Campinas (UNICAMP), which from the beginning took on the role of a research university with a project aimed at innovation and the relationship with companies. The second takes place in the 1970s when local actors saw the potential for the implementation of a Technological Pole. The third, starting in 1980, with the creation of Organizations capable of implementing enterprises linked to technology generation and transfer. The fourth, in the 2000s, with the institution of the Fundação Fórum Campinas Inovadora (FFCi), with the mission of boosting regional development"*
>
> *(Souza e Garcia, 1999a; 1999b; Suzigan et al, 2005; Silva, 2010; Baldoni, 2015)*

These facts enabled the attraction of investments, and the consequent concentration of industrial and services activities and capacities, which due, among other factors, to its continued relationship with the production of science, technology, and innovation at the local level, resulted in the conditions necessary for attracting and multiplying companies and actors supporting innovation and fostering the local entrepreneur culture, thus consolidating an innovation ecosystem in the city of Campinas.

Given its current situation, according to data from the Brazilian Institute of Geography and Statistics (IBGE), the city of Campinas presented in 2018 a GDP of approximately R$ 61.3 billion, having ranked in 2017 as the 10th city that produces the most at the national level and the 2nd at

the state level. It is estimated that Campinas has 1,213,792 inhabitants, being the 14th largest city in the country and the 3rd largest in the State of São Paulo[32].

Located approximately 90km away from the city of São Paulo, which is the main center of production and consumption of the country, the city of Campinas has a highly relevant geographic position. It also has a high logistical capacity, due to its road network, which is crossed by highways such as Bandeirantes and Anhanguera and connects the capital São Paulo with the interior of the state; its railway network, which makes contact with the Port of Santos, which is the main port in South America; and its air network, as it has the largest cargo airport in Brazil.

Campinas is the metropolis of the Metropolitan Region of Campinas (RMC), which consists of 20 municipalities, namely: Americana, Artur Nogueira, Campinas, Cosmópolis, Engenheiro Coelho, Holambra, Hortolândia, Indaiatuba, Itatiba, Jaguariúna, Morungaba, Monte Mor, Nova Odessa, Paulínia, Pedreira, Santa Bárbara d'Oeste, Santo Antônio de Posse, Sumaré, Valinhos and Vinhedo. Since Campinas acts as the central axis of the RMC its economic activities interact with such municipalities. According to the IBGE, it is estimated that the RMC as a whole has 3,220,291 inhabitants, and a GDP of R$201,831,889,00 (2018).

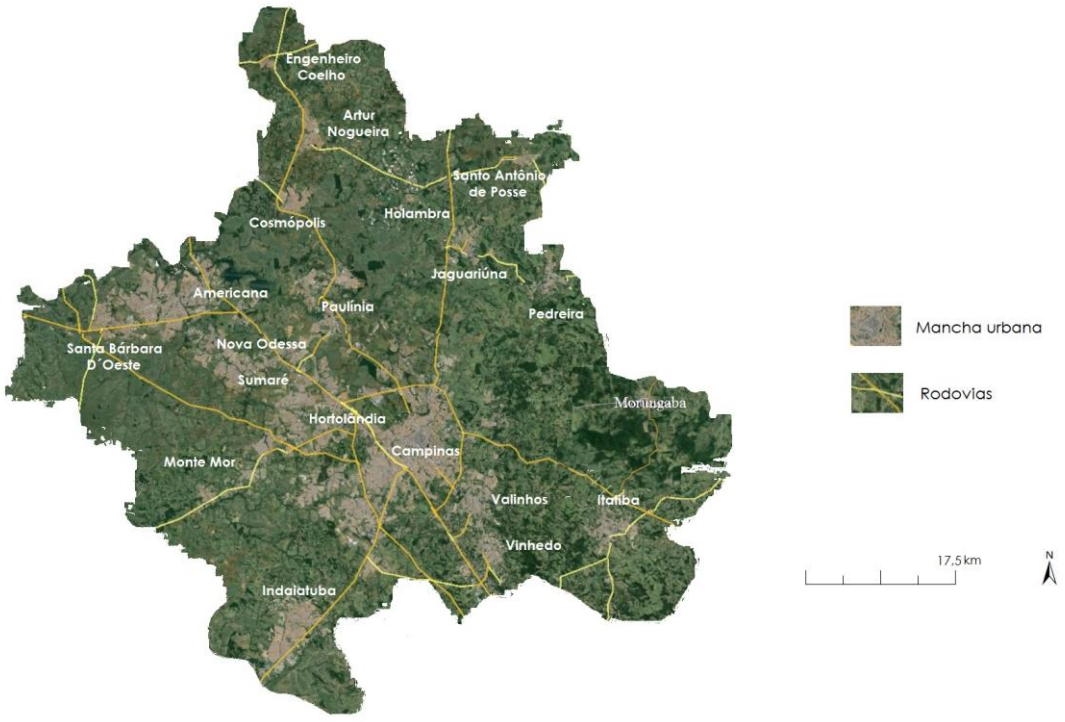


Image 5 - Campinas Metropolitan Region (RMC). Organized by Orlando Moreira Junior, 2016.

Campinas has three Strategic Development Poles, which are areas of socio-economic development in the municipality that aim to ensure the economic potential combined with quality urbanization. Among these, the HIDS area is located at Polo Unicamp/Ciatec II, which has among its guidelines provided by the Director Plan for Development of Campinas, the role of

[32] https://cidades.ibge.gov.br/brasil/sp/campinas/pesquisa/38/47001?tipo=ranking

encouragement of public and private institutions to invest in personnel qualification and the promotion of effective mechanisms to encourage the installation of research centers, laboratories, and high-tech industrial companies.

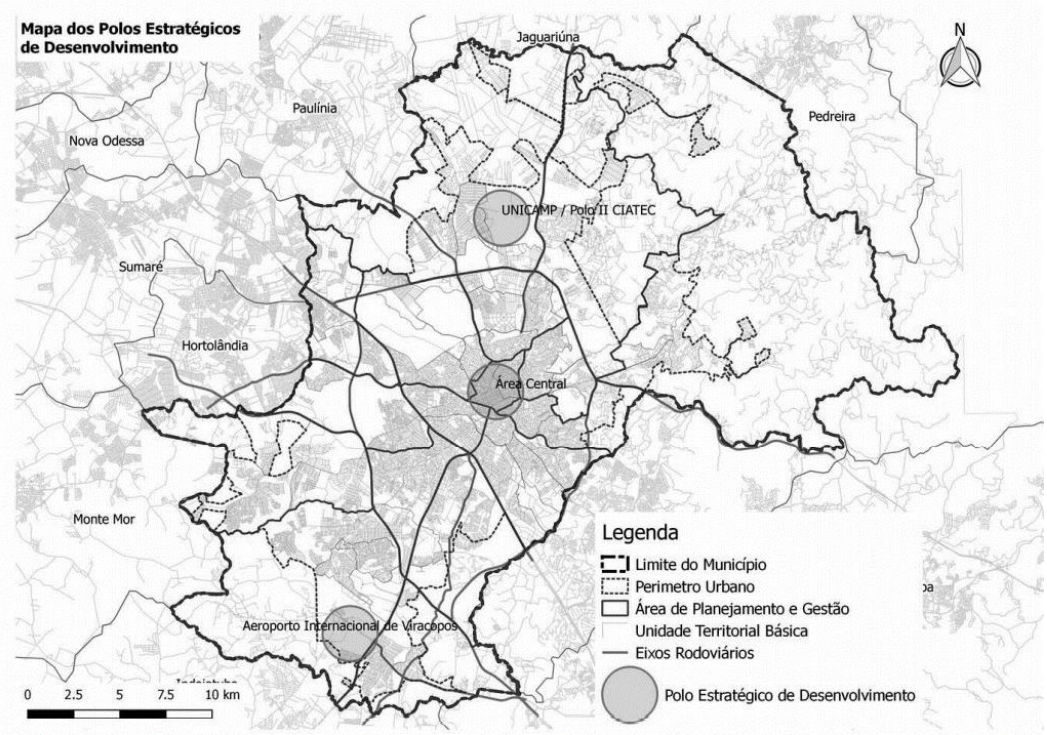


Image 6 - Campinas' Strategic Development Poles. Source: Diário Oficial do Município de Campinas 09/01/2018.

The network of actors linked to innovation in Campinas is extensive, with several kinds of highly relevant organizations, which develop activities that directly influence the ecosystem's multiple innovation processes, contributing to the construction of a more entrepreneurial and innovative local environment, where interaction is facilitated and synergies are promoted.

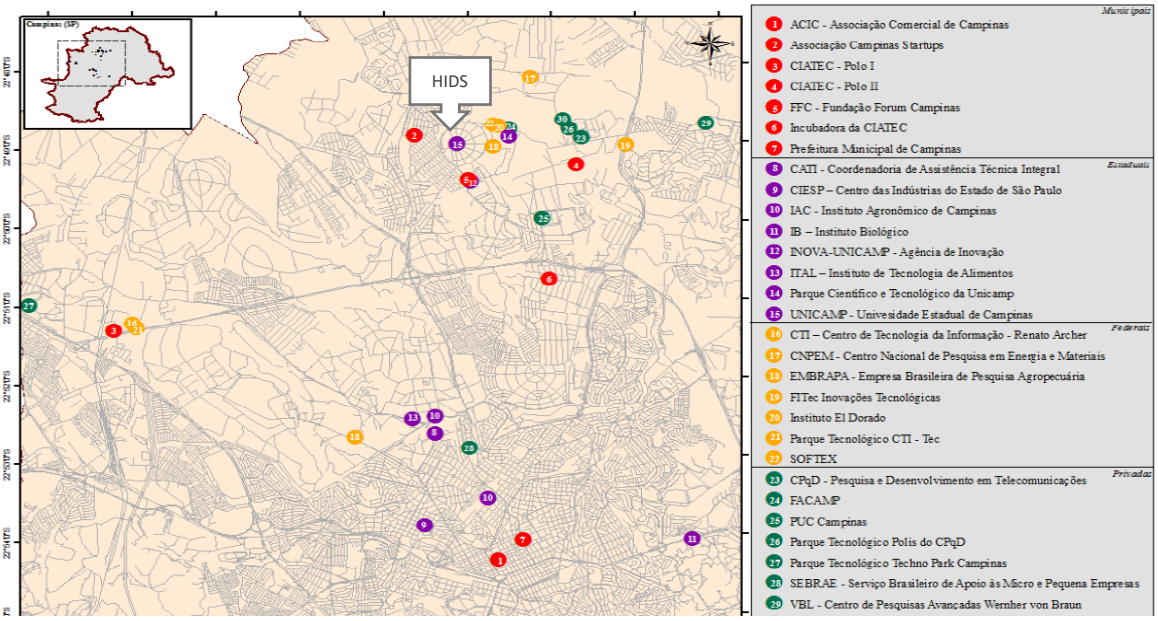


Image 7 - Science, Technology and Innovations Organizations in the CIE (BALDONI, 2016)

The map above lists 30 organizations that work for the promotion of science, technology and innovation in the territory of Campinas. It is worth observing their concentration in the center of the city (south) and in the surroundings of HIDS area.

Among the groups of actors present in the Campinas Innovation System, the following can be highlighted:

I. Higher Education Institutions

Regarding Higher Education Institutions (HEI), Campinas is a city with high national relevance. This fact comes from its 16 HEIs registered in MEC (Ministry of Education) [33], among which it is possible to highlight UNICAMP, which is a key institution of the CIE, since according to the Round University Ranking it is the 2nd best university in the country, and the 3rd in relation to the production of scientific articles in Brazil, effectively contributing to the consolidation of Campinas as a national center for the production of scientific knowledge. Other expressive universities present in the territory can be exemplified by Mackenzie, PUC-Campinas, FACAMP and UNIP, characterizing the municipality's capacity to generate specialized labor force.

II. Research Institutes

In the territory of Campinas, there are several research institutes, which commit efforts to research and development of themes that directly and indirectly guide its municipal economic structure, fostering the generation of specific knowledge within the Innovation Ecosystem, examples of such themes are information and communication technologies, energy, agribusiness, etc. Among these organizations, the following can be highlighted: CPqD - Center for Research and Development in Telecommunications, Instituto Eldorado, Fitec - Technological Innovations, CNPEM - National Center for Research in Energy and Materials, Wernher Von Braun Labs for Advanced Research, and Embrapa - Brazilian Agricultural Research Corporation.

III. Incubators and Accelerators

Business incubators work to facilitate the design, validation, organization, and initial follow-up of projects for a fixed period, through the provision of support services in their activities, such as consulting, training, infrastructure or networking. Accelerators, in turn, offer similar resources and services, but in a normally shorter period, having as their main focus companies with expansion and scalability capacity, in addition to facilitating interaction with investors and, consequently, access to investments.

Such innovation organizations are essential to support the creation of new companies, reducing risks and enhancing incubated or accelerated business models, which results in stimulating the creation of new businesses by local entrepreneurs.

[33] https://emec.mec.gov.br/

Regarding the CIE, the following incubators can be highlighted: Ventures, INCAMP - Technology-Based Companies Incubator at Unicamp, Vértice, and the Mackenzie Company Incubator, in addition to the accelerators, Venture HUB, Baitas, and Unitas.

IV. Science and Technology Parks

The Innovation Ecosystem of Campinas counts on the presence of Scientific and Technological Parks, which are promoters of competitiveness and of its territorial development, having the function to stimulate and manage *"the flow of knowledge and technology amongst universities, R&D institutions, companies and markets; it facilitates the creation and growth of innovation-based companies through incubation and spin-off processes; and provides other value-added services together with high quality space and facilities*[34], these being: the CPqD Technology Polis; the CTI-Tec; the Techno Park Campinas; Unicamp's Scientific and Technological Park, which bring together more than 120 installed companies[35], the vast majority of which are technology-based companies, enabling the development of innovative products and processes.

V. Entrepreneurial Fabric

According to IBGE data from 2019, 51.008 active companies and organizations are present in the territory of Campinas[36], which defines it in relation to the total number of companies as the 10th city at the national level, and the 2nd at the state level. The presence of several large companies, such as Bosch, Samsung, Raízen, CPFL Energia, etc. is a fact that also reflects the capabilities of the ecosystem, showing the potential of its business fabric to produce and consume innovation, science, and technology.

It should also be pointed out that, due to its context of fostering innovation, Campinas was classified in a survey carried out in 2020 by Abstartups - Brazilian Association of Startups as the second city in the state with the highest number of startups (144), only behind the state's capital São Paulo[37].

VI. Other Innovation and Entrepreneurship Support Organizations

Several organizations that do not fit into the previous groups are present at the Campinas Innovation Ecosystem, which aim to support entrepreneurship and local innovation. These can be exemplified by SEBRAE – Campinas (Brazilian Support Service for Micro and Small Businesses), Campinas Tech Community, Innovative Campinas Forum Foundation (FFCi),

[34] www.iasp.ws/our-industry/definitions

[35] https://regiaocampinas.org.br/ambientes-de-inovacao/

[36] https://cidades.ibge.gov.br/brasil/sp/campinas/pesquisa/19/29763?tipo=ranking&indicador=29762

[37] http://campinas.tech/mapeamento-tecnologico-campinas/

CIESP - Campinas (Industries Center of the State of São Paulo), and the Municipal Council of Science, Technology and Innovation.

VII. Legal Instruments

From the perspective of formal instruments, the municipality of Campinas has specific legislation to encourage innovation in its territory, providing access to tax incentives for startup companies or business segments related to science, technology, and innovation[38]. It should be noted that companies located in the CIE can also use legislative benefits from the State of São Paulo, in addition, of course, to national instruments.

Law	Description	Scope
LAW No. 14.947 OF DECEMBER 16th, 2014	The Law 14.947 grants tax incentives in the municipality related to the Tax on Urban Land and Land Property (IPTU) to companies that carry out activities related to information technology, R&D, education, training, convention centers, biotechnology, defence, technology parks and CNAEs (National Economic Activity Code) are eligible for the 100% IPTU exemption and at a 2% rate for the Tax on services of any nature (ISSQN).	Municipal
LAW No. 14.920 OF NOVEMBER 24th, 2014	Law no. 14.920 grants tax incentives to start-up companies, which according to this law are companies that carry out activities related to websites and blogs, creation and distribution of applications and software, design of hardware elements, R&D activities, innovative ideas or business models, R&D activities in biotechnology, pharmaceuticals and cosmetics, engineering and energy systems, agricultural products and physical and natural sciences. The tax benefits are the total exemption from IPTU and reduction of the ISSQN rate. The benefits may be enjoyed for a period of up to 3 years.	Municipal
LAW No. 15602 OF MAY 8th, 2018	Law no. 15.602 grants the tax benefits of IPTU exemption and a 2% reduction in ISSQN to the bus and hybrid electric vehicle industries, batteries, photovoltaic panels, machines and equipment with renewable energy.	Municipal

Having presented the conjuncture of the Campinas Innovation Ecosystem, central competitiveness aspects capable of generating strategic contributions to the HIDS business model will be addressed in the next topics.

[38] https://www.campinas.sp.leg.br/atividade-legislativa/pesquisar-legislacao

3.1 Current trends

In order to identify possible current trends in the Innovation Ecosystem in Campinas, its economic structure should be taken into account. According to data from the SEADE Municipalities platform (2017) , its five main sectors of activity by industrial transformation value (VTI) are computer, electronic and optical equipment (26.7%); Automotive vehicles, trailers and truck bodies (17.8%); Machines and equipment (13.1%); Rubber and plastic material (7.7%) and pharmochemical and pharmaceutical products (7.5%).

Regarding the distribution of formal employment by division of the National Classification of Economic Activities (CNAE), still in the industry sector, it is identifiable that in 2019, 13.7% of the workforce is present in the sector of motor vehicles, trailers, and truck bodies; 12.04% in specialized services for construction; 9.7% in infrastructure works; 9.1% in the construction of buildings; followed by the manufacture of computer equipment (6%); electricity, gas and other utilities (5.3%). As for the services sector, 26.9% of the workforce is in the retail trade; 15.2% in public administration, defense, and social security; 9.7% in education; 7.8% in human health care activities and 5.8% in trade and repair of motor vehicles and motorcycles.

Another relevant source of information for this analysis is the study carried out in 2020 by the Brazilian Association of Startups (Abstartups), which, through mapping and diagnosis of startups in Campinas, identified the following main areas of action:

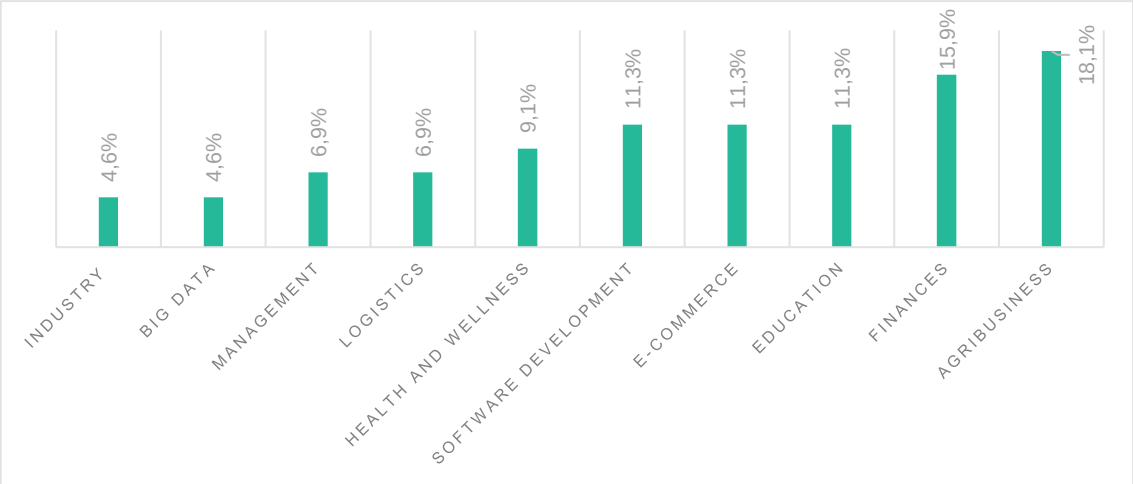


Image 8 - Campina's startups areas. Source: https://abstartups.com.br/pesquisas/

3.2 The contribution from HIDS

It is understood that after its implementation, the Hub will enable the following contributions to the Innovation Ecosystem of Campinas:

1. Improvement of the triple Helix: HIDS will assert itself as an enabler of interactions between the university, public authorities and private initiative in the Innovation

Ecosystem of Campinas. Since the project's success is directly associated with their respective collaboration, this alignment will enable a greater understanding of the demands of knowledge and value generating institutions, such as universities and business, by the municipal government, and in return, the value generated by the Hub can be associated and incorporated by the Municipality of Campinas.

2. Capacity for international interaction: Having in its guidelines to position itself as an international hub, HIDS will facilitate interaction with companies, universities, research institutes, government bodies, and other relevant actors from other countries, generating visibility for the municipality of Campinas, attracting investments and facilitating the dissemination of products, services and policies generated in its territory.

3. Living Laboratories: HIDS will assert itself as an environment of innovation, where new technologies and public policies can be tested in its territory in order to facilitate their validation, where the concept of its living laboratories can be highlighted. This fact will allow the identification of successful models, products and services, which can be disseminated in the market with greater assertiveness, or incorporated by the city of Campinas.

4. Alignment with the SDGs: Having as its prerogative the development of technologies aimed at the Sustainable Development Goals, HIDS will exert direct influence on R&D and value generation at the local level, which will consequently encourage the creation of initiatives that take into account such objectives, such as lines of research, products, services, technologies or public policies.

5. Territorial development: HIDS is expected to become a territorial model that allows constructive interaction between different social actors, making the mixed use of space improve both innovation and value generation by companies and universities, as well as contributing to the quality of life of the people who live there, and its surrounding community, combining work, leisure activities, education, culture, tourism, and commercial activities in its territory in a sustainable and environmentally positive way. Such development model can be multiplied at the municipal level, by the future development of other similar areas of innovation, as well as nationally and internationally.

In general, the development of HIDS is expected to enhance cooperation and integration of the performance of actors present in the Innovation Ecosystem of Campinas, promoting the generation of value in the social, environmental and economic spheres, and enabling synergies in favor of sustainable development.

Chapter 04

SWOT and PESTEL analysis

4. SWOT and PESTEL Analysis

The SWOT and PESTEL analyses were developed based on the information collected in this report. The SWOT highlights the main internal strengths and weaknesses of HIDS, as well as the opportunities and threats that should be considered, taking as background the local context and the analysed innovation ecosystem. In addition, the PESTEL analysis examines the potential of each variable: political, economic, social, technological, environmental and legal, all of which have been considered in detail given the focus of HIDS' mission in responding to the SDGs. The complete analysis provided clarifies HIDS' competitive advantages, which will be critical to the development of the business plan.

4.1 SWOT Analysis

The SWOT Analysis is a method that allows the verification of internal and external indicators, enabling the holistic visualization of relevant data. The development of this matrix aims to develop more critical and grounded strategies for the HIDS' development, being essential to ensure the coherence of the actions established in the planning process.

Strengths	Weaknesses
Science and Innovation capabilities; SDGs orientation; Institutional relevance; Territory; Innovative ecosystem.	Clear definition of common interests; Conclusion of the masterplan; Tangibility; Project dissemination.
Opportunities	**Threats**
Synergies between stakeholders; New Technologies Laboratory; Talent retention; Partnership attraction.	Unsupportive land occupation; Fiscal, exchange and monetary crisis; Project discontinuity; Public undercapitalization.

Strengths

- **Science and Innovation capabilities:** great academic and scientific potential of higher education institutions present at HIDS, such as UNICAMP, FACAMP and PUCC, making it possible to access a multidisciplinary and highly specialized professional workforce in different lines of knowledge, facilitating synergies for innovation, and having at its disposal vast experience related to the production and appropriation of technological value.

- **SDGs orientation**: within the scope of the activities planned and developed by HIDS, it is possible to identify that its orientation for the development of specialized knowledge and innovation aligned with sustainable development, represents a competitive advantage in relation to the global demand of such solutions.

- **Institutional relevance:** renowned institutions are present in the Founding Advisory Council, providing a favourable scenario for demand and development of innovation and funding attraction.

- **Territory:** The development of HIDS' territory as an innovation area is a common interest of the stakeholders involved. The city of Campinas is considered an important logistical area, what is a factor of great relevance for the activities and incentives that will be developed.

- **Innovative ecosystem:** the municipality of Campinas has a strong culture of entrepreneurship, while HIDS has in its structure and objectives the aim of encouraging new businesses, seeking to stimulate a scenario that results in innovations in the various sectors of production, and services related to sustainable development. This fact endorses the collaboration of the ecosystem

Weaknesses

- **Clear definition of common interests:** It is understandable that diverse interests of local stakeholders, including the HIDS Founding Council, should be taken into account during the HIDS development process. However, there is a need for common goals to be clearly defined and organized so that synergy is leveraged, and the development of the project facilitated.

- **Conclusion of the masterplan:** finalizing the masterplan is of essential relevance to define the structural and strategic guidelines for the project, allowing its full development. In this sense it is necessary that all components conclude their contributions, what will result in a clear characterization of the HIDS demands and opportunities, and therefore improve its collaboration capabilities with local, national and international stakeholders.

- **Legal definitions:** The definition of the legal body of HIDS, its structure and organizational methodology, as well as the definition of the appropriate legislation regarding the use and occupation of the land in which it is inserted, are crucial points for its development and therefore should receive priority attention as they can result in risks for the assertive implementation of the project.

- **Project dissemination & tangibility:** it is important that the project establishes itself as a feasible initiative among stakeholders and the civil community, which will contribute to their engagement and interaction with HIDS' development. Therefore, the dissemination of the project within the Campinas Innovation System, and Campina's population is defined as an improvement point, since the scarcity of English-translated information and general awareness of the local population may limit the involvement of local, national and international interested agents, such as companies, researchers, students, investors, among others.

Opportunities
Synergies between stakeholders: HIDS' may act as a synergy promoter between institutions with the aim of creating an environment capable of attracting new relevant actors to the region, what will result in a context of integration between industries, local community, institutions and municipal urban planning. In this scope, the economic, social and cultural activities developed by the agents involved can complement each other, in order to build an integrated and harmonious environment with HIDS, fostering the development of a new model of urban and social life in Campinas, based on sustainable development.
• **New Technologies Laboratory**: o Development of new technologies aimed at SDGs are a key opportunity in the Development of HIDS, which proposes the creation of living labs, which would facilitate innovation through spaces capable of testing new products, services and technologies. In this sense, the innovation resulting from such spaces would contribute to attract the interest of stakeholders, as well as improve the quality of life of Campinas' citizens trough the diffusion of new technologies in its territory.
• **Talent retention:** The HIDS' structure may allow the municipality to increase its capacity in terms of talent retention. By territorially grouping work, innovation, consumption and leisure activities, the area will contribute to retain talents trained at the local level, as well as attract national or international talents, therefore fostering the local entrepreneurial culture and consequently the CIE.
• **Partnership attraction:** the project is part of an innovation ecosystem of national reference and has stakeholders of national relevance. In this way, HIDS' can act as a hub to foster cooperation and interactions with national and international actors, enabling the development of partnerships in order to foster trade, regional development, investments, among other factors, having always in consideration the promotion of the sustainable development.

Threats

- **Unsupportive land occupation:** the area stipulated for the urban development of the project has land beyond the Fazenda Argentina, however, the private land that may be made available to HIDS would have the possible purpose of building individual housing, due to its privileged location and its high market value. This type of development is present in other areas of the city, therefore, it is important that there is no replication of this model of construction around the project, so that the space is correctly used and meets its goals of innovation, technology and sustainability.

- **Fiscal, exchange and monetary crisis:** the interest rate is an important instrument of monetary policy, and its relationship is directly linked to the country's economic and exchange activities, which may or may not stimulate national and international investments. In this sense, fiscal and exchange instability in the country can affect the project's activities and finance in the short and long term.

- **Project discontinuity:** the public administration discontinuity factor related with the changes of government and public policies is a relevant topic, as it may result in contradictions and mismatches between the HIDS development and public strategies. In this context, this vulnerability can affect the development of HIDS, considering that it is a long-term project and that, in order to present effective results, it must be aligned with public interests and strategies. Therefore, the municipal involvement in the project needs to be taken as a priority, in order to further integrate the municipality in the HIDS' development process, and create institutional and legal instruments that are able to ensure its constant progress.

- **Public undercapitalization:** The current economic situation in Brazil refers to a situation of decreasing its capacity for public investments, which as a result may delay the development of activities contemplated by HIDS, therefore, making necessary the elaboration of revenue strategies that take this fact into account.

4.2 PESTEL analysis

PESTEL analysis is a methodology organized to analyse the impact that the external environment can generate in the development of the project, allowing the further understanding of whether or not this environment is collaborative, enabling the optimization of strategies and project performance. The PESTEL analysis is based on the following factors: Political, Economic, Social, Technological, Environmental and Legal.

Political	Economic
Political support; Political capabilities; Municipal management; Complex legislation; Political Instability.	Competitive environment; Air traffic; Location and access; Established economy; Expressive consumer market.
Social	**Technological**
Wealth generation; Qualification of human resources; High cost of living in Campinas; Urban infrastructure; Problems in urban mobility.	Technological fabric; Reference in scientific research; Entrepreneurship culture; Innovation and technology industries.
Environmental	**Legal**
Sustainable development; Experimentation laboratories; Territorial model; Climate change.	Supporting ST&I; Protect and support the activities; Bureaucracy; City Council of ST&I.

Political

- **Political support:** Campinas City Hall and São Paulo State Government are both members of the Founding Advisory Council, which demonstrates the high degree of government interest in the Development of HIDS and consequently its high political capacity. The dissemination of activities and results generated in HIDS may be substantially enhanced by the cooperation with other municipalities in the São Paulo state.

- **Political capabilities:** HIDS aims to promote the dissemination of sustainable development in the international context and will serve as a model for urbanism. It is expected that from this developed format, the project will interact with major public and private actors, which will contribute to the notoriety and political capacities of the city of Campinas, as well as result in the formalization of national and international cooperation.

- **Municipal management:** The project initiatives will result in the basis for the generation of a favourable scenario for the development of practices that contribute to municipal management, including the implementation of technologies, the development of laws that foster innovation and trade agreements.

- **Complex legislation:** bills can take years to be approved and this is a factor that can delay and hinder the development of the project. The legislative complexity, becomes a risk factor for the application of the necessary and foreseen norms for the proper framework for the development of HIDS.

- **Political instability:** the political changes and polarization experienced in Brazil, might be a risk factor for the continuity of policies that support research, innovation and entrepreneurship, and therefore may affect HIDS activities, or defer the approval of laws that would support its development.

Economic

- **Competitive environment:** the region sets up a competitive environment, in line with trends in innovation and sustainable development, factors that are essential for inclusive economic development, generating opportunities in different sectors. The result of this economic behaviour found in the municipality is a high level of quality of life and business development, with emphasis on entrepreneurship and technological innovation.

- **Air traffic:** the Viracopos Internacional Airport is consolidated as a relevant air traffic centre in the national scenario, also being the largest air cargo centre in South America due to its land extension. These characteristics provide the region with national and international mobility, what expands its economic capacity, enables advanced commercial cargo logistics, attracts agricultural and manufactured producers, and generate jobs.

- **Location and access:** the region of Campinas has an important road network, which provides easy access to its cities through seven Brazilian highways, including Anhanguera, Bandeirantes and Dom Pedro I, which are among the most important in the country. This factor allows a greater movement of people from other cities, enabling the dislocation of workers from neighbour cities, attracting industries and facilitating the flow and distribution of products, an advantage that positively impacts the economic activity of companies and institutions in Campinas.

- **Established economy:** Besides being a national reference in scientific knowledge production, Campinas is known as an industrial pole, with the presence of internationally relevant industries in its territory, what results in high rates of job creation and wealth production.

- **Expressive consumer market:** Campinas has a population of 3 million inhabitants[39] and a Human Development Index of 0.805[40], which shows its quality of life, directly related to the purchasing power of the population and their consumption habits that accompany this data. Thus, this factor represents an advantage for companies, start-ups, investors and researchers interested in being part of HIDS, aiming to reach the region's commercial economic potential.

[39] regiaocampinas.org.br/indicadores/pessoas/

[40] cidades.ibge.gov.br/brasil/sp/campinas/pesquisa/37/0

Social

- **Wealth generation:** the region of Campinas stands out for its results in the generation of wealth, which includes qualified jobs and technological advances. Campinas' innovation ecosystem provides and encourages this favourable scenario for generating business, improving human capital, social integration and marketing activities.

- **Qualification of human resources:** the city has impressive educational and scientific support, due to the location of relevant education and research institutions. In this context, the available technological infrastructure stimulates social interactions and the exchange of knowledge between people, enhancing cultural, human, entrepreneurial and technical development.

- **High cost of living in Campinas:** the cost of living in a city is determined by several factors, such as the average price of housing, food, transport, health, leisure and well-being. These values directly affect the behaviour, economic and social practices of the region's residents, which will consecutively affect HIDS in its commercial and urban dynamics.

- **Urban infrastructure:** the city of Campinas has a large installed infrastructure, which consists of sanitation, transport, energy and telecommunication services, factors that are very important for the region's socio-economic development. This structure allows for better living conditions for society, the generation of jobs, and increased family income. A scenario that provides conditions for HIDS to install itself in an organized environment, with benefits and conducive to growth.

- **Problems in urban mobility:** the urbanization process of the city of Campinas and its population growth triggers an increase in traffic jams, generated by the high number of individual vehicles. The project proposed by HIDS should consider the improvement of urban and metropolitan circulation in the region, developing alternative and efficient transport so that the problem is mitigated, resulting in improved mobility and environmental protection.

Technological

- **Technological fabric:** The Campinas high developed technological fabric is represented by the presence of recognized public and private institutions, such as the National Bank for Economic and Social Development; Develop SP; Coordination for the Improvement of Higher Education Personnel; National Council for Scientific and Technological Development; São Paulo State Research Support Foundation; National Service for Industrial Learning, among others. Also contemplating this scenario, the region has a high level of exportation of goods with high added technological value[41].

- **Reference in scientific research:** Campinas is a national reference of scientific research and generation of patents, which among diverse research and higher education institutions located in the city, Unicamp can be highlighted. The university, which has a fundamental role in the project, has established its national position in the production of high-impact research, knowledge transfer, cooperation with the productive sector, stimulation of innovation and the creation of new business models, adding substantial value to HIDS.

- **Entrepreneurship culture:** Campinas' ecosystem is formed by several factors that favour the development of new businesses, what can be exemplified by its ranking as the seventh best city to undertake in Brazil, according to a survey carried out in 2017, which presents the Entrepreneurial Cities Index nationwide, considering factors such as regulatory environment, infrastructure, market, access to capital, innovation, human capital and entrepreneurial culture[42]. This recognition affirms Campinas and its potential for the generation of technology and innovation, being a prominent factor for the development of HIDS.

- **Innovation and technology industries:** the city of Campinas is considered by many researchers as the "Brazilian Silicon Valley" [43] due to its industrial and human resources capabilities that attract companies in the technology sector.

[41] regiaocampinas.org.br/fomento/

[42] crbconstrutora.com.br/blog/morar-bem/morar-em-campinas/

[43] anpei.org.br/campinas-e-apontada-como-maior-polo-de-tecnologia-da-america-latina/

Environmental

- **Sustainable development:** HIDS will contribute to the sustainable development process, by producing knowledge to mitigate and overcome the social, economic and environmental challenges of contemporary society such as energy, food, health, urbanism, environment, economy, and social relations.

- **Experimentation laboratories:** HIDS proposes to develop knowledge and innovative technologies, having its own territory as an experimentation laboratory. Following what is proposed by the SDGs, the search for solutions associated with topics such as energy, food, urbanism, waste management, become a priority, which generates results in environmental issues and challenges. Actions include encouraging the circular economy; harmonious urban development; new technologies for solid waste treatment; effective participation in the topics of climate change, sustainable agriculture, decarbonization, among others.

- **Territorial model:** the project aims to be a territorial development model, oriented by the SDGs and based on the creation of sustainable neighbourhoods, what will include solutions focused at the preservation of fauna, flora, rivers and springs in the region, as capacities and technologies that are able to further assess the local impacts of human activities. The model and its solutions will be able to be replicated locally, nationally or internationally, contributing to the sustainable development of other communities.

- **Climate change:** this global factor affects not only the environment but triggers social and economic problems, based on the damage caused. Heat waves may reduce work capacity and productivity, as well as increase energy use; droughts directly affect the food production chain; flooding, affects the social and commercial dynamics of the region, etc. These instabilities caused by climate change may influence HIDS' priorities regarding SDGs.

Legal

- **Supporting science, technology and innovation:** The legal apparatus supporting science, technology and innovation in Campinas is made up of the following instruments: National Law for Incentives to Innovation (LAW No. 10.973, OF 2 DECEMBER 2004); Information Technology Law (LAW No. 8,248 OF OCTOBER 23, 1991); "Lei do Bem" (LAW No. 11.196, OF NOVEMBER 21, 2005); São Paulo System of Innovation Environments (DECREE No. 60,286, OF MARCH 25, 2014); São Paulo Innovation Law (COMPLEMENTARY LAW No. 1,049, OF JUNE 19, 2008); Municipal Startups Incentive – Campinas (LAW No. 14.920 OF NOVEMBER 24, 2014). This shows that the Municipality of Campinas has a broad interest in fostering its innovation ecosystem, which is supported by legal incentives that help to facilitate the development of innovative and technological services, products and companies.

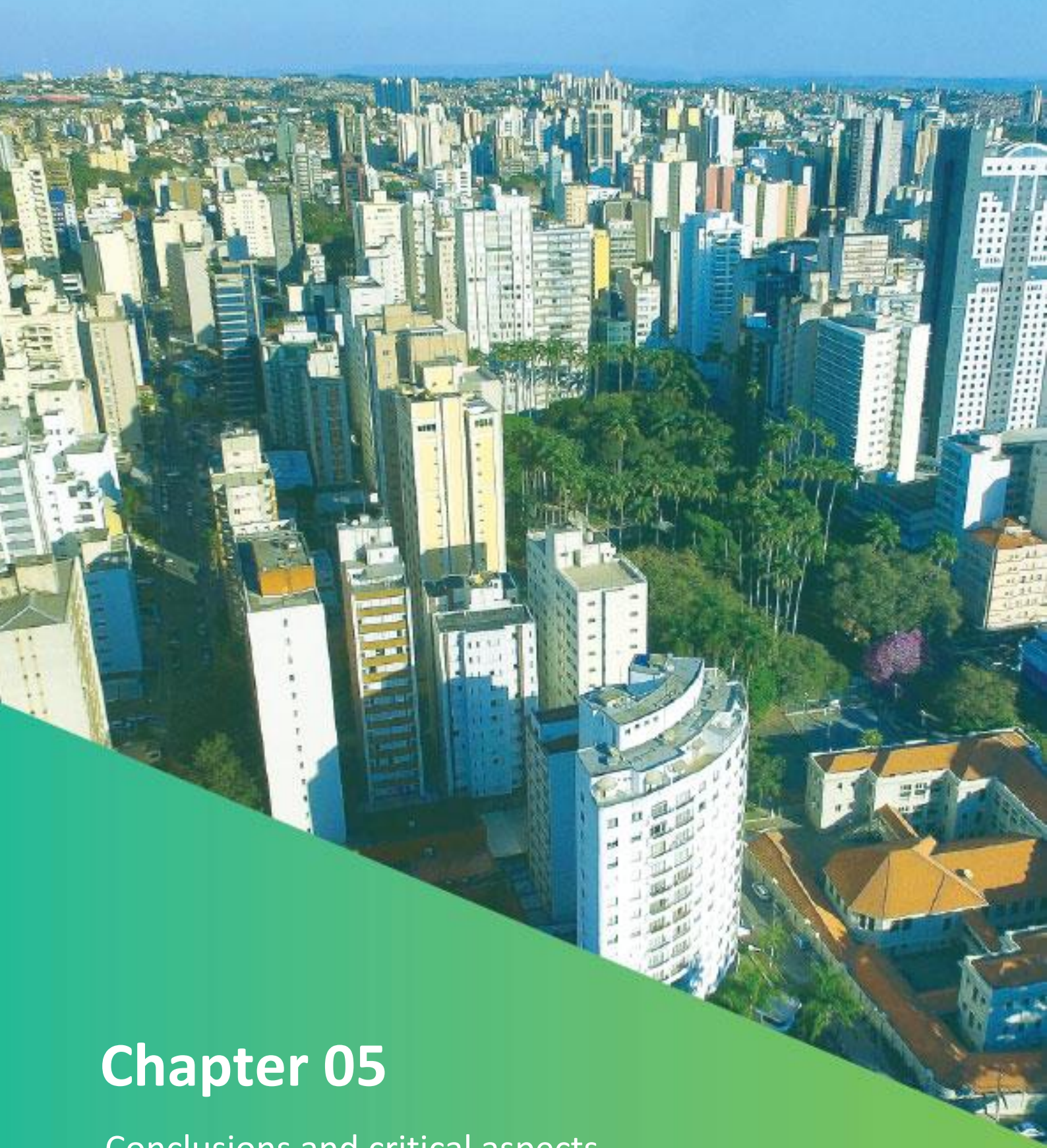
- **Protect and support the activities:** The team responsible for the legal development of the project has been working on drafting proposals for bills that protect and support the activities carried out in the sphere of HIDS, considering topics such as:

  i. Tax exemptions for research, innovation and development;
  ii. Structuring of a technological park; creation or authorization of a legal entity for space governance;
  iii. Environmental, sociocultural and urban protection;
  iv. Urban project for development of the area.

  However, they are proposals that may or may not be validated by the Legislative Chamber. It is important that, together with the legal model, there is the strengthening of legal planning that allows ensuring the project's permanent implementation.

- **Bureaucracy:** the administration of the Brazilian State is divided into three levels of government: federal, state and municipal. These levels have different but complementary responsibilities that interact in their spheres of power, therefore, the bureaucracies found in them directly affect social, political, and business issues. As a consequence, bureaucracy may be present in activities, public policies and incentives of HIDS' interest.

- **City Council of ST&I:** pursuant to Art. 1 of Municipal Law No. 14,739 of December 19, 2013, the Municipal Council of Science, Technology and Innovation was created with the objective of advising the Municipal Executive Power, supporting and encouraging scientific, technological and innovation development in the Municipality of Campinas, pursuant to article 251 of the Organic Law of the Municipality. The legislation presents advantages for HIDS, considering that it acts in the area of interest for the project activities.



Chapter 05

Conclusions and critical aspects

5. Conclusions and critical aspects

5.1 Common grounds for creating a shared vision for the future of HIDS

From the analysis developed, it is possible to identify common foundations for the creation of a shared vision for the future of HIDS. Despite the diverse perspectives and objectives expected by stakeholders, factors converge towards a central and shared sense of ideas:

1. **Territorial development**

Through an innovative environment, the project has territorial development as one of its common objectives, aiming at the creation of an area of innovation that encompasses companies, universities, public institutions and civil society, capable of fostering harmonic interactions between these actors, resulting in a favourable environment for the generation of knowledge, technology and innovation. The territorial development targeted consists of a complex system, characterized by the connection of synergies between all stakeholders, seeking as a result of proper urban development, the generation of wealth, innovation, services, valorisation of the environment, education and employment, that will promote sustainable development in the economic, social and environmental spheres of HIDS. The results of its implementation may serve as a model to be replicated within Campinas, or other cities.

2. **Sustainable development**

The HIDS' role of developing technologies and knowledge aimed at sustainable development is a consensus among its stakeholders, therefore it must take in consideration the various sectors and challenges present in the SDGs, and clearly define which of them are more susceptible to be the focus of HIDS. In this aspect, examples of possible areas of development that already were highlighted are: quality education, clean and affordable energy, sustainable cities and communities, clean water and sanitation, responsible consumption and production, and smart cities.

3. **Living laboratories**

The development of living laboratories is also a synergy identified by the HIDS stakeholders. These spaces are understood as learning structures, by including academics and professionals who aim to produce knowledge, prototype, validate and test new services, products, markets and technologies in the context of their industries and institutions, seeking more sustainable practices that will be applied to the HIDS and its ecosystem. In other words, there is a common vision that the project should be a reference laboratory for the creation of technologies, social development and wealth generation.

4. Legal structure

The consensus for the need of a legal structure stands out because the project aims to be participatory in public policies, which will allow its actors to integrate with legal issues, as well as provide the permanent and continuous conditions for the development of HIDS. In this context, innovation and entrepreneurship are decisive factors for economic growth and social development, which require strong leadership from the public and private organizations to ensure their execution and results, therefore, HIDS' legal structure should clearly define the rights and responsibilities of the organizations and individuals involved, in order to manage the public and private interactions to be carried out during its activities.

5.2 The conceptual and territorial implications of HIDS area

The territorial objective of HIDS is to be an area of innovation that includes activities of work, leisure, research and innovation, transforming itself into a model of a smart city. The project's urban planning policy must be conceived within its concept of sustainable regional development, based on principles that encompass the city's dynamics in its social, economic, cultural and environmental context. Another factor that must also be considered is the implementation of a housing policy that enables democratic access to the city must be associated with a comprehensive urban planning policy.

The project aims to base its activities on the concept of a sustainable city, applying the use of technology as a provider of innovations, involving its qualified human resources capacity, resulting in a responsible relationship with the environment, expanding its capacity for development, adaptation and overcoming challenges. In this context, technology and its applications are perceived by HIDS as an integrative and participatory tool, which in addition to providing advances and solutions in the commercial and scientific spheres, also improves people's relationship with the environment in which they live.

The development of this model based on the initiatives of a smart city arises to meet current demands at national and international levels. The concern with the scarcity of natural and productive resources, energy resources, demographic density, and social problems, highlight the need to better manage and plan urban spaces and agricultural production. HIDS is motivated to establish itself as a reference that encourages change that understand the need to organize, develop and act, making it possible to obtain tangible results regarding the generation of innovations, intelligent governance, and, consequently, the formation of citizens engaged in change processes.

In short, the analysis allows us to understand that the HIDS, in its general vision and territorial implications, seeks to base its economy and governance on innovation and entrepreneurial activity. Given the importance that the Campinas Region plays in scientific production and its capacity to attract investments, the management of resources from a sustainable perspective

expands its range of possibilities, as it will make the region also a reference for an environmentally suitable and attractive ecosystem for the actors, by implementing a more innovative management, presenting greater economic and urban development resulting from a disruptive positioning.

5.3 Cooperation level and openness potential among stakeholders

Cooperation among stakeholders plays a very important role in the project, as in addition to providing greater cohesion between its common objectives, they also make the initiatives develop in a more structured way, bringing benefits in the medium and long term. The enhancement of collective organization and collaboration, regarding HIDS activities, will also result in the promotion and dissemination of information about the project, strengthening the connections with local society and other actors from the CIE.

The relationships established between these actors and the HIDS are essential to characterize and establish links between the objectives that are aimed at by the organizations to the local sustainable development challenges. The importance of involving them in the planning process is highlighted as it allows for greater interaction in the formulation and implementation of activities and public policies. In this context, a collaboration between the various stakeholders, including the ones outside the HIDS Founding Council, that allows debate, negotiation, dialogue, and the construction of proposals on the best ways to implement the regional development expected by all will make the planning process more comprehensive, participatory, and democratic, as it allows its execution in a context of greater diversity of stakeholders.

5.4 Leveraging the development of HIDS while preserving key aspects of the current business environment

As mentioned during the analysis, Campinas is a national centre for the production of knowledge and technology. Its ecosystem of innovation has a high degree of institutional development, where it is worth highlighting the solid presence of i) Research and development, fostered by the activity of universities, research centers, and other institutions producing scientific and technological knowledge; ii) Innovation support institutions, such as incubators, accelerators and entrepreneurship support agencies; iii) Developed entrepreneurial fabric, where anchor companies of high national relevance are located; iv) policies and public instruments to support innovation and entrepreneurship.

Given this fact, it is understood that HIDS can leverage its development, preserving the key elements of the local business environment, by the following actions:

1. Acting as a catalyst for Sustainable Development: SDGs reflect contemporary social, environmental, and economic demands, which are increasingly being taken into account in public

management and business activities. The HIDS, by promoting the development of knowledge oriented to SDGs can support this specific demand, contributing to the incorporation of capacities oriented towards sustainable development at the local level.

2. Promotion of the Campinas Innovation Ecosystem: One of the capabilities provided for in HIDS is its involvement with national and international companies and institutions, acting as a promoter of cooperation. In this sense, its development can be leveraged through its positioning at the local level as an effective agent for attracting investments and promoting the visibility of the local innovation ecosystem.

3. Territorial development: Considering that HIDS has the objective of consolidating itself as an area of innovation, which has as a guideline the mixed occupation of local space, combining R&D, education, work, leisure, and retail activities. Its development can be facilitated through the establishment of partnerships which have a common interest in the territorial development, where ample cooperation opportunities are demonstrated in the face of such activities.

5.5 Potential advantages of HIDS for startups and innovative ventures

Regarding startups and innovative ventures, HIDS will be able to contribute directly with:

1. Due to its living laboratories, it will be able to facilitate the testing and prototyping of new technologies and knowledge, facilitating its incorporation into new products, services and processes to be developed.

2. HIDS will be able to facilitate the interaction with other companies, government institutions, and research, development, and entrepreneurship support institutions from other countries, what will result in the dissemination of knowledge and technologies, facilitate the interaction of local companies at national and international levels, and improve the visibility and attraction of investments for the CIE.

3. The territorial model of mixed land use will facilitate the retention of talents and the exchange of knowledge and activities between companies and institutions at the local level, encouraging developed companies and talents to remain in the territory.

4. The structure contemplated by HIDS will be able to attract anchor companies, which will result in an increased demand for innovative solutions, consequently effects such as spin over and specialization will take place. New businesses will also be housed in its structure, enabling easier access to knowledge and technologies, enhancing their competitiveness.

5. The knowledge related to Sustainable Development to be developed by HIDS will help startups and innovative ventures to incorporate such capabilities into their products, services, and business models, promoting more sustainable business models.

5.6 Relevant infrastructure and demand needs and gaps

Regarding the infrastructure and demand, it is possible to identify the following needs and gaps to be addressed, such as:

1. The regularization of land use: The legal definition of land use, which allows for the proper development of HIDS activities, as well as the development of its basic infrastructure (such as water, sewage, and energy), are necessary factors for the project's progress.

2. Land ownership: In the target area of development of HIDS there are private properties that must be intermediated by the local government so that they are destined for sustainable development actions, with the control of non-sustainable activities as well.

3. Conclusion of the master plan: Another key factor for HIDS is the need to conclude the master plan, in order to provide the full tangibility of the project.

4. Capacity to attract investments: The legal context, and definitions of infrastructure and specific areas of interest within the SDGs are facts that must be analysed to direct the efforts to be developed by HIDS to attract investments.

5. The definition of common goals between key stakeholders: The clear definition of common goals among the central stakeholders, especially those of the Founding Advisory Council, is necessary in order to leverage synergies and cooperation within the project.

6. Greater alignment with the local society: The promotion of HIDS in the Campinas Innovation Ecosystem, as well as enhancing its interaction with local civil society and entrepreneurs is an identified demand, which would facilitate popular support and participatory planning during the project development.

7. Presence of key companies: The HIDS' specific capabilities must be taken into account for a greater assertiveness of its value proposition in order to attract anchor companies.