The university contribution to sustainable development in Brazil: an analysis of the institutionalization of HIDS-Unicamp

A contribuição da universidade com o desenvolvimento sustentável no Brasil: análise da institucionalização do HIDS-Unicamp

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ABSTRACT: This article aims to discuss the International Hub for Sustainable Development (HIDS), integrated into the University of Campinas (Unicamp/Brazil) and to the regional context of the city of Campinas, state of São Paulo, Brazil. We seek to present and analyze the experience of formulating and implementing HIDS, in view of its history of constitution, participating actors, structuring process, and its perspective of the concepts of sustainability and scientific and technological development. The HIDS concerns a partnership between 14 institutions, which correspond to legal categories such as public companies, higher education institutions, state authorities, social organizations, private law foundations, research, development and innovation institutions, multinationals companies, among others. In addition, it aims to contribute to the process of sustainable development, considering the production of knowledge and technologies through national and international cooperation, to mitigate and solve problem-situations in contemporary society. Methodologically, this article consists of bibliographic reviews and access to documents and information published on the institutional website of the researched experience. Considering that HIDS is a project still in the structuring and implementation phase, the focus of the analysis is on presenting the initiative's formulation trajectory, its context and constitution process, as well as its alignment in relation to the main mobilized topics. In addition, it is worth discussing which models of international experiences are cited in their constitution process and how these experiences impact the emergence and current structure of HIDS. Therefore, we aim to contribute to the reflection on innovative institutional initiatives, whose main mission is oriented to the promotion of transformative technologies and enterprises, integrated urban development, and sustainability.

Keywords: International Hub for Sustainable Development; sustainability; scientific and technological development; Unicamp; Brazil.

RESUMO: Este artigo tem como objetivo dissertar sobre o Hub Internacional para o Desenvolvimento Sustentável (HIDS), integrado à Universidade Estadual de Campinas (Unicamp/Brasil) e ao contexto regional do município de Campinas, estado de São Paulo, Brasil. Em outras palavras, busca-se apresentar e analisar a experiência de formulação e implementação do HIDS, tendo em vista seu histórico de constituição, atores participantes, estruturação e sua visão relativa aos conceitos de sustentabilidade e de desenvolvimento científico e tecnológico. O HIDS diz respeito a uma parceria realizada entre 14 instituições, que correspondem a categorias jurídicas como empresas públicas, instituições de ensino superior, autarquias estaduais, organizações sociais, fundações de direito privado, instituições de pesquisa, desenvolvimento e inovação, empresas multinacionais, entre outras. Além disso, possui como objetivo contribuir para o processo do desenvolvimento sustentável, considerando-se a produção de conhecimento e tecnologias por meio de cooperações nacionais e internacionais, de modo a mitigar e solucionar situações-problema da sociedade contemporânea. Metodologicamente, este artigo constitui-se a partir de revisões bibliográficas e acesso aos documentos e informações publicadas pelo site institucional da experiência pesquisada. Em razão do HIDS se constituir em um projeto ainda em fase de estruturação e implementação, o foco da análise está em apresentar a trajetória de formulação da iniciativa, seu contexto e processo de constituição, bem como seu alinhamento em relação às principais temáticas mobilizadas. Além disso, importa discutir quais modelos de experiências internacionais são citados em seu processo de constituição e de que forma tais experiências impactam o surgimento e estrutura atual do HIDS. Dessa maneira, este artigo visa contribuir para a reflexão em torno de iniciativas institucionais inovadoras, cuja missão principal esteja orientada para a promoção de tecnologias e empreendimentos transformadores, desenvolvimento urbano integrado e sustentabilidade.

Palavras-chave: Hub Internacional para o Desenvolvimento Sustentável; sustentabilidade; desenvolvimento científico e tecnológico; Unicamp; Brasil.

1. Introduction

In this article we aim to discuss the International Hub for Sustainable Development (*Hub Internacional para o Desenvolvimento Sustentável* – HIDS), integrated into the University of Campinas (Unicamp/Brazil) and to the regional context of the city of Campinas, state of São Paulo (SP), Brazil. The proposal for an International Hub dedicated to the challenges of building sustainable development is part of contemporary efforts to establish environmental governance. In this sense, its conceptual formulation and institutional structuring process follow the principles that guide the establishment of successful governance processes concerning socio-environmental issues. Among these principles, we highlight the multi-actor activities of broad segments, groups, and social sectors such as government agencies, scientific institutions, business actors, civil society organizations, interest groups, and citizens individually considered. Thus, it is possible to articulate various initiatives in favor of projects that involve the areas of planning, promotion, and encouragement of sustainability and sustainable urban development (Hannigan, 2006; Bhagavatula *et al.*, 2013; Fenton & Gustafsson, 2017; Ferreira, 2017; 2018; Di Giulio *et al.*, 2019; Ferreira *et al.*, 2020).

In addition to multi-actor action, environmental governance is also guided by the principles of multilevel and multisector action, in the multiple mobilized areas under consideration. Moreover, these premises ripple in the socio-institutional context that involves the proposal of the HIDS initiative. In other words, both in conceptual and practical terms, initiatives related to the Hub must pay attention

to the multiple relevant and appropriate levels of intervention (local, regional, national, and international levels). In addition, its conception mobilizes multiple sectors and dimensions of the collective structure of social life, in areas as diverse as urban planning, transportation, health, education, energy, housing, urban infrastructure, and social experience (Gupta, 2007; Bulkeley & Newell, 2010; Newell *et al.*, 2012; Dewulf *et al.*, 2015). Based on this general contextualization of the principles that guide the structuring process of HIDS, we place greater emphasis, within the scope of this article, on multi-actor arrangements that guide effective environmental governance processes. We developed this analysis throughout the next sections of the study.

Finally, the investigated initiative takes as its fundamental theoretical and methodological framework the reference of living labs and its enormous potential to promote important transformations towards more balanced patterns of interaction between society and the environment, with a view to sustainable development. Thus, according to Irina Zen, living labs seek to constitute "a co-creative process that allows the integration of research and innovation in a systematic way, given a territorial context" (Zen, 2017, p. 940, free translation). Among the elements that compose a living lab, ordered from the perspective of HIDS and the literature on the topic, there are: the action in a real-world context of socio-environmental problems; valuation of co-creation processes; collaboration and active participation of users; involvement of multiple stakeholders; multiple approach to teaching, learning, and research methods; governance based on public-private partnerships; and innovation as a major structural axis (Gross & Krohn, 2005; Almirall & Wareham, 2008; König & Evans,

2013; Lucchesi & Rutkowski, 2019). As we shall see, these references provide a fundamental basis for the initiatives and actions planned in the context of the institutionalization of the HIDS project as well as for the international models and experiences that inspire it.

Based on this general overview, in this article we seek to answer the following questions: what was the context in which it emerged and how did the formulation of the project to institutionalize a Hub at Unicamp take place? Which actors participated (and are still participating) in its constitution and structuring process? What models of international experiences are mentioned in its constitution process? How did Unicamp participate (and is still participating) in this project? What is the HIDS view regarding the concept of sustainability and how does this view relate to the concepts of scientific and technological development, as well as technological innovation mobilized by the proposal? In other words, we seek to present and analyze the experience of formulating and implementing HIDS, considering its history of constitution, participating actors, structuring process, and its mobilization as for the concepts of sustainability and scientific and technological development. It is worth highlighting that HIDS is a relevant (and, one might say, unique) experience at the national and Latin American contexts, either because of its proposed arrangement between science, government, companies, and society in general; or because of the very magnitude of the commitment of the involved universities (science universities and institutions important at the local, regional, national, and international levels); or because of the intention to act on major social and environmental challenges also present at different scales. In this sense, monitoring its formulation

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process, understanding the involved actors, and formulating a future research agenda constitute an interesting research task.

As a form of organizing the article, we divided it into two parts, in addition to this introduction and final considerations. The first part aims to place the reader in relation to the context in which HIDS emerged, presenting its history, structuring process, and general characterization, as well as its partners and actors participating in this proposal, the mobilization on the part of Unicamp, and the international experience models considered at its origin. In addition, we present a brief discussion on how to mobilize the concepts related to the intersection of the Science and Technology (S&T) topics and university considered in the proposal such as the conceptions of scientific and technological development and technological innovation.

The second part will be dedicated to discussing the concept of sustainability inherent in the HIDS proposal, in view of the different perspectives present in the literature. In such discussions, the positions taken by the different actors participating in the project under analysis are considered in the light of the broader sociopolitical processes of institutionalization of issues related to sustainability. In the final considerations, we resume the main points addressed throughout the article, with emphasis on the analytical results found and on the design of a research agenda that delves into topics related to the process of institutionalization and implementation of the investigated experience and other similar ones.

To answer the proposed questions and fulfill the aforementioned research trajectory, the research considered, in particular, the institutionalization process of the International Hub for Sustainable Development (HIDS). It should be noted that HIDS can be considered as an institutional policy within the context of Unicamp and, as a result, the "policy contexts" approach, based on Stephen Ball and Richard Bowe (1992), was used as methodological inspiration. In this approach, the phases of a public policy would be divided, analytically, into five contexts (Ball & Bowe, 1992):

1) Context of influence: phase in which policies begin with the development of political discourses, motivations, and legitimation, among other relevant contextual aspects. In this context, disputes of interest can be included in the definition of the social purposes of the studied policy;

2) Context of text production: in this context, policy texts are formulated and materialize and represent some results of the previous context, also relating to language, content, among others;

3) Context of practice: the policy being implemented, observing the actions of the actors in this process;

4) Context of outcomes/effects: this context refers to the identification and analysis of the outcomes (in reaction to the policy's own goals and objectives) and broader effects (social, political, among others);

5) The context of political strategy: identification of the social and political activities conducted by the actors to deal with the results and effects, including the inequalities reproduced or created by the policy. It should be noted that in the conducted research the focus was on the first and the second contexts, as HIDS is a recent project.

In this sense, we seek to constitute the research problem from the perspective of institutional analysis of the HIDS project, with special attention

to its actors, processes, dynamics, and structural conceptions. We do not intend to detail this methodological approach. However, we highlight the first two contexts mobilized in this article, namely: the "context of influence" and the "context of text production." The first refers to the general influences of the policy as well as the moment in which political discourses are prepared in order to initiate the policy. Evidently, it includes the disputes and interests on the part of the involved actors and the influences of the historical and situational context. The second moment concerns the context of text production, when the policy is materialized, generally in textual format, showing conceptions, disputes, intentions, and social, political, and institutional legitimations (Ball & Bowe, 1992).

In particular, the use of this approach guided the process of describing and analyzing the policy, as it drew attention to: the actors involved in the HIDS implementation process; the various influences related to the entry of this thematic agenda into Unicamp, as well as the conflicts existing in this process; the mobilized conceptions of sustainability, innovation, and the relationship between the university and society, both in the context of influence and in the context of text production; and, overall, to the way the policy has been materialized. In short, considering the description of HIDS, firstly, discussions on environmental governance and conceptions of sustainability were mobilized; and, secondly, the debate about the relationship between university and society with the interaction models raised by HIDS.

Finally, we highlight the exploratory nature[1] assumed by the article, as the project's implementation process is recent, with its first activities officially formalized in 2019 (HIDS, 2019). In this sense, the study aims to raise initial reflections to stimulate a more in-depth debate on HIDS and initiatives that encompass the same "model." Furthermore, as the article will seek to address the topic in a panoramic way, the project is multifaceted in its dimensions and approaches, either because of the considerable number of academic and non-academic actors it encompasses, the participation of the scientific community, the discussions about sustainability, and the relationship between universities and society that it raises as well as the living lab models by which it is inspired.

2. The HIDS formulation process

The initial stimulus for the HIDS idea was provided by Unicamp, offering as a tangible asset for the project an area of 1.4 million m² acquired in 2013, informally known as *Fazenda Argentina* [Argentinian Farm] and which is located adjacent to the current Barão Geraldo campus, in the city of Campinas (SP). This space represents 60% of the current territory occupied by the university's main campus and is part of one of the strategic development centers of the city of Campinas, the High Technology Pole Ciatec II. This region is home to important research, technology, and innovation institutions of national reference, such as the National Research Center for Energy and Materials (CNPEM), the Technology City of the São Paulo Technological Park System (SPTec), the Data Cen-

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[1] According to Gil (1999), exploratory research "has the main purpose of developing, clarifying, and modifying concepts and ideas, with a view to formulating more precise problems or researchable hypotheses for further studies" (Gil, 1999, p. 43, free translation).

ter Santander, the Eldorado Research Institute, the Brazilian Agricultural Research Corporation (Embrapa), the Unicamp Innovation Agency (INOVA) as well as FACAMP (Faculties of Campinas) and the Pontifical Catholic University of Campinas (PUC-Campinas).

It is worth noting that, regarding the area that houses the project, its acquisition by the university was involved in a process of disputes and questions within the framework of the university community. Thus, some sectors questioned the justification or priority of allocating large volumes of resources to such asset, considering the context of the institution's budgetary difficulties and the existence of other important demands such as the financing of student retention policies. We consider it pertinent to address this specific aspect related to the history of the HIDS project, as it shows the centrality of the dynamics of negotiation and political participation between multiple social actors, sometimes with conflicting interests, perspectives, and demands. Efforts to build a common cooperation process towards sustainable urban development, in this sense, demand capacities and abilities that relate to the specific political, cultural, and regulatory spheres of discussions on innovation, universities, and sustainability. We investigate such issues throughout the next sections of this article.

Thus, as a general characteristic of the HIDS initiative, we highlight the participation and involvement of different social actors in the stages of planning, implementation, execution, and improvement of activities related to a project of this nature. In this sense, the HIDS proposal aims to attract the interest of national and international institutions such as universities, research and development (R&D) centers and institutes, government sectors, public and private companies, non-governmental organizations, and civil society groups. Hence, it seeks to create an environment of technological, economic, and social innovation to offer solutions to be brought to the local community and society and that contribute to sustainable development. In all of these initiatives, the Sustainable Development Goals (SDGs) framework of the United Nations (UN) 2030 Agenda provides a fundamental support basis.

Among the models and experiences that inspire the development of this major project, the following stand out: the "Silicon Valley"; "*Self-sufficiency in Clean Energy – HafenCity*"; "*Circular Economy in Kalundborg – Denmark*"; "*Integration with Pittsburgh – Carnegie Mellon University*"; "*Innovation of Porto Digital – Recife*"; "*Disruptive Health Technology in Surrey – Canada*"; "*Transforming Milan into a Smart City*"; "*Data Generation and Storage – London*"; "*Smart City Technology – Seoul*"; "*Social and Urban Innovation of Senseable City Lab – MIT*"; "*Solar Cycleway – Amsterdam*"; "*Sustainable Mobility – Paris*"; "*Urban Mobility and Climate Change Policy – Banco Santander*"; "*Connectivity of High Line – New York*"; "*Green Infrastructure Of Qunli Park – China*"; "*Urban Infrastructure in Barcelona*"; "*Zero Waste Policy – Switzerland*"; "*Environmental Recovery Of The Tietê River Park*"; and "*Climate Governance – Santos*" (HIDS, 2019). These models and experiences share a strong foundation in the theoretical and conceptual framework of living labs, as a reference for the planning of their activities, especially with regard to action in a real-world context, valuation of co-creation processes, and emphasis on innovation as a major structural axis (Gross & Krohn, 2005; Almirall & Wareham, 2008; König & Evans, 2013; Zen, 2017; Lucchesi & Rutkowski, 2019).

Regarding the actors involved in the process of formulating and institutionalizing the HIDS project, the following stands out: among the 14 official actors, six refer to Research Institutions and Universities (Unicamp, PUC-Campinas, Facamp, CPQD, Eldorado Institute, and CNPEM); four are private companies (TRB Pharma, Cariba Empreendimentos e Participações, Cargill, and CPFL); one public company (Embrapa); one mixed-capital company (Sanasa); as well as two representatives of the municipal and state government (Campinas City Council and São Paulo State Government). In addition to these actors, we identified three partners that are part of the HIDS project, one private company (Inventta Consultoria) and two actors that we categorize as being related to the international and financial cooperation of the project (Inter-American Development Bank – IDB and KRIHS Consultoria). It should be noted that the process of identifying these actors, as well as their contributions to HIDS, was carried out based on information published by the project's institutional website.

Based on this identification, we can observe the following: this project seeks to carry out a process of cooperation between actors of different kinds, aiming at promoting institutional synergies. The multi-actor cooperation model on which they are based (Hannigan, 2006; Bhagavatula *et al.*, 2013; Fenton & Gustafsson, 2017; Ferreira, 2017; 2018; Di Giulio *et al.*, 2019; Ferreira *et al.*, 2020) is illustrated in Figure 1, present on the HIDS institutional website and which represents the intention of making the project cohesive with their participation and contribution.
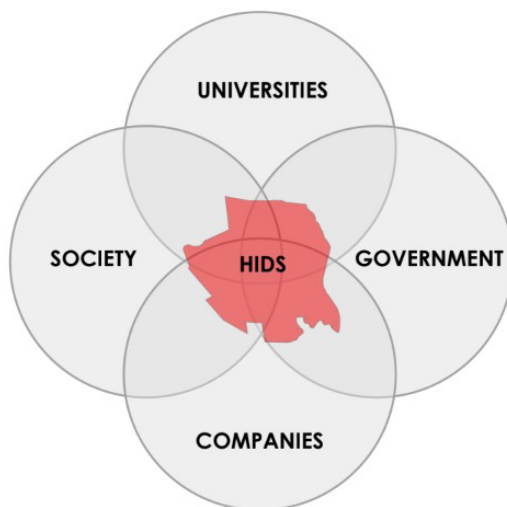

FIGURE 1 — Model of interaction and synergy between HIDS actors.
SOURCE: HIDS institutional website.

It is evident, therefore, that the proposed constitution of the HIDS evokes, directly and indirectly, the discussion about the relationship between the university and its social and economic environment. In fact, universities and research institutions involved in the project play an important articulating/ leadership role — that is, despite the participation of government agencies and companies, the intellectual and political leadership of HIDS lies within academic institutions.

Overall, the process of formulating the initiative, taking into account the initial meetings and opinion texts published on its official website, seeks to reaffirm, in a diffuse way, the importance of universities and science in promoting sustainable socioeconomic development and, more specifically, the role of universities at the regional level and in the university-business partnerships and arrangements. We also observed that the project seeks to legitimate itself through these conceptions. For instance, in an article entitled *Ousadia para um futuro sustentável* ["Daring for a Sustainable Future"] (Knobel & Lima, 2021), published in Estadão Newspaper, the importance of science in tackling environmental problems in times of scientific denial and climate change is emphasized; based on this contextualization, the article resumes the economic and techno-scientific potential of the Campinas region (SP, Brazil) to locate HIDS as "a bold, long-term project that seeks to unite, in the form of a consortium and partnerships, national and foreign, public and private institutions, together with different governmental spheres" (Knobel & Lima, 2021, p. 1, free translation); based on this arrangement, the article summarizes the social importance of the proposal through broad contributions to "sustainable development, producing knowledge, innovative technologies, and education for future generations, mitigating and overcoming the social, economic, and environmental fragilities of contemporary society" (Knobel & Lima, 2021, p. 1, free translation).

Moreover, an important characteristic of the project is discussed: a more "synergistic" integration between university, company, government, and city through more appropriate arrangements, put into practice in developed countries (Celani, 2021). When considering this broader discourse, as well as the analysis of the governance model, minutes of the meetings, opinion articles, and the actors involved in the process, some basic conceptions about the role of universities and science in society can be identified, based on the centrality given to the development of innovations[2], the so-called Triple Helix Model (Brisolla *et al.*, 1997; Etzkowitz *et al.*, 2008; Coutinho & Silva, 2017), the debate about ecosystems and innovation clusters (Butler & Gibson, 2011; Oh *et al.*, 2016; Audy, 2017; Cai & Etzkowitz, 2020), as well as the debate on the impacts of universities on regional development[3] (Vieira, 2017; Pinheiro *et al.*, 2018; Benneworth & Fitjar, 2019; Ultramari & Levy, 2020). Regarding the location of the official actors involved in the project, we can observe, as shown in Figure 2, that nine of them are part of the area through which the HIDS will be established, enabling better communication between them as well as facilitating access to the structures provided by each actor.

[2] We are not stating that the participating actors necessarily take these models as basis (although there is this possibility), but rather attempting to identify some theoretical conceptions, based on documentary research, that relate to the process of developing the HIDS. For more information on the Technology Park development process, see Silva & Dagnino (2021).

[3] It is not appropriate, in this article, to comment on each of these debates in depth; however, for more detailed information, it is recommended to consult the listed authors.

FIGURE 2 – Location of the HIDS actors.
SOURCE: HIDS institutional website.

Overall, we can state that HIDS also seeks strong regional integration, valuing the spatial and geographical dimension of sustainable development — even though it seeks the creation of knowledge and innovation at different scales — and the participation of the city of Campinas in this process.

As for issues related to project financing and accountability, the following is known:

i. IDB is the main funder of the project, investing USD 1 million on a non-refundable basis;

ii. other project funders can also be identified, as is the case of Unicamp itself and PUC-Campinas.

Each axis of the HIDS Master Plan presents its budget (either in BRL or USD currency), in view of the activities carried out to date. Other data and details can be verified both on the HIDS and IDB institutional websites, considering the transparency and publicity of the granted funding.

Once the process of formulating and structuring the initiative has been presented in general terms, the following section is dedicated to addressing more directly the way in which the debate on "sustainability" and "sustainable development" permeates the context of institutionalization of HIDS.

3. The debate on sustainability and sustainable development in the context of HIDS

Broadly speaking, the issue of sustainable development is marked by multiple theoretical and conceptual perspectives regarding what would effectively constitute the notion of sustainability and its fundamental dimensions. It can be said that the heterogeneity of positions, references, and values represents, precisely, one of the key characteristics of the discussions surrounding the planning and implementation of socioeconomic development processes from a sustainable perspective (Yearley, 1996; Veiga, 2008; Dunlap & Brulle, 2015; Ferreira, 2017; 2018). In such debates, the polysemic nature of the theoretical terms and concepts in dispute is evident, based on different ways of conceiving the involved topics and the possible alternatives indicated for the submission of action proposals (Silva Júnior *et al.*, 2015).

Simultaneously, the process of institutionalizing issues related to sustainable development has succeeded in constituting perspectives of understanding that are presented in a hegemonic way in broad intellectual, political, cultural, and institutional circuits (Nobre & Amazonas, 2002; Veiga, 2008; Nascimento, 2012). The commonly referenced expression in this regard is found in the Brundtland Report ("Our Common Future"), published in 1987. In this document, the concern to incorporate the dimensions of environmental impacts into economic processes gained the formulation that would become the main reference for discussion: sustainable development is defined as one that "satisfies the needs of the present without compromising the ability of future generations to satisfy their own needs" (Brundtland, 1987, p. 24, free translation). This seemingly simple and consensual definition gives rise to multiple approaches or points of view that are anchored under this concept, often with conflicting and even contradictory theoretical or practical guidelines (Yearley, 1996; Veiga, 2008; Ferreira, 2017; 2018).

When considering the positions most directly linked to the HIDS experience, the privileged object of analysis within the scope of this article, we notice the existing alignment with respect to the aforementioned process of institutionalizing the issue of sustainable development. As an example of such guideline, we highlight an excerpt from an article previously mentioned (Knobel & Lima, 2021), published by members of HIDS to disseminate the ideas and importance of the project. When referring to the 2030 Agenda as the reference framework for HIDS initiatives, the authors draw attention to the fact that "we must create the conditions for the needs of the current generation to be met, but we must protect the right of future generations to also meet their needs" (Knobel & Lima, 2021, p. 1, free translation). In addition to the emphasis on intergenerational elements, we notice the consolidation of a perspective based on the well-known three pillars of sustainability, namely: emphasis on the environmental, social, and economic dimensions of the development (Goodland, 1995; Veiga, 2008; Nascimento, 2012).

In this sense, we observed, among the materials, minutes, and documents analyzed in this article (see the "Introduction" section), the preponderance of a hegemonic approach to issues associated with sustainability and sustainable development within the framework of the HIDS project. As previously

discussed, this indicates the preference for theoretical-conceptual perspectives that seek to build spaces of articulation around consensual positions and common regulatory bases. Among these points of convergence, the importance attached to the fields of technological innovation, entrepreneurship culture, and investment attraction stands out. In conceptual terms, similar perspectives approach the aspects called "weak sustainability" in academic literature, especially within the scope of economic sciences. According to Neumayer (2013),

> Weak sustainability (WS) requires maintaining total net investment, adequately defined to comprise all relevant forms of capital, above zero. This can be interpreted as a generalization and extension of the well-known Hartwick's rule (Hartwick 1977). WS is developed based on the possibility of replacing natural capital (as well as any other form of capital). […] Therefore, its investment rule, which simultaneously covers all relevant forms of capital, does not need to distinguish between specific forms of capital. If the investment in manufactured capital and human capital is large enough to compensate for the depreciation of natural capital, an explicit sustainable development policy is not even necessary, as sustainability is guaranteed almost automatically. Otherwise, appropriate measures are applied (for example, resource tax, savings subsidy, or environmental regulation) to keep the total net investment above zero […] (Neumayer, 2013, p. 23, free translation, emphasis added).

In addition, based on different theoretical and practical approaches, we verified the centrality assumed by the technological dimension as a common point with regard to the constitutive aspects of weak sustainability, in such a way that many of the proposals and lines of action formulated take precisely this arena as the one with the greatest potential and relevance for achieving advances towards sustaina-

ble development (Nobre & Amazonas, 2002; Veiga, 2008; Neumayer, 2013; Silva Júnior *et al.*, 2015). Thus, initiatives that seek to improve the design of goods and products, as well as the performance (efficiency) of industrial processes and production instruments, occupy major places. Productive innovation and technical-scientific progress, from this point of view, constitute indispensable factors for effectively and adequately confronting the complex challenges arising from the environmental crisis. Regarding HIDS, the positions associated with the different institutional actors that compose the project are examples of the emphasis outlined on the aspects of defining weak sustainability.

Specifically, in relation to the way in which each actor perceives the project, in addition to their contribution capacities, we identified the following from the minutes and publications of the HIDS (HIDS, 2021a): with regard to Research Institutions and Universities, they are willing to collaborate with the provision of human resources and with assistance concerning specific issues related to the attraction of the international community, communication and marketing of the project, the planning and implementation of the management model and the provision of technologies and equipment, in addition to participation in the construction of living labs. These actors share the vision that the knowledge generated by them can contribute to sustainable development, making HIDS a world reference in terms of the use of innovative technologies, aiming at sustainable technological development, and aligned with the Sustainable Development Goals (SDGs).

As for private companies and, by extension, the involved public and mixed companies, we can observe that their collaboration capacities refer to

specific topics related to the availability of internally generated technologies and knowledge, such as Artificial Intelligence, Internet of Things (IoT), electricity and renewable energy, in addition to topics related to agribusiness, health, and urban and real estate issues. Regarding the way in which these specific actors visualize the project, the importance they attach to economic development, to the generation of innovations, to self-sustainability, to collaboration between universities, research institutions and companies, as well as the training of human resources, job creation, quality of life, and the optimization of project resources to make the city of Campinas an Smart City, is evident.

Similar to what the aforementioned actors have presented and contributed, the representatives of the municipal and state governments discuss the importance of carrying out such a project to leverage the attraction of new investments to the city of Campinas, aiming to provide innovative solutions to the current economic development model, adapting and strengthening it in a sustainable way. Concerning the available assets and capacities, both actors address issues related to political representation, knowledge of current legislation, and the feasibility of human and financial resources.

In Figure 3, we can see the main words mentioned by the involved actors regarding the vision, image of the future, and value proposition they have in relation to HIDS, corroborating what has been presented so far. It is noteworthy that this figure was developed from the Word Clouds.com platform, through their perceptions according to the material published by the HIDS institutional website (HIDS, 2021b).

Based on the figure, we can see the emphasis given to technical, economic, and managerial dimensions, in line with the perspectives and conceptions grouped under the name of weak sustainability. In this sense, we observe the highest occurrence of terms such as "technologies," "innovative," "Smart," "investments," "model," "assets,"

FIGURE 3 — Word cloud about the vision, future image, and value proposition of actors that are part of HIDS.
SOURCE: Prepared by the authors.

among other similar terms. Furthermore, we can note the alignment established between the institutional attributions and capacities of the involved actors, seeking to strengthen interactions between universities, companies, governments, and society. This is expressed, in Figure 3, in the privileged mobilization of words such as "city," "society," "knowledge," and "Campinas."

4. Final considerations

As observed in our analysis, the experience of the International Hub for Sustainable Development, linked to the University of Campinas and the regional context of the city of Campinas/SP, is a project with great ambitions and expectations, especially in the Latin American context. As an initiative that is in its initial implementation and institutionalization processes, its mission and general objectives seek to address the multiple challenges related to the processes of building an integrated urban development model, dedicated to the issues of sustainability and sustainable development. In this sense, the participation of different institutional actors in terms of shared efforts and common initiatives, aiming to attracting investments, promoting technological innovations, and building synergies in favor of the HIDS project, stands out.

The diversity of actors involved in the proposed HIDS discourse implied the mobilization of sustainability perspectives aligned with the hegemonic conceptions of institutionalization of environmental issues. This means, as we discussed, paying greater attention to the dynamics of cooperation and negotiation that seek to build consensual positions and common regulatory bases. An example in this regard can be found in the analytical association that can be established between, on the one hand, the initiatives developed by HIDS regarding sustainable development and, on the other, the conceptual framework of the Brundtland Report. The role played by the dimensions of technological innovation and scientific progress, together with the discourse of the entrepreneurship culture, allows us to indicate, as dominant perspectives, aspects related to the conceptions of weak sustainability, which centralizes the technological dimension and the productive sector in considering the problem. Likewise, it is worth drawing attention to the heterogeneous and polysemic nature that constitutes the debates regarding the conceptions of sustainability and sustainable development. Based on these interpretations, we point out the centrality of positions and perspectives on sustainability as key dimensions for the structuring processes of the HIDS initiative.

Finally, a series of conceptions about the relationship between university and society were identified, which directly or indirectly support the aforementioned contexts. The focus was on triple helix models, highlighting the articulations between university, company, and government — in addition to an intense debate about the importance of the university in the context of regional development.

Overall, HIDS presents itself as a model to be observed and studied, considering its particularities in the Latin American context, opening up possibilities for the discussion on such arrangements within the framework of local specificities, which consider the common characteristics between emerging countries and their challenges resulting from structural socioeconomic and environmental divisions.

Therefore, as a way of summarizing the employed analytical approach, in Figure 4 we show

the way in which we present HIDS in this article, considering its historical trajectory, description of the governance structure, the debate on the conceptions of scientific and technological development and sustainability, in addition to indicating future research agendas.

In this sense, particularly considering the models used to base the HIDS, the potential of deepening investigations in relation to various analytical aspects is raised, in the context of such debates on conceptions of sustainable development and of the relationship between university and society. As possible examples, discussions on Sociotechnical Imaginaries (Jasanoff *et al.*, 2007; Fonseca, 2017; Vicente *et al.*, 2021) could be mo-

bilized; these discussions could be contextualized within the trajectory of the Science and Innovation Policy in Brazil (Carlotto, 2013; Turchi & Morais, 2017); among others. Hence, initiatives that seek to promote profound and significant transformations in integrated urban development processes, with a view to technological innovation and sustainability, can be understood and promoted in a scenario of complex socio-environmental challenges. Therefore, both the discussions on university-business and the international models that inspire HIDS raise important questions about the need to adapt and consider these models as well as the rationality of the interaction between the university and the business.
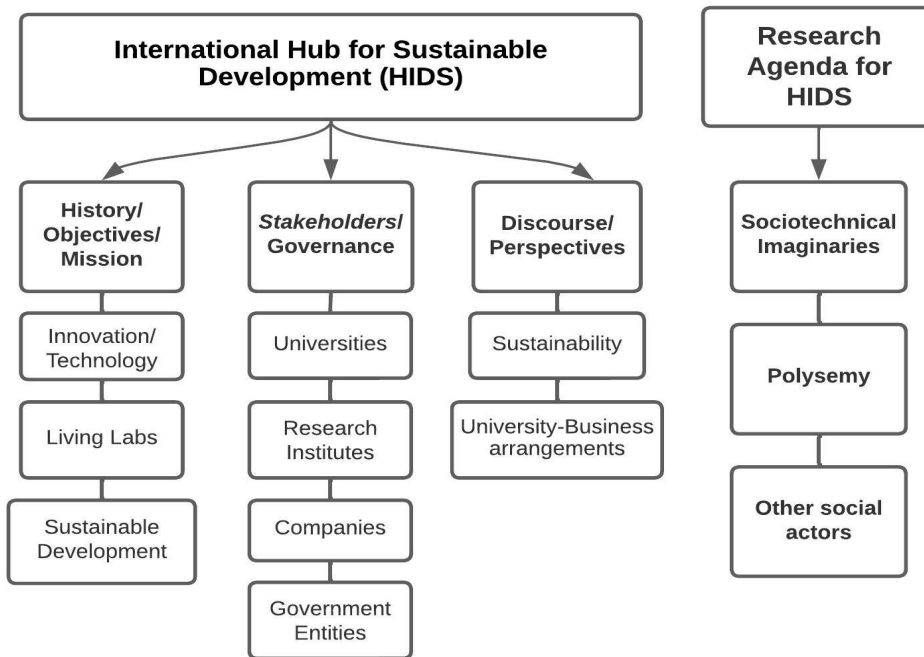

FIGURE 4 — Research design/description.
SOURCE: Prepared by the authors.

References

Almirall, E.; Wareham, J. Living labs and open innovation: roles and applicability. *eJOV: The Electronic Journal for Virtual Organizations & Networks*, 10, 21-46, 2008.

Audy, J. A inovação, o desenvolvimento e o papel da Universidade. *Estudos avançados*, 31, 75-87, 2017.

Ball, S. J.; Bowe, R. Subject departments and the 'implementation' of National Curriculum policy: an overview of the issues. *Journal of curriculum studies*, 24, 97-115, 1992.

Benneworth, P.; Fitjar, R. D. Contextualizing the role of universities to regional development: introduction to the special issue. *Regional Studies*, 6, 331-338, 2019.

Bhagavatula, L.; Garzillo, C.; Simpson, R. Bridging the gap between science and practice: an ICLEI perspective. *Journal of Cleaner Production*, 50, 205-211, 2013.

Brisolla, S., Corder, S.; Gomes, E.; Mello, D. As relações universidade-empresa-governo: um estudo sobre a Universidade Estadual de Campinas (Unicamp). *Educação & sociedade*, 18, 187-209, 1997.

Brundtland, G. H. *Our common future.* Oxford: Oxford University Press, 1987.

Bulkeley, H.; Newell, P. *Governing climate change*. New York: Routledge, 2010.

Butler, J. S.; Gibson, D. V. (Eds.). *Global perspectives on technology transfer and commercialization*: building innovative ecosystems. Edward Elgar Publishing, 2011.

Cai, Y.; Etzkowitz, H. Theorizing the triple helix model: past, present, and future. Triple Helix, 7, 189-226, 2020.

Carlotto, M. C. *Veredas da mudança na ciência brasileira*: discurso, institucionalização e práticas no cenário contemporâneo. Editora 34, 2013.

Celani, M.G.; Vaz, C.E.; Bernardini, S. HIDS: um parque tecnológico para o século XXI. 2021. Disponível em: <https://www.unicamp.br/unicamp/index.php/ju/artigos/hids-um-parque-tecnologico-para-o-seculo-xxi>. Acesso em: jul. 2021.

Coutinho, G. A. S.; Da Silva, A. V. Inovação tecnológica, relação universidade-empresa e modelo teórico da Hélice Tripla. *Blucher Education Proceedings*, 2, 36-48, 2017.

Dewulf, A.; Meijerink, S.; Runhaar, H. The governance of adaptation to climate change as a multi-level, multi-sector and multi-actor challenge: a european comparative perspective. *Journal of Water and Climate Change*, 6, 1-8, 2015.

Di Giulio, G. M. et al. Bridging the gap between will and action on climate change adaptation in large cities in Brazil. *Regional Environmental Change*, 19, 2491-2502, 2019.

Dunlap, R. E.; Brulle, R. J. *Climate Change and Society*: sociological perspectives. New York: Oxford University Press, 2015.

Etzkowitz, H.; Ranga, M.; Benner, M.; Guaranys, L.; Maculan, A. M.; Kneller, R. Pathways to the entrepreneurial university: towards a global convergence. *Science and Public Policy*, 35, 681-695, 2008.

Fenton, P.; Gustafsson, S. Moving from high-level words to local action - governance for urban sustainability in municipalities. *Current Opinion in Environmental Sustainability,* 26-27, 129-133, 2017.

Ferreira, L. C.; Barbi, F.; Barbieri, M. D. (Orgs.). *Dimensões humanas das mudanças climáticas no sul global*. São Paulo: Editora CRV, 2020.

Ferreira, L. da C. *O desafio das mudanças climáticas* - os casos Brasil e China. Jundiaí/São Paulo: Paco Editorial/Fapesp, 2017.

Ferreira, L. da C. *The sociology of environmental issues*: theoretical and empirical investigations. Curitiba: Editora CRV, 2018.

Fonseca, P. F. Imaginários sociotécnicos e política de ciência, tecnologia e inovação no Brasil: uma leitura crítica do novo marco legal. In: Pereira; Winckler; Teixeira (Eds.). *A governança dos riscos socioambientais da nanotecnologia e o marco legal de ciência, tecnologia e inovação do Brasil*. São Leopoldo: Editora Karywa, 112-128, 2017.

Gil, A. C. *Métodos e técnicas de pesquisa social.* São Paulo: Atlas, 5. ed., 1999.

Goodland, R. The concept of environmental sustainability. *Annual review of ecology and systematics*, 26, 1-24, 1995.

Gross, M.; Krohn, W. Society as experiment: sociological foundations for a self-experimental society. *History of the Human Sciences*, 18, 63-86, 2005.

Gupta, J. The multi-level governance challenge of climate change. *Environmental Sciences*, 4, 131-137, 2007.

Hannigan, J. *Environmental sociology*. London/New York: Routledge, 3. ed., 2006.

Hartwick, John M. Intergenerational Equity and the Investing of Rents from Exhaustible Resources. *American Economic Review*, 67(5), 972-4, 1977.

HIDS – Hub Internacional para o Desenvolvimento Sustentável. Ata da Primeira reunião do Conselho Consultivo HIDS realizada no dia 08 de outubro de 2019. Disponível em: <http://www.hids.unicamp.br/primeira-reuniao-conselho-consultivo-hids-08-10-2019/>. Acesso em: jan. 22.

HIDS – Hub Internacional para o Desenvolvimento Sustentável. Apresentação do PowerPoint: International HUB for Sustainable Development: a model of sustainable district. 2019. Disponível em: <http://www.hids.depi.unicamp.br/en/wp-content/uploads/2019/11/Vers%C3%A3o-PDF_EN_HIDS_NOV_2019_RX-compactado.pdf>. Acesso em: jul. 2021.

HIDS – Hub Internacional para o Desenvolvimento Sustentável. Atas - Conselho. 2021a. Disponível em: <http://www.hids.unicamp.br/category/atas-conselho/>. Acesso em: jul. 2021.

HIDS – Hub Internacional para o Desenvolvimento Sustentável. Visão do Conselho para o HIDS. 2021b. Disponível em: <http://www.hids.depi.unicamp.br/visao-do-conselho-para-o-hids/>. Acesso em: jul. 2021.

Jasanoff, S.; Kim, S. H.; Sperling, S. Sociotechnical imaginaries and science and technology policy: a cross-national comparison. Harvard University, 2007.

Knobel, M.; Lima, M.A. Ousadia para um futuro sustentável, 2021. Disponível em <https://www.unicamp.br/unicamp/noticias/2021/04/16/ousadia-para-um-futuro-sustentavel>. Acesso em: jul. 2021.

König, A.; Evans, J. Introduction: Experimenting for sustainable development? Living laboratories, social learning and the role of the university. In: König, A. (Ed.) *Regenerative Sustainable Development of Universities and Cities:* the role of living laboratories. Cheltenham: Edward Elgar Publishing, 1-23, 2013.

Lucchesi, G. P.; Rutkowski, E. W. Living Labs: science, society and co-creation. *In*: Leal Filho, W. et al. (Ed.). *Industry, Innovation and Infrastructure.* Cham: Springer International Publishing, 2019.

Nascimento, E. P. do. Trajetória da sustentabilidade: do ambiental ao social, do social ao econômico. *Estudos Avançados*, 26, 51-64, 2012.

Neumayer, E. *Weak versus Strong Sustainability*: exploring the limits of two opposing paradigms. 4. ed. Cheltenham/Northampton: Edward Elgar Publishing, 2013.

Newell, P.; Pattberg, P.; Schroeder, H. Multiactor governance and the environment. *Annual Review of Environment and Resources*, 37, 365-387, 2012.

Nobre, M.; Amazonas, M. de C. *Desenvolvimento sustentável:* a institucionalização de um conceito. Brasília: IBAMA, 2002.

Oh, D. S.; Phillips, F.; Park, S.; Lee, E. Innovation ecosystems: a critical examination. *Technovation*, 54, 1-6, 2016.

Pinheiro, R.; Šima, K.; Young, M.; Kohoutek, J. University complexity and regional development in the periphery. In: Pinheiro, R.; Young, M; Šima, K. *Higher Educationand Regional Development*. Palgrave MacMillan, 1-20, 2018.

Silva, R. B. da; Dagnino, R. Polos e parques de alta tecnologia: uma alternativa? *Planejamento e Políticas Públicas,* 33, 145-171, 2021.

Silva Júnior, R. D. D.; Ferreira, L. D. C.; Lewinsohn, T. M. Entre hibridismos e polissemias: para uma análise sociológica das sustentabilidades. *Ambiente & Sociedade*, 18, 35-54, 2015.

Turchi, L. M. O.; Morais, J. M. D. O. Políticas de apoio à inovação tecnológica no Brasil: avanços recentes, limitações e propostas de ações. IPEA, 2017.

Ultramari, C.; Levy, W. Universidade e cidade: uma reconciliação necessária. *Revista NUPEM*, 12, 144-161, 2020.

Veiga, J. E. da. *Desenvolvimento sustentável*: o desafio do século XXI. Rio de Janeiro: Garamond, 3. ed., 2008.

Vicente, P. N.; Dias-Trindade, S. Reframing socio technical imaginaries: the case of the fourth industrial revolution. *Public Understanding of Science*, 30, 708-723, 2021.

Vieira, D. J. Evolução do ensino superior brasileiro em período recente: novas perspectivas para o desenvolvimento regional? IPEA, 2017.

Yearley, S. *Sociology, environmentalism, globalization*: reinventing the globe. Sage, 1996.

Zen, I. S. Exploring the living learning laboratory: an approach to strengthen campus sustainability initiatives by using sustainability science approach. *International Journal of Sustainability in Higher Education*, 18, 939-955, 2017.