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Contribution by Brazil

to the CSTD 2021-2022 priority theme on “Science, technology and innovation for sustainable urban development in a post-COVID world”

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PRIORITY THEME 2: STI FOR SUSTAINABLE URBAN DEVELOPMENT IN A POST-COVID WORLD

1. What are the concrete challenges that your country has encountered in transition towards sustainable urban development to make cities productive, inclusive, and livable?

Brazil has advanced significantly in the creation of legislation for cities' short, medium and long term planning and management (Law 10.257/2001 and Law 13.089/2015). However, there is still lack of financial, technical and technological resources in municipalities to implement them and carry out dissemination process of knowledge and methodologies on urban policies.

Today the country presents a diversity of urban scenarios and municipalities, with historical challenges of social, spatial and economic inequalities, revealing the permanence of social injustices such as: right to social housing; insufficient urban mobility, lack of diversity of energy matrix and basic sanitation. The country is still overcoming these historical challenges, as well as, trying to assure implementation of the legislation and urban infrastructure in municipalities. To achieve urban sustainability, it is essential to ensure the availability of trained technical staff, financial resources, equipment, networks and technology in Brazilian municipalities. It is necessary to make use of digital tools in the management of urban plans in basic areas, such as urban mobility, basic sanitation and climate change adaptation plans.

2. How has the Covid-19 pandemic so far impacted on sustainable urban development, and what lessons could we draw from the Covid-19 pandemic on sustainable urban development?

The pandemic in Brazil caused negative impacts on urban mobility and the use of public spaces, besides having significantly affected employment and income of the general population. The negative impacts are more visible in the population, states, and municipalities of lower economic power, highly impacted by job losses and reduction and/or elimination of income. As a result of the pandemic, the population had to adapt to new habits imposed by the need to prevent the spread of COVID-19, such as avoiding family contact with the elderly and avoiding agglomerations. These new habits had a direct impact on the ways in which work and recreation are carried out, consequently affecting consumption and production in general. In response to the changes caused by the pandemic, there has been an acceleration in the use of new technologies allowing teleworking, communication, and distance education. These alternatives were supported with limitations by municipal public managers.

In August 2020, the Sustainable Cities Program, in partnership with the CITInova/MCTI Project, conducted a survey aimed at identifying the main impacts of Covid-19 in 302 cities and municipalities and evaluating the initiatives of mayors and municipal managers to minimize its effects on cities (available at https://www.cidadessustentaveis.org.br/noticia/3070,https://www.cidadessustentaveis.org.br/arquivos/pesquisa_PCS_Ibope/Impactos_e_acoes_Covid-19_nos_municipios.pdf) The research concluded that even before the pandemic, the socioeconomic context of the country was of a very large inequality and the economy was

heading to a recession. The pandemic aggravated the situation and affected the cities' finances.

Among the initiatives of the managers of the municipalities some stand out for their importance and impacts in the community:

- 98% of the municipalities adopted the distribution of basic food items for the most vulnerable population.
- efficiency and dedication of the Unified Health System (SUS) and health professionals, who were in the front line of the fight against the pandemic.
- 96% of the municipalities said they made emergency investments in health.
- 92% of the municipalities started to carry out remote classes, both in the public and private network, supporting students enrolled in the Public Education Network with an amount of money to cover for food.
- 33% of the public transportation companies increased the bus fleet to reduce the number of passengers, so that the vehicles circulated only with seated people, ensuring the necessary distance.

3. What projects/policies has your country implemented to use science, technology, and innovation to make cities productive, inclusive, and livable? What are the main outcomes? What are the main challenges confronted while trying to implement these projects/policies?

The Chamber of Cities 4.0, launched in 2019, under the coordination of MCTI and the Ministry of Regional Development (MDR) is a forum, with direct and integrated participation of public and private business, government and academic institutions, to develop joint and synergistic work under the theme of Smart Cities opening a direct channel with the society for the development of urban policies (Available at https://www.gov.br/mdr/pt-br/assuntos/desenvolvimento-regional/projeto-andus/carta_brasileira_cidades_inteligentes.pdf). Furthermore, MDR has been using participatory methods to review and formulate management and planning instruments of the National Urban Policy, including the achievement of the Sustainable Development Goals.

The Ministry of Regional Development (MDR) is selecting at least 10 Brazilian municipalities to integrate mentoring activities and training in sustainable urban development, adding to an already pre-existing group of 6 municipalities (Available on the link <http://www.andusbrasil.org.br/noticias/79-andus-seleciona-municipios-para-mentoria-e-capacitacao-em-instrumentos-e-ferramentas-de-desenvolvimento-urbano-sustentavel>).

The Science, Technology and Innovation Plan for Renewable Energy and Biofuels 2018-2022 aims to encourage research in the area of alternative energy research with the strategic objective of "fostering research, technological development and innovation in energy production chains, in order to strengthen competitiveness and increase the diversification of the energy matrix, ensuring energy security and efficiency". (Available at <https://antigo.mctic.gov.br/mctic/export/sites/institucional/tecnologia/tecnologiasSetoriais/Plano-de-Ciencia-Tecnologia-e-Inovacao-Para-Energias-Renovaveis-e-Biocombustiveis.pdf>). There are incentive programs and projects for municipalities to use and disseminate sustainable energy alternatives, on a national scale, such as photovoltaic and wind energy, significantly increasing the options in the country's energy matrix. Research carried out in the area of renewable fuels contribute to the replacement of fossil fuels in urban transport,

in the use of biofuels and others, ensuring improved quality of life and reduced emissions in the urban environment.

The Ministry of Science, Technology and Innovation develops and coordinates projects, programs and public policies related to the targets of SDG 11, such as:

TNA Brazil Project

(https://antigo.mctic.gov.br/mctic/opencms/ciencia/SEPED/clima/tna_brazil/tna_brazil.html); ADAPTA Brazil, which establishes a national platform for the collaboration and dissemination of knowledge about cities, allowing analysis of information in an increasingly integrated and updated way on climate and the risks of impacts in Brazil.

(<https://adaptabrasil.mcti.gov.br/>); CEMADEN policies that promote scientific, technological, and innovative developments to advance the quality and reliability of warnings, and the prevention and mitigation of natural disasters, ensuring prevention measures for the population living in risk areas (<http://www.cemaden.gov.br/>).

4 - Can you provide examples of policies/projects/initiatives aimed at strengthening national STI capabilities for sustainable urban development? For example, how does your country build technology and innovative capabilities through investments in R&D and human capital? What institutional and regulatory arrangements are in place to stimulate R & D and innovation, and to effectively address unintended consequences of technological innovation, such as privacy, ethical, gender and other concerns?

The CITinova Project (<https://citinova.mctic.gov.br/>) is a good example of a project aimed at improving national capacities for the sustainable development of Brazilian cities. The project's main goal is to develop innovative technological solutions and offer methodologies and tools for integrated urban planning to support public managers, encourage social participation and promote fairer and more sustainable cities. The specific objectives of the project are:

I - accelerate the transition of cities towards sustainable urbanization; II - Use technology and innovation to improve the quality of life and well-being of citizens; and III - Avoid the direct emission of 3.8 million tons of CO₂. The CITinova project clearly implements recommendations on the inclusion of vulnerable groups, of gender, color and income, ensuring in the service contracts a clause that requires the minimum composition of 50% by women in the team, as well as, in the proposition of the policy for housing, foresees priority criteria regarding low-income groups, colored and women. Furthermore, in 2020, the National Council for Scientific and Technological Development - CNPq, a public foundation linked to MCTI, launched the "Call CNPq / MCTI No. 23/2020 - Research and Development in Urban and Regional Sustainability" to support research on issues related to urban and regional sustainability and produce subsidies for national policies on urban and regional development to be made available, on the platform AdaptaBrasil MCTI (available at <https://www.gov.br/cnpq/pt-br> (http://www.cnpq.br/web/guest/chamadas-publicas?p_p_id=resultadosportlet_WAR_resultadoscnpqportlet_INSTANCE_0ZaM&filtro=abertas&detalha=chamadaDivulgada&desc=chamadas&idDivulgacao=9742))

Regarding social inclusion policies, there is the "Action Plan for Science, Technology and Innovation in Science and Social Technologies" to promote the improvement of scientific

education, the popularization of S&T and the social appropriation of knowledge, (Available at the link http://www.finep.gov.br/images/afinep/Politica/16_03_2018_Estrategia_Nacional_de_Ciencia_Tecnologia_e_Inovacao_2016_2022.pdf)

As for gender policies, there are innovative actions to ensure certain proportions in the hiring of women in work environments and execution of services. On March 9, 2021, Senate bill nº 398/20 was approved, making it a state policy to encourage the participation of women in the areas of science, technology, engineering, and mathematics.

In the aspect of data privacy, the LGPD (General Law of Data Protection - Law No. 13.709/2018) came into force on 18/09/2020. It presents regulations on the treatment of personal data in Brazil, both in physical means and digital platforms.

5. Could you share case studies of regional and international cooperation that have helped your country in strengthening STI capacities? Can you provide success stories in this regard?

The CITinova Project is a successful case of international cooperation to strengthen STI capabilities in the field of urban development. This project is funded by the Global Environment Fund (GEF), implemented by the United Nations Environment Program (UNEP) and executed by MCTI in partnership with the Brazilian cities of Brasilia and Recife. One success story of this project is the SISDIA (District Environmental Information System) platform (<https://sisdia.df.gov.br/home/>). SISDIA provides, in a public and free platform, climate projections for the Federal District and Integrated Development Region of the Federal District and Surroundings (RIDE); Sustainability Indexes in the Descoberto and Paranoá basins; mapping of vegetation cover and soil use in the Federal District; diagnosis on the contamination of the old dump and the Climate Inventory updated until 2018.

The generation of this platform was considered, by public managers, academics and experts in the area, an example of the contribution of the best scientific knowledge to support integrated urban planning and a model to be replicated for the whole country and will be relevant in ensuring that the development of Brasilia happens, increasingly, within the principles of sustainability and focused on quality of life.

Another success story of the CITinova project is the revitalization and urbanization of Capibaribe Park in the city of Recife. The project covers 30 km of the riverbanks, focusing on public spaces for people on cycle paths and pavements, leisure, and contemplation areas. The intention is that the Capibaribe Park project, once implemented, becomes an example and a reference for the gradual transformation of Recife into a garden city, aiming to increase the public green area index from 1.2 m² per inhabitant to 20 m² by 2037. The implementation of the Capibaribe Park project, when completed, will target approximately 400,000 inhabitants in an area of 7250 hectares.

In addition, the CITinova project developed a virtual platform to support and promote integrated and sustainable public management of cities: the Sustainable Cities Platform (PCS). It contains the Sustainable Development Index for Cities (IDSC-BR) which was selected to participate in the Paris Peace Forum 2021. The Index mapped, monitored, and evaluated SDG`s compliance of 770 Brazilian cities. The data and information of the Index also provide inputs for the preparation of the Local Voluntary Report (RVL) and a balance sheet of the

progress of cities in fulfilling the 2030 Agenda.

More information on the PCS Platform is available at

<https://www.cidadessustentaveis.org.br/institucional/pagina/plataforma>

<https://www.cidadessustentaveis.org.br/inicial/home>

6- Could you suggest the contact person(s) of the nodal agency responsible for projects/policies or international collaboration related to the theme? We might contact them for further inputs.

National Director of Project CITInova - MCTI

Luiz Henrique Mourão do Canto Pereira

E-mail: luiz.canto@mctic.gov.br