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ON SCIENCE AND TECHNOLOGY FOR DEVELOPMENT (CSTD)**

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**Contribution by Portugal**

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**

### **United Nations Commission on Science and Technology for Development (CSTD)**

Dear CSTD member,

The [24<sup>th</sup> CSTD annual session](#) selected “STI for sustainable urban development in a post-COVID world” as one of the priority themes for its 25<sup>th</sup> session (2021-22 period). This theme addresses SDG 11 on sustainable cities and communities.

Urbanization is a complex megatrend touching on various issues including economic transformation, environmental sustainability, inclusion and poverty eradication, and resilience to natural disasters, climate change, and public health emergencies like the COVID-19 pandemic. Cities also play a central role in shaping innovation and technological diffusion. In addition, peri-urban areas present increasing challenges in terms of poverty, sustainability, mobility, and economic performance. The 19<sup>th</sup> CSTD explored innovation and urban development in 2016. Since then, accelerating technological change and its deep impact on issues such as urban planning and management, critical systems’ resilience, and citizen and community involvement make it advisable for the CSTD to update its findings and to examine and share emerging good practices and consider the latest trends in science, technology and innovation that can contribute to greener, more resilient, and more inclusive cities, particularly in light of the knowledge gained in developing innovative responses to the challenge of COVID-19.

The CSTD secretariat is drafting an issues paper on the theme to be presented at the CSTD inter-sessional panel to be held on 17-19 November 2021. In this context, we are seeking inputs from CSTD Member States. We would be grateful if you could kindly answer the following questions based on your experience from your country or region.

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

**Reduction of CO2 emissions** / low carbon cities / climate action knowledge for cities: Local commitments in international networks such as the C40 - Cities Climate Leadership Group, Covenant of Mayors and Eurocities;

**Mitigation and Adaptation to Climate Change.** Most severe climate challenges are:

- Wildfires are expected to increase in the future due to increased incidence of droughts and reduced soil moisture in the Mediterranean area. Portugal is in the group of countries (Portugal, Spain, Turkey) with the highest current and projected danger. The depopulation of rural areas and the expansion of urban areas has led to the creation of interfaces between built environment and forests or other vegetation types with accumulated biomass (wildland-urban interface; WUI). Most fires start in close proximity to WUI; in Portugal, 85% of all forest fires start 34 within 500m of WUI (EEA Report 2020).
- Wildfires also have health impacts, as smoke from wildfires increases air pollution. Strong positive correlations between wildfire occurrence and the number of pneumonia cases were found for some municipalities in Portugal.
- Land cover changes within cities can play a central role for the cities’ exposure to flooding and for their adaptation to a changed climate. Several cities in Portugal have experienced

considerable increase in surface sealing in the core city area during the last two decades, leading to some densification within the already heavily urbanized area

- Water scarcity is driven by significant urbanization, combined with high abstractions from the energy and industrial sectors for cooling purposes and from the public water supply sector. Higher pressures than the EU average can be observed in Portugal because of higher abstractions from agriculture (very intensive irrigation), public water supply and tourism. Certain urban regions of Portugal experience severe water stress almost all year long.

**Transition to more circular economic models** (not only in terms of the use of materials but also of the efficient uses of water (with introduction of the use of recycled water and alternative local sources) and energy (increase local production levels using renewable sources (solar, wind and geothermal)).

**Promotion of Green and Sustainable Public Procurement.**

**Reduction of waste production** (promotion of waste disposal for use as secondary raw materials, focus on optimizing the use of organic matter, increasing the resource of recycled or sustained building materials). Despite the decline in recent years of the total municipal waste generation, the prevalence of undifferentiated collection and air pollution problems (especially in the densely populated urban areas) remain major challenges.

**Immigrant integration; multiculturalism.**

**Sustainable mobility** – smart cities: improvement of public transport networks, shared mobility.

**Use of cities as Living Laboratories:** cities bringing together a large set of entrepreneurs, start-ups, population, resource consumption patterns; have to position themselves as places of experimentation to consolidate new, more sustainable approaches.

**The importance of housing affordability** for vulnerable groups and of social protection policies to guaranteeing a decent life. The role of the social economy and social services providers to address and prevent homelessness.

**Issues of urban rehabilitation,** with the intention of promoting spaces with effective premises to give responsiveness to current requirements and social, economic and environmental values integration.

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?

There are several lessons learned:

1. The covid-19 pandemic confirms the necessity to put health as a high priority in public policies and expenditure, and to prepare cities to upcoming risks and extreme events. The transformation and advancement of participatory practices can help make more consensual decisions for our future on this planet. Also, the capacities of local governments need to be strengthened, including deeper cooperation between local and national authorities.
2. The COVID-19 pandemic has heightened the urgency of effective action to solve homelessness and domestic violence issues. The importance of protecting most vulnerable in the cities, tackling inequalities, and safeguarding social cohesion.

3. The focus on low-diversified economic activities has greatly weakened the economic sector of many cities (such as Tourism).
  4. The first containment clash demonstrated that short-chain supply-based food systems were much more resilient and sustainable.
  5. Evidence of the importance of investing in outdoor spaces that support the social interaction, use of public spaces and well-being (programs such as 'Rua é Sua' – 'The Street Is Yours' is an example of this).
  6. The rapid adoption of telecommuting illustrates how societies can transform seemingly overnight to confront urgent threats.
3. What projects/policies has your country implemented to use science, technology, and innovation to make cities productive, inclusive and liveable? What are the main outcomes? What are the main challenges confronted while trying to implement these projects/policies?

Key examples of urban development plans and programs:

[PNPOT | Território Portugal \(dgterritorio.gov.pt\)](https://dgterritorio.gov.pt) - **the National Program of Spatial Planning Policy** - is an instrument of territorial development of a strategic nature that establishes the great options with relevance to the organization of the national territory. The PNPOT territorial model is based on three main pillars: i) prevention system and risk management; ii) conservation systems and sustainable management of natural resources and agroforestry spaces; and iii) urban and accessibility systems. The development of R&I on these issues will be fundamental to the successful implementation of PNPOT.

PNPOT strongly articulates with other strategical policy documents relevant to national territory development, which includes urban development, such as the **Program for the Inland Recovery** (Programa de Valorização do Interior), aiming to the development and population of the inland national territories, contrary to the trend of desertification of recent decades.

**The National Housing Strategy (2015-2031)** is the instrument that allows for the articulation of sustainable urban solutions, with the aim of facilitating the access of households, housing, location, quality, comfort, safety, accessibility, typology, occupancy status, mobility, and surrounding environment. The Strategy proposes to act in three areas: i) in the classification of accommodation; ii) urban regeneration; and iii) the rentals market

**The Financial Instrument for Urban Rehabilitation and Revitalization (IFRRU)**, created under Portugal 2020 (Partnership Agreement between Portugal and the European Commission), is part of the Government's strategy for rehabilitation to be the main form of intervention in building and urban development. IFRRU 2020 is a financial instrument designed to support investments in urban rehabilitation, in the whole Portuguese territory. More info: [1.4 billion for urban rehabilitation in Portugal | Interreg Europe](#)

[Casa Eficiente 2020](#) Programme: aims at financing, in favourable conditions (compared to the market), operations that promote the improvement of the environmental performance of buildings and dwellings, with a special focus on energy and water efficiency, as well as on urban waste

management. This support has been reinforced in 2021 through the "**Buildings + Sustainable Programme**", with another four million euros from the Environmental Fund; in 2021 new support will be channelled through the Plan for Recovery and Resilience (PRR). A new Strategy for the Renovation of Buildings (620 million euros) was announced in Parliament.

In the context of cross-cutting and multisectoral challenge of climate change, the main instruments are the **Roadmap for Carbon Neutrality (2050)** and the **National Energy and Climate Plan (2030)**, at the level of mitigation. National Energy and Climate Plan 2030 covers the five dimensions: decarbonisation, energy efficiency, supply security, the internal energy market and research, innovation and competitiveness. At the level of adaptation, the **National Strategy for Adaptation to Climate Change** and the **Action Program for Adaptation to Climate Change** stand out. The project of the **National Adaptation Roadmap (2100)** is focused on assessing the vulnerability of the Portuguese to climate change in the longer term.

The National Waste Management Plan (2014-2020), establishes the strategic guidelines for the prevention and management of waste from the point of view of environmental protection and development of the country, aims to promote efficient use of natural resources in the economy and prevent/reduce the adverse impacts of the generation and management of resources.

In the case of Lisbon we have as an example the Climate Action Plan approved at the end of last year and validated by the C40 network.

The focus on new bike lanes and pedestrian zones, reclaiming public spaces and improving mobility, safety and air quality. Increasing bike lane network in Lisbon is also an example of success.

The investment in the construction of a photovoltaic plant for the supply of buses from Carris (public transportation system).

The start of the Living Lab - Creative Hub of Beato, [Hub Criativo Beato · Centro de Inovação para Empresas Criativas e Tecnológicas](#)

4. Can you provide examples of 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?

Since **Lisbon** is awarded as [European Green Capital \(europa.eu\)](#) 2020 there is a wide range of illustrative projects in this respect, aimed at strengthening national STI for urban transitions:

[HUB-IN - Hubs of Innovation and Entrepreneurship for the Transformation of Historic Urban Areas - Lisboa E-Nova - Agência de Energia-Ambiente de Lisboa \(lisboaenova.org\)](#) is a project funded by the Horizon 2020 program of the European Commission that aims to promote the urban transformation and regeneration of historic urban areas (HUA) using as main catalyst the innovation and entrepreneurship, while preserving their unique identity social and cultural identity and the environment. Started in 2020; duration 48 months.

[AI4PublicPolicy - Lisboa E-Nova - Agência de Energia-Ambiente de Lisboa \(lisboaenova.org\)](#) project intends to unveil the potential of AI in the automation, transparency and development of public policies, citizen-centric, that allow better decisions at financial level. The project has 15 participants and is led by GFT ITALIA SRL. Lisboa E-Nova is responsible for the Lisbon pilot and the associated case studies. Started in 2021; duration 36 months.

[C-Tech - Climate driven Technologies for Low Carbon Cities - Lisboa E-Nova - Agência de Energia-Ambiente de Lisboa \(lisboaenova.org\)](#). The C-TECH research and technological development project, led by NOS and developed within the scope of MIT Portugal, aims to develop, and validate a smart cities digital platform for urban modelling and planning at a pilot scale. The platform will enable different scenarios to be simulated such as energy efficiency in the building sector, green structures, and energy efficiency of urban mobility. Started in 2020; duration 36 months.

Examples of Collaborative Laboratories relevant for promoting the knowledge and technology transfer in the urban context:

[The Collaborative Laboratory for the Built Environment of the Future \(builtcolab.pt\)](#) aims to develop research, innovation, and knowledge transfer activities, with a view to increasing productivity, competitiveness, and sustainable growth of the Ecosystem of the AEC sector – Architecture, Engineering, and Construction, promoting the digital and climatic transformation of buildings and infrastructures, making them adaptable, intelligent, resilient and sustainable (in partnership with national and international reference networks, positioning itself as incubator and demonstrator of its maturity).

[Cecolab](#) CoLab. Through specialized research, CECOLAB develops sustainable market solutions in a model of circular economy for strategic value chains on the national level, with a high repercussion effect on other value chains of the Portuguese economy and with high international impact.

Example of funding opportunities:

[MIT Portugal](#) collaborative research between MIT and Portuguese universities, research institutes, laboratories, and companies, targeting innovative, high-impact ideas and research projects to address complex challenges of global and societal impact. ‘Sustainable cities’, ‘Digital Transformation in Manufacturing’ and ‘Climate Science and Climate change’ are key areas supported by the programme and directly related to urban sustainable development.

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?

Lisbon is part of the C40, Eurocities and Covenant of Mayors networks. It is also working with the Ellen MacArthur Foundation in the areas of circularity of food systems and circular public procurement. These groups are excellent sharing and knowledge groups between various cities.

[Hub Criativo Beato · Centro de Inovação para Empresas Criativas e Tecnológicas](#) is an initiative to develop new technologies and services to promote the sustainability of Hub Criativo do Beato (HCB) in Lisbon, and thus contribute with good practices to mitigate the impact of climate change. Partially founded by EEA grants, the HCB aims to the mobilization and implementation of urban strategies for

sustainability and environmental resilience, and intervene in four priority areas: Energy, Buildings, Mobility and Circular Economy & Environment.

The ClimAdaPT.Local project, financed by EEA grants, supported the development of 26 local adaptation strategies, ensuring a consistent coverage across the country (Aguiar et al., 2018). After the project concluded in 2016, the 18 participating municipalities created a National Network of Municipalities for Adaptation to climate change, which has since continued knowledge exchange ([adapt.local](http://adapt.local) - [Rede de Municípios para a Adaptação Local às Alterações Climáticas](http://Rede de Municípios para a Adaptação Local às Alterações Climáticas) ([adapt-local.pt](http://adapt-local.pt))).

Recent research - [Cooling down our increasingly dense cities - Stockholm Resilience Centre](#) - (Grilo et al. 2020): To deal with effects of high temperatures in urban areas, Portuguese and US universities, in collaboration with the Stockholm Resilience Institute, have developed a model that more accurately can assess how green areas help cool the effects of urban heat islands. (Focusing on Almada, a municipality located within the metropolitan area of Lisbon).

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.

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Please send your responses and any further inputs on the theme to the CSTD secretariat ([stdev@unctad.org](mailto:stdev@unctad.org)) by 6 September 2021. We look forward to receiving your valuable inputs.

Sincere regards,

CSTD secretariat