Houston Area Model United Nations
Standard Committee

CSTD

Chair | Katherine Zhao
Topic A: Applying Smart Technology for Sustainable Urban Development
Houston Area Model United Nations 51
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Chair Letter

Dear Delegates,

Welcome to HAMUN 51! I'm Katherine, and I'm thrilled to be chairing another set of ambitious, hardworking, and curious delegates at this year's conference. MUN has been an important part of my life, and I continue to give my all to HAMUN because I believe it can leave a profound impact on you as a future global leader, student, and person as well.

A bit about me: I am a sophomore accounting major at Texas A&M. Outside of academics, I love to read, watch movies, and sing as part of the A&M Reveliers. Most importantly, I adore MUN and the work I put into it. I first started the activity during my junior year of high school and haven't looked back since. This is my fourth HAMUN overall: I attended twice as a delegate and chaired the UN Security Council at HAMUN 50. MUN has taught me that I am a global citizen: part of a world bigger than myself that is growing and changing every day, and the importance of keeping up with major issues. As delegates, it is your role to thoroughly understand and embody the stances and policies of your countries in the context of the topics we will be discussing. That includes articulating your ideas and collaborating with your fellow delegates to form solutions that you all find not only creative and effective, but viable.

If I have any advice for you all, there are two things. Firstly, don't procrastinate. You want as much time to take and marinate on your research as possible so you will be prepared for committee in February. Second is to have fun and enjoy getting into it, as cliche as that sounds. MUN may be a work-intensive activity, but it's a rewarding one and you may as well enjoy it because you are learning about things you likely could never conceive learning about normally right now, and your time at conference will be one to remember as they always were for me.

Have fun researching, delegates! See you all in committee!

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Introduction to Committee

The Commission on Science and Technology Development (CSTD) is a subsidiary of the UN Economic and Social Council, one of the six principal organs of the UN. It serves as an intergovernmental forum for ECOSOC and the General Assembly for discussion on the latest news and development in the fields of science and technology, and the committee receives substantial support from UN Trade and Development (UNCTAD).

The CSTD meets annually and reports to the Economic and Social Council, and it currently consists of 43 elected members who serve four year terms and a bureau of a chair and four vice chairs.

It is a successor to the Intergovernmental Committee on Science and Technology, which was originally formed in 1979 and transformed into a subsidiary body of ECOSOC in 1992. CSTD has been a relevant focal point of discussion in the follow up to the issues discussed at the World Summit on the Information Society in 2005, and has been a forefront on developments of big tech such as big data analytics, the Internet of Things, and AI.

CSTD serves the UN member states' national governments and civil organizations through the experience and expertise of its representatives, and it also collaborates with other UN bodies such as the Commission on the Status of Women and UNESCO.

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Executive Summary

Globalization and increased population growth have brought challenges to creating livable cities, especially with limited resources and awareness of the degradation of the natural environment. Countries everywhere are attempting to adapt to utilize efficient urban planning and low-cost strategies to prepare for the increasing urbanization of the world population: in fact, by 2050, about two-thirds of the population will have moved to cities.

Less developed countries in particular struggle to transform their cities into green, resilient spaces due to existing problems with infrastructure, resource scarcity, and the digital divide that exists in citizen knowledge, government officials, and urban planners.

In times of rapid technological growth and innovation, it's no surprise that there are new possibilities and solutions for achieving more sustainable urban development and increasing the amount of "smart cities", which are defined by their effective use of digital technology and data-driven applications while also positively affecting the environment, citizens, and economy.

Key features of building sustainable cities include including the people in government decisions via data-driven feedback, efficient use of renewable energy resources, efficient transportation options, and intelligent infrastructure such as management for traffic, waste, and public utilities such as water and electricity. Tools such as satellites, the Internet of Things (IoT), and artificial intelligence can be of great assistance here.

Although these innovations sound like automatic fixes to increased problems in urban development, it's important to factor in the various challenges in incorporating them, especially when building a resilient, livable city from the ground up. The initial investment that must be made will be a high one, and the digital divide can be a hindrance in areas defined by poverty and brand new urban areas. Additionally, there are ethical concerns regarding privacy and data and cybersecurity.

Table 1
Global urban sustainability challenges: A brief summary

Urban sustainability challenges	Urban sustainability dimensions		
	Green	Productive	Inclusive
Inefficient and polluting urban energy systems			
Unsustainable urban production and consumption patterns			
Urban water scarcity			
Urban traffic congestion and vehicle emissions			
Limited access to decent urban employment opportunities and growing inequalities			
Unaffordable and poor-quality housing			
Gender-based inequalities and violence against women and girls			
Defective urban planning practices			
Urban violence and insecurity			
Vulnerability to natural disasters			

A table of common urban sustainability issues and how interdimensional they are (Siurce: UNCTAD)

Topic Concept

Urban development has always been a cornerstone of global relations, as cities are the center of globalization and have been targeted by the UN in its Sustainable Development Goals (SDGs). Goal 11 points out that the rapid urbanization needs to be on the same pace as developing housing, services, and infrastructure, but the two of these developments have not always lined up, leading to issues such as overcrowding, slums, pollution, and urban sprawl.

One of the major factors in planning smart cities with digital technology is improving mobility, which mostly affects transportation and the environment. With the ongoing issues of excessive greenhouse gas emissions, clutter in public spaces, and traffic congestion. With accessibility being a huge part of this, it's important to look beyond conventional public transit such as buses, trains, and subways; when bringing up options such as rideshare services and electric vehicles, there are multiple systems that can be correctly applied to improve route planning, time estimation, and traffic control. The idea of personalizing service and fully integrating travel information, payments, and reservations through paid models is Mobility as a Service (MaaS).

Of course, mobility resources have no use without energy sources to power them. Smart infrastructure and green architectural design are inseparable from evaluating efficient energy sourcing and distribution. Urban societies are actively looking away from fossil fuels towards more renewable sources such as wind, solar, and geothermal power and must figure out how to balance the benefits of these sources with additional costs of grids and water management systems that use data analytics to track energy usage and potential disruption to the current way of life.

City governments and policymakers also want to manage waste efficiently and increase circular consumption: recycling and reusing material. Governments and corporations are developing "matchmaking" models to exchange material and resources and help out their communities. Food waste is also an issue that can be helped with digital tracking of the global supply chain and shipping processes; the European Space Agency's platform Ambrosia is an example of this.

Policymakers also are looking to apply science and technological innovations to improve social equality, financial stability, and a sense of unity among residents of cities, as one of the biggest problems even more developed and industrialized cities have is poor access to equal job opportunities, as well as increasing economic inequality, forced labor, and modern slavery. To promote increased economic benefit in these cities, technological hubs are set up to increase investments, creative flow, and e-commerce transactions, such as the Technological Hub Value Proposition in Santo Domingo, and three innovation zones for companies and start-ups to test new products in Riga, Latvia.

Smart technology such as facial recognition and blockchain can also prevent the proliferation of trafficking, child labor, and modern slavery, all issues related to the urbanization of the world. An example of this is when law enforcement officials use facial recognition on the Internet to track any suspicious-looking advertisements and prevent nefarious activity from occurring locally or regionally. Satellites are also a tool to monitor the movement of vehicles and individuals to notice potential of child abuse and trafficking.

Digital twin technology has been an extremely helpful asset to urban planners and managers as it has the ability to virtually replicate physical properties and processes. It has predictive abilities and can collect and analyze data of the property for future use. Hence, this type of technology is useful when developing sustainable housing, as the life cycle and added improvements and maintenance of a building can now be easily tracked. The digitization of manufacturing and operations techniques can speed up and improve the process of building new housing. The non-profit organization New Story tested this development in 2018 when producing 600-square feet homes with 3D printing in slum areas of Bolivia, Haiti, and Mexico within one day.

Throughout all of these different aspects of urban development that have been discussed so far, there are a few big key technologies that play a role in streamlining and improving the processes. The first of these are Geographic Information Systems (GIS), which provide urban planners a comprehensive view of a city's social, environmental, and structural complications. GIS gather real time data on potential disaster areas and heavy population distribution, which improves decision making skills.

Previously mentioned in passing, the greatest capability of the Internet of Things (IoT) is its ability to connect data from different systems and users to centralize urban operations. This can be useful regarding energy conservation: “smart lights” can be adjusted to only operate at their fullest when a lot of people are around, or if it’s dark outside. Sensors are used today to monitor air quality and traffic conditions as well.

Machine learning and artificial intelligence combine to create the tool of data analytics, which has immense predictive value. Predictive data can give planners info about future needs for jobs and housing, as well as give daily overviews of energy usage, traffic reports, and waste disposal, better preparing them for decision making.

When assessing on how to apply smart technology to address pre existing or possible issues in cities, it is important to remember that problems will naturally arise based on resource availability, capital required to start these urban renovation projects, and lacking digital literacy in certain parties. Policymakers, citizens, urban planners, civil engineers, and architects in a city/area may be working towards the same goal, but not everyone involved will have the same level of knowledge in keeping up to date with all the technological trends around them and utilize them in the manner of best operations. This is where each country and the international community need to strengthen collaboration and build additional solutions to ensure that all of these ideas and strategies are best fit for what a particular urban design needs.

Deployment of e-bikes in Hanoi, Vietnam based on the government’s goal of sustainable mobility.

Topic History

The topic question of sustainable urban development via technological innovation is a relatively recent discussion in global agendas. In 2016, the UN hosted a global summit centering the importance of better aligning cities, towns, and villages to fit with the Sustainable Development Goals. The New Urban Agenda and the Quito Declaration on Cities and Human Settlements for All (commonly shortened to the New Urban Agenda) was formed in Quito, Ecuador. It essentially listed a broad range vision for constructing housing and cities in a way that evolves both developed and developing countries well.

The Agenda is general overall in its scope, with points 156-160 emphasizing incorporating science and technology via data collection and electronic discoveries. Member states wanted to "focus on social, technological, digital and nature-based innovation, robust science-policy interfaces in urban and territorial planning and policy formulation and institutionalized mechanisms for sharing and exchanging information, knowledge and expertise".

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A benchmark in the history of focusing on utilizing resources efficiently for cities was of course, the COVID-19 pandemic. One of the things that came into question were the increased use of tools like masks and disposable items that led to increased waste. Normal waste management practices proved to be insufficient in preventing pollution in highly susceptible areas. The pandemic also changed the ways public health officials approached reducing vulnerability and keeping people informed. Using tools like big data and the IoT helped track cases and develop new health policies.

The effects of the pandemic on urban policy were actively discussed in the years following, with the 25th session of CSTD in 2022 reaffirming the importance of applying past discoveries for the 2030 Agenda for Sustainable Development, which includes the establishment and continued maintenance of "smart cities". A resolution encourages "bringing together local scientific, vocational and engineering knowledge, mobilizing resources from multiple channels, improving core information and communications technology and supporting infrastructure development, including smart infrastructure" for global cities.

Coinciding with the effects of the pandemic is of course, the AI boom. With artificial intelligence being such a product of existing ideas and a resource to be used along with other “smart technology” to integrate into these cities.

However, cities are designed for their people first and foremost. The technology is merely a tool, not the end result. More frugal, “low tech” types of digital innovation such as 3D printing and open-source innovation may become more applicable to certain places the more time goes on and AI slowly begins to take over the world, as the Global Centre at Singapore has stated in 2024.

Shenzhen, China builds up “green infrastructure” to mitigate the effects of irregular water supply and flooding. This builds up a more circular economy without being too reliant on ultra modern technology (UNDP Handbook on Smart Urban Innovations).

Case Examples

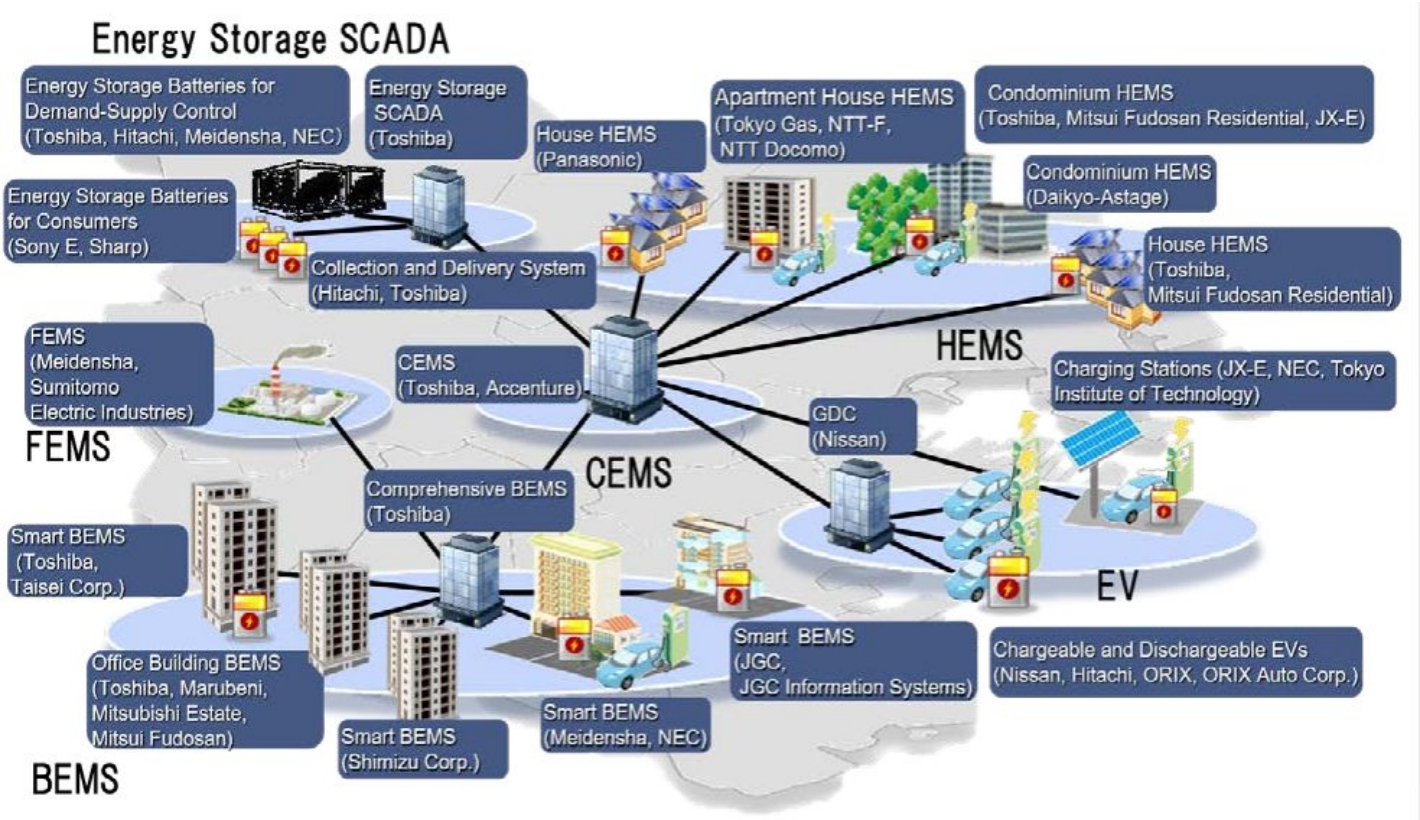
Yokahama, Japan

Yokahama is the second most populous city in Japan after Tokyo, and it has been regarded as a well-functioning place and a great example of urban development, coming a long way from the rundown fishing village it started off as. In the first half of the twentieth century, it faced the typical urbanization struggles of post-war globalization such as scarce housing and inadequate infrastructure and public services. However, under the leadership of mayor Ichio Asukata and his Six Major Projects Plan in the 1960s, the city was able to overcome these initial setbacks and develop into the hub of economic and social prosperity it is today. The biggest factor in this initial success was the establishment of the Planning and Coordination Department to coordinate various stakeholders.

Starting in the 2010s, the increasing demand for smart cities got to Yokahama, and soon enough, they stepped up to develop the Yokahama Smart City Project (YSCP), after helping private sector companies with operations regarding new technology.

The YSCP deems itself as serving private companies as well as the city, and has gone into great detail regarding energy management in homes and businesses. Yokohama's biggest goal in the present is increasing sustainable housing. Like the rest of Japan, Yokohama's population is aging rapidly. Aging brings a new set of issues to urbanization such as isolation from the rest of society and instability of resources available for the elderly, so planners and policymakers have been hard at work for those who are planning these new complexes with the knowledge they have.

The renovation of this port was part of the initial Six Major Projects Plan and designed by the PCD.



An overview of Yokohama's Smart City Project, focusing mainly on their energy storage plan. (Credit: World Bank Group)

TOPIC A: QUESTIONS TO CONSIDER

- What are considered some of the “smart cities” in your country? How did they develop that way, and what differentiates them from the rest?
- What are some of the biggest issues surrounding modern urbanization surrounding certain areas in your country? Explain internal and external factors that might have an influence on them.
- How has your country made use of technological innovations (GIS, AI, big data analytics) to develop their cities, provide economic benefit, and maintain efficient public services? Do you have any specific examples for your cities in your country?
- How does your country factor in the various costs, knowledge gaps, and ethical issues involved in bringing these technological ideas to your cities? For those in countries who have less developed cities or are predominantly rural, what exactly has been hindering you from doing so?
- What are your strategies to work with your own country and other countries’ delegates to manage resources and give/receive assistance to/from those who are urbanizing rapidly or are desiring to urbanize and have greater sustainability in their cities?

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