

## **Plenary Keynote: Şiir Kılıç**

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### **Smart Energy Systems Targeted Mitigation in Urban Areas for Avoiding Increments of Global Warming**

#### **Abstract**

Mitigation actions that can be aligned with supporting smart energy systems have an important role in shifting trajectories for our climate future. The global mean near-surface temperature reached 1.55 °C above pre-industrial levels on an annual basis in 2024 and at least 1.34 °C in estimates with longer timescales. Swift, targeted, and integrated mitigation actions continue to be necessary across spatial scales in coherent ways to enable the best chances of remaining with the long-term temperature goal of the Paris Agreement. This keynote will focus on the role of urban areas in supporting smart energy systems within ambitious mitigation pathways. A particular focus will be on the mitigation potential of 465 urban areas that can avoid up to 0.09 °C increments of global warming in 2050 when the transient climate response to cumulative CO<sub>2</sub> emissions is considered. Such a mitigation potential is possible when there are high levels of renewable energy deployment, sector coupling, and better urban planning. The avoided increments of global warming are in comparison to a less ambitious mitigation pathway that is aligned with the SSP1-2.6 scenario. Moreover, the vitality of decarbonizing urban infrastructure across sectors while addressing broader needs, such as ensuring access to renewable electricity and enabling co-benefits for improving air quality and protecting lives that are

essential for sustainable development, are also emphasized. Actions that are aligned with supporting smart energy systems will be crucial from several dimensions. The plenary keynote will conclude with an outlook towards the Seventh Assessment cycle of the Intergovernmental Panel on Climate Change where points of emphasis in the agreed outline include those on the mitigation effects of system integration and actions for supporting net-zero targets.