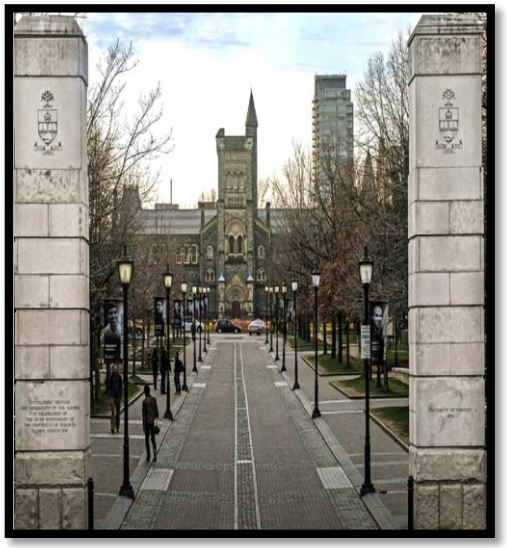

University of Toronto

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CSE: Climate Science for Engineering Decision, Education and Policy
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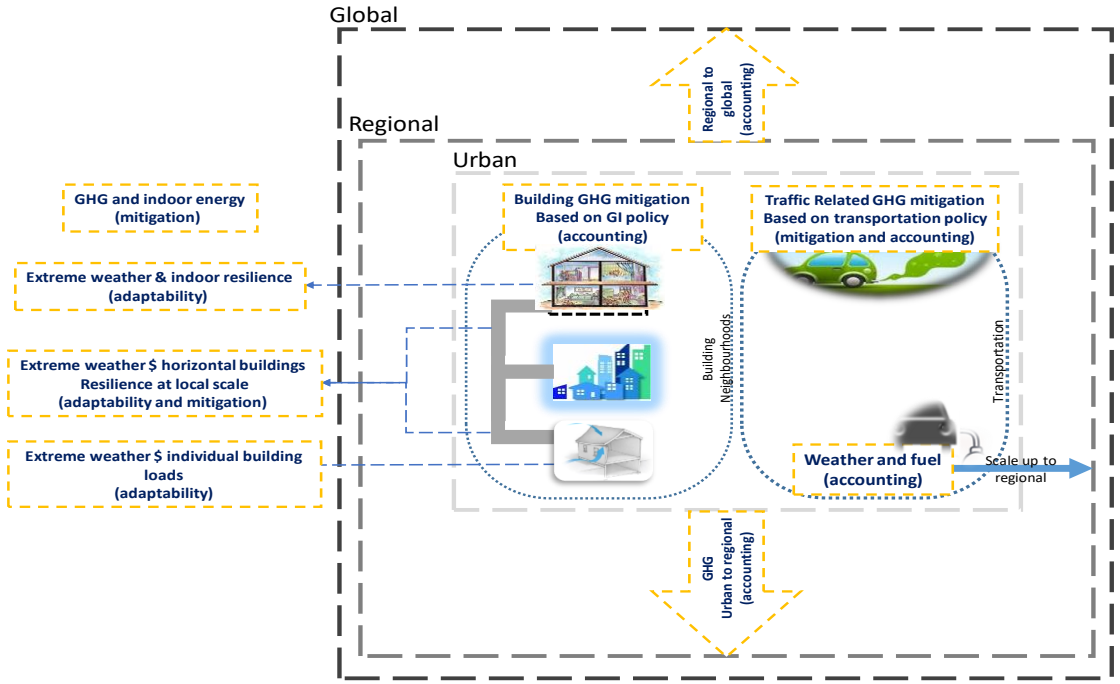
Building and urban adaption to climate change

CSE: *Climate Science for Engineering Decision, Education and Policy.*

CSE VISION: *To generate and communicate actionable knowledge for engineering decisions and policy development under climate change.*



CSE multi-level components

OBJECTIVES

The CSE is a multi-disciplinary research and education centre that was established in 2019. It is seed supported by a Dean's Strategic Fund (DSF) initiative of the Faculty of Applied Science and Engineering at the University of Toronto.

The research of CSE will provide the much needed opportunity to address carbon accounting, greenhouse gas reduction efforts, and climate change mitigation/adaptation challenges in a transdisciplinary environment.

The multi-level educational programs of CSE will accelerate the awareness and adoption of low-carbon, climate change resilient choices in urban design. CSE will also stimulate strategic partnerships with private and public sector stakeholders.

RESEARCH THEMES

Buildings and GHG Emissions

Because buildings represent about half of urban greenhouse gas emissions, retrofitting existing buildings to reduce their emissions and reducing emissions in new building design are critical steps to combating anthropogenic climate change. CSE seeks to develop actionable knowledge for practitioners so that they can account for the impact of climate change in new designs, as well as better operating practices to enable reductions in GHG impacts form existing infrastructure.

Traffic and climate change

Cities and GHG Emissions

To develop specific engineering and public policy actions, predictions of climate models must be brought down to scales and conditions relevant for urban micro-climates influenced by building form and density. Urban scale research within CSE addresses questions of relevance to municipal and sub-municipal (e.g., neighbourhood) areas. At the urban scale, we are working on several pilot projects related to water systems, co-benefits of GHG reduction policies, and civil infrastructure.

Regions and mega-regions

To investigate large-scale GHG mitigation goals and their feedback to climate change, research is needed to link building and urban scale research to broader regions, ranging from metropolitan areas to mega-regions and provinces. At this scale, CSE is engaging in research related to the interaction between GHG mitigation strategies and the regional climate system.