EXECUTIVE SUMMARY

This research studied 22 Leadership in Energy and Environmental Design for Neighbourhood Development (LEED-ND) certified projects to determine how LEED-ND projects are achieving their certification status. Specifically, this report looked for common credits and major themes among the 22 projects, in addition to analyzing four variables for their degree of influence on the LEED-ND certification scores. This report used a sequential mixed-methods approach which included data collection, closed-ended survey questions, and basic statistical testing (mean). This report revealed the importance of promoting sustainable neighbourhood development in planning practices. Secondly, it contributed to our understanding of the LEED-ND credit system and its overall effectiveness. Both goals will aid planners in determining the feasibility of implementing sustainable practices at the neighbourhood scale.

The Environmental Protection Agency (EPA) concludes that the urban form directly affects water, air, and soil quality; as a result, the built form is identified as the nexus of environmental issues such as climate changes. Urbanization, specifically rapid urbanization has caused cities to become identified as both the cause and catalyst for a change towards a more sustainable future. Recently, researchers have pointed to urban sustainability as a method to invoke change. LEED-ND has emerged as a significant planning tool to address the issue of urban sustainability. It is important, however, to stress that LEED-ND acknowledges that is not meant to be a one-size-fits-all policy tool that replaces comprehensive plans. It is extremely important to understand how LEED-ND projects are achieving their certification scores so that the rating system can be improved to better address the issue of urban sustainability.

This report's methods have closely followed Garde's approach in "Sustainable by Design? Insights From U.S. LEED-ND Pilot Projects." This report used a sequential mixed-methods approach broken down into two phases. Phase I consisted of data collection divided into three sections: LEED-ND scorecards, physical characteristics of the projects, and respondents' insights into the certification process, while phase II analyzed the collected data gathered from phase I. The analysis was further divided into two sections: associations and common trends, and four variables' (Overall Score, Brownfield Site, Geographical Location, and Neighbourhood Characteristics) degree of influence on LEED-ND certification scores. A set of analytic manipulations, described by Miles and Huberman were followed to analyze data collected in phase I. A list of analytic manipulations is as follows:

- Making a matrix of categories and placing the evidence within such categories;
- Creating data displays – flowcharts and other graphics – for examining the data;
- Tabulating the frequency of different events; and,
- Calculating second-order numbers such as means and variances

Some of the key findings that percolated through the analysis process are as follows:

- Densities of LEED-ND projects are extremely high and are already on par when compared with new policy standards for provincial and state governments. For example, density standards from Ontario (Ontario Places to Grow) for 2031 have similar density targets when compared to studied LEED-ND projects

- Several credits (On-site Energy Generation, Solar Orientation, and District Heating and Cooling) were noticeably omitted from over 80% the 22 projects.

- Smart Location and Linkages, and Neighbourhood Pattern and Design sub-categories were achieved by a larger number of the 22 studied projects when compared to the Green Construction and Technology sub-category.

- Geographical location and compactness of LEED-ND neighbourhoods are significant determinants in a project's overall score.

- Respondents cited low weighted point totals and high economic costs as the primary reason why some credits were pursued by few participants.

- LEED-ND gold projects noted higher economic costs to achieve their score, confirming Dale and Newman's findings that social sustainability and the lack of affordable housing is one of the main negative externalities surrounding most newly built sustainable communities.

- Projects located in colder (winter) climates (geographical locations) experienced lower overall scores and respondents felt that the rating system was inflexible in addressing local context when compared to projects from warmer climates.

Results of the analysis were used to make the follow recommendations to the current structure of the LEED-ND rating system:

- The weighting system needs to put a greater emphasis (more allocated points) towards previous 1 point credits, specifically under the Green Construction and Technology sub-category.

- The rating system needs to incorporate additional (optional) points and credits designed to address issues important to specific geographical regions.

- The rating system needs to implement financial incentives that offset the costs of some of the least cost-effective credits (On-site Energy Generation, Solar Orientation, On-site Renewable Energy Sources, and District Heating and Cooling).

- The United States Green Building Council needs to better educate the general population about the current LEED-ND rating system.