

# **Study on sustainable campus of North-Eastern Federal University, Russia**

(ロシア・北東連邦大学のサステイナブルキャンパスに関する研究)

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**[Introduction]** A concept of sustainability has been strengthening its presence in the world. Meanwhile, universities have been searching for ways to contribute to sustainable development, which is represented by the G8 University Summit and the Sapporo Sustainability Declaration in 2008. Through such endeavors, a concept of sustainable campus was given birth. The North-Eastern Federal University (NEFU) locates in Yakutsk, Russia, which is surrounded by symbiotic ecosystem between vegetation and permafrost. The ecosystem is considered as susceptible to global warming. Also, there are potential demands for sustainable development in the city. Based on such circumstances, a sustainable campus project was launched by the NEFU. This study aims to provide a guideline for the sustainable campus project and to consider effective ways to reduce CO<sub>2</sub> emissions from the NEFU.

**[Methods]** Assessment System for Sustainable Campus (ASSC; Ikegami and Ozasa, 2015) was applied to objectively evaluate the current status of sustainability of the NEFU campus, from viewpoints of four fields, namely Management, Education and Research, Environment, and Local community. Potential CO<sub>2</sub> reductions and economic efficiency of lighting system modernization project applied in 2016 on several buildings of the NEFU were estimated by evaluations utilizing Life Cycle Assessment (LCA) and Life Cycle Cost (LCC) calculation.

**[Results and discussion]** Among the four fields above, Education and Research and Local community were turned out to be strengths of the NEFU, while Management and Environment were not well evaluated due to lack of data obtained. Results of the project evaluations revealed two facts. Firstly, the project would reduce total CO<sub>2</sub> emissions for five years by 60%. Secondly, the project's life cycle cost would be compensated within 2 years and 3 months by electricity cost saving. These results implied that, by introducing the perspective of sustainability into management, the NEFU could effectively promote the sustainable campus project in the long run.

**[Conclusion]** Short-term and long-term actions should be taken in parallel to promote the sustainable campus project of the NEFU. While the short-term actions are exemplified by reinforcement of its own advantages and increasing efficiency of lighting systems to reduce the CO<sub>2</sub> emissions, the introduction of the concept of sustainability and sustainable campus into NEFU's management is appropriate for the long-term actions.