



SURE Research Publication Service

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1) **Reference of your publication:**

Al-Shuwaikhat, H. M., Abubakar, I. R., **Aina, Y. A.**, Adenle, Y. A., Umair, M. (2017) The Development of a GIS-Based Model for Campus Environmental Sustainability Assessment. *Sustainability*, 9 (3), 439:1-23.

2) **Hyperlink to the publication:**

<http://www.mdpi.com/2071-1050/9/3/439/htm>

3) **Abstract:**

Sustainability indicators and assessments are vital in promoting campus sustainability. Despite the plethora of indicator frameworks, campus sustainability assessment in developing countries encounters many challenges including lack of, or restricted access to, data and difficulties in measuring indicators. There is also a limited application of Geographical Information Systems (GIS) in campus environmental sustainability assessment, although campus operations have spatial dimensions. This article proposes a GIS-based model for environmental sustainability assessment of campus operations and demonstrates its usefulness using King Fahd University of Petroleum and Minerals, Saudi Arabia. The model applies spatial analysis techniques, including inverse distance weighted (IDW) interpolation, to statistically assess the various campus operational activities by using land use data to estimate greenhouse gas emissions from energy use, water consumption, solid waste, and



transportation. The integration of spatial dimension in the model facilitates the collection and measurement of spatially related indicators, helps identify hotspots of campus operations, and provides better visualization of the existing condition and future scenario of campus environmental sustainability status. This model can assist decision-makers to construct strategies for improving the overall environmental sustainability of university campuses. The paper concludes by highlighting how the model can address some challenges of campus sustainability assessment in developing countries.

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