

# Towards a practical environmental footprint tool

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## Abstract (75 words out of 100 words allowed)

The Integrated Environmental Footprint Tool (IEFT) has four linked sub-modules for N, C, P and water. The IEFT will be applied specifically to sustainability assessment in institutions of higher education because campuses provide an ideal setting for assessing, studying, and reducing footprints. This paper first describes IEFT's usefulness for campus sustainability management, and then applies it, in conjunction with individual consumer footprint tool, to explore strategies for reducing the consumer-driven portion of the campus footprints.

Keywords: footprint, national, institutions

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## 1. Introduction

Footprint tools have been developed for N, C, P and water (e.g., Leach et al. 2012; Clarke et al. 2017; Hoekstra and Mekonnen, 2011; Rööös and Tjärnemo 2011). These tools are used at the personal-level and also at the institutional-level. This project uses an integrated footprint tool that combines N, C, P and water to determine the sustainability of institutions of higher education in the US. The tool is designed to so that it can be applied to institutions in other countries.

## 2. Project overview

The tool is being developed in three phases. The first phase, conceptual development is currently in process. The second phase is a 25-person workshop, sponsored by National Socio-Environmental Synthesis Center (SESYNC), that will occur in January 2020 in the SESYNC headquarters in Annapolis MD, USA. The third phase is application of the IEFT to specific institutions of higher education.

## 3. The workshop

The workshop has four working groups: Footprint Integration; Consumer Behavior; Economic Damage Costs; and Other Social Indicators. These groups will focus on two specific socio-economic components for the first version of the Integrated Environmental Footprint Tool (IEFT):

- Integrate consumer behavior into the campus footprint.
  - This integration will have two parts: 1) identify, refine, and report the primary parts of the campus footprint that are consumer-driven (i.e., food, commuting, heating, electricity), and 2) propose strategies for achieving reductions (e.g., social psychology study with food labels, energy saving opportunities)
  - This information will help campuses tackle the portion of their footprint that is due to consumer behavior through targeted management strategies. Prior to and at the workshop, we will also discuss how the IEFT can be used to achieve the behavior changes that are explored in scenario analysis.
- Incorporate the economic value of nitrogen and carbon as a tool output.
  - The economic value reports the costs and benefits (e.g., damage costs) of the use and emission of carbon and nitrogen. These damage costs would provide important information for decision makers who are analyzing management scenarios and setting footprint reduction goals. These data sets available for carbon and nitrogen (e.g., Compton et al. 2011) will be applied to the IEFT using the benefit-transfer method (Liu et al. 2013). We will add other

damage cost data sets (e.g., phosphorus) as they are available.

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