Bassel Daher was born in Beirut, Lebanon. He received his B.E. in Civil and Environmental Engineering from the American University of Beirut in 2010.

Bassel is currently an M.S.E. candidate working with Professor Rabi H. Mohtar. During his stay at Purdue, Bassel worked on quantifying the interlinkages between water, energy, and food resources.

He worked on developing a framework that aids national strategic planning and policy making, for better integrative management of these resources.

Throughout his period at Purdue, Bassel was also an active member at the Global Engineering Program and part of the Global Policy Research Institute activities.

Agricultural & Biological ENGINEERING

Thesis Defense

Speaker: Bassel Daher

Title: Water, Energy, and Food Nexus: A Basis for Strategic Planning for Natural Resources

Major Professor(s): Rabi H. Mohtar

Date: Wednesday, October 17, 2012

Time: 8:00am

Location: ABE 212

Abstract:

Our global community is facing unprecedented risks and challenges that are directly linked to the way we currently understand and manage our resources. Providing sustainable solutions to overcome present challenges poses the need to study the existent interlinkages between these resources. This paper presents water, energy, and food as main systems that form a nexus, which itself is affected by defined external factors. The nature of the intimate relation between water, energy, and food forces a paradigm shift in the management approach; moving from silos to more integrative approaches. This paper further introduces a new proposed scenario-based framework and set of methodologies that not only define and discover the level of interconnectedness between water, energy and food, but provides explicit quantifications for them. It is used as a base for a multidimensional tool that quantifies resource demands according to proposed scenario variations. Data from Qatar is used for a case study to help evaluate the proposed tool structure and its overall performance. “Sustainability Index” criteria and utility are introduced as a way of identifying locally favorable scenarios.

The presented WEF nexus framework and tool provide a dynamic model for systematic integration of resources in the planning and decision making processes. Promoting integrative thinking in the process of strategic planning comes through highlighting the intimate level of interconnectedness between these systems.