

Introduction to Analysis Activities

The primary purpose of GCEP is to produce new energy technologies with positive worldwide climatic impact. Analysis activities are conducted at GCEP to support the construction and distribution of a technical portfolio and assess the impact of the research. This chapter describes the activities of two analysis groups.

The first section describes the Systems Analysis group, led by A. J. Simon of the GCEP staff. This effort is intended to provide a capability for tracing of mass and energy flows for energy systems, so that quantitative comparisons of energy technologies can be made. This work provides a theoretical bound on performance predictions for new technologies and a set of tools to analyze the performance of developed technologies. This allows GCEP to better understand where opportunities exist to increase the efficiency or reduce the emissions of energy conversion devices and systems.

The second section describes the Integrated Assessment of Energy Technologies, led by Professors John Weyant and James Sweeney in the Management Science and Engineering Department. The Integrated Assessment project is developing a comprehensive analysis system that can be used to estimate probable significance of technologies, to explore options to speed up diffusion of technologies, and to determine the magnitude of potential reductions in greenhouse gas emissions. This work provides a measure of the potential impact of technology development in the context of infrastructure cost and with respect to the probabilities of success for other technologies.

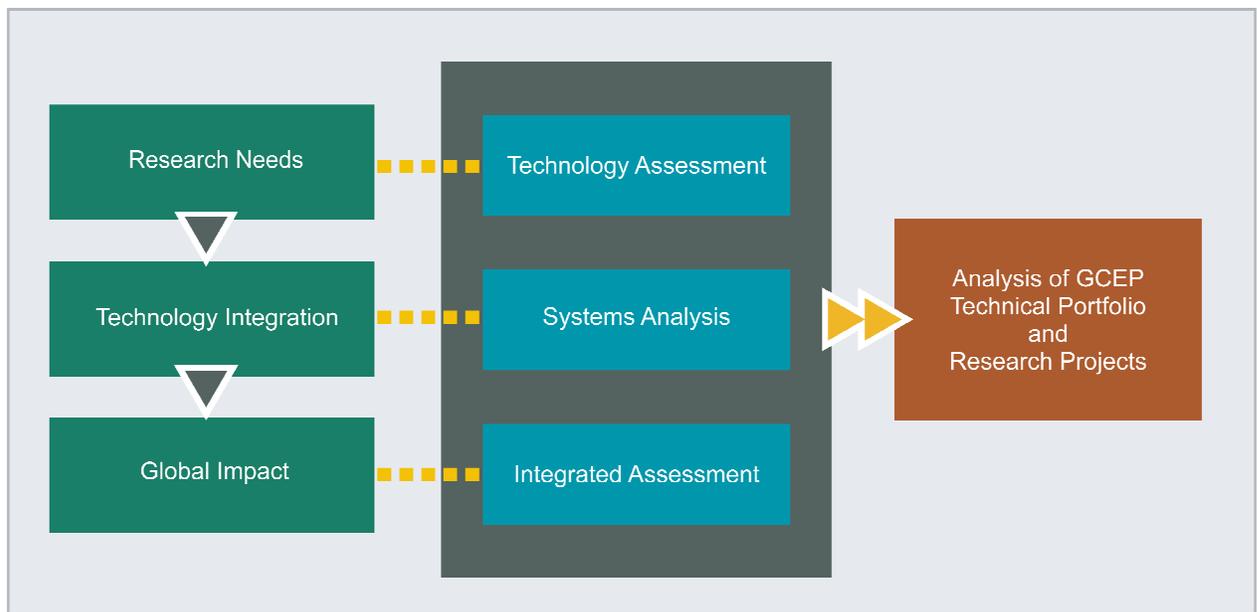


Figure 1: Analysis Activities

The above figure demonstrates how the two analysis activities integrate with GCEP's assessment of technologies. The technology assessments serve as the main vehicle through which GCEP informs its decisions to investigate specific technologies. The work

of the two analysis groups refines and advises this information. The result of these interactions is a detailed technical understanding of a proposed project, a thorough survey of the state-of-the-art and a reasonable estimate of the potential impact. While each of those components could stand on its own merit, the integrated combination will provide GCEP with a high level of confidence in developing its technology portfolio.