

## **SUMA PS 5150: Energy and Sustainable Development**

**Fall, 2017– Wednesdays, 6:10pm-8:00 PM**

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### **Overview**

In this course we use energy as a window to sustainable and unsustainable development in poorer countries and less mature markets. The seventeen Sustainable Development Goals (adopted August 2015) are used as a point of reference.

We examine the twin problems of energy waste and energy poverty through a variety of perspectives from the very micro (the individual and his or her household or small business) to the very macro (global institutions and activities). By examining these different perspectives, the ambiguities, vested interests and challenges of energy for sustainable development are explored. We combine the issues of energy waste – inefficient production, transmission, distribution and use—and energy poverty – lacking basic sources of modern energy—because these are inextricably bound.

We introduce and use a multi-level analytical framework. Students conduct a country-specific analysis and design an “enterprise” (program, project or business) appropriate to the assigned country.

We introduce a theory of change or market transformation, arguing that the path forward requires four coordinated courses of action: enterprise development, market development, capacity building and impact building.

Our approach is skeptical: the expansion of the present, generally inefficient system for electricity and fuel distribution, as well as inefficient end-use, is posited as a significant fraction (30% or more) of the *solution* to energy poverty. The expansion of such inefficient energy services to un-served populations could thus expand rather than contract the problem of energy waste while ostensibly solving the problem of energy poverty. These and other ambiguities are central to this course. The proliferation of goals and objectives, combined with the need for resources – human, financial and societal – and the multiple reporting requirements of numerous processes and procedures are highlighted as hurdles to success.

### ***PERSPECTIVES EXAMINED***

- **Customer and End-user**-factors that influence the purchase of more or less sustainable energy by consumers
- **Country and Government**-conditions that dictate a country’s path to a more or less sustainable energy and sustainable development future
- **International Organizations**-goals, priorities and activities aimed at a more sustainable future
- **Programs**-country and regional activities intended to increase energy availability and advance sustainable development
- **Product and Service Businesses**-fundamentals of selling more sustainable energy goods and services in frontier markets

- **Project Developers**-fundamental issues facing utility grid and off-the-grid project developers and operators
- **Grid Utilities**-sustainable energy issues and the traditional central station utility
- **Financier**- factors that influence making investment decisions in sustainable energy
- **Market Transformation**-generally perceived strategies and tactics to increase the supply and use of more sustainable energy sources and advance the cause of sustainable development
- **Cross-cutting Issues**
  - Health, Cooking and Indoor Air Pollution
  - Climate Change
  - Gender and Youth
- **Regional Perspectives:**
  - West Africa
  - Southern Africa
  - East Africa
  - Southeast Asia
  - Caribbean

## Method and Learning Objectives

The following complementary activities are undertaken in this course.

- Review of Briefing Materials in advance of class
- (Classroom) Introductory Remarks, Class and Discussions and In-class Exercises
- Individual Research of an Assigned Country and Formulation of a Country-specific Program, Project or Business
- Group Sharing of Research and a Group Presentation
- Short Assignments Leading to a Final Paper

This course takes student through a series of practical *study-learn-do* sequences leading to knowledge and skills applicable to evaluating energy policy, programs, projects and businesses in “frontier” markets. Its *primary* learning objective is to expose participants to methods that will allow objective analysis while at the same time sensitizing participants to the inherent ambiguities and “grey” issues (e.g., vested interests).

*Secondary* learning objectives involve exposure to analytical frameworks useful beyond the energy for development space; tools and techniques for high-level but practical evaluation of programs, projects and businesses; and, working as individuals concurrently in a team setting (for a regional perspective presentation).

## Course Content and Schedule

Following is a Class-by-Class sketch of the course, including the Briefing Materials to be reviewed in advance of each class and illustrative discussion points participants should be prepared to discuss.

Following this section will be found a schedule summary that itemizes the assignment participants are expected to complete and the corresponding due date.

NOTE: Documents marked with \* will be found in class-by-class folders on Canvas

**Class 1 (September 6)** contains a course and issue introduction, an overview of the Sustainable Development Goals, and a discussion of the interconnection among energy, human development and sustainable development. In advance of this class participants are expected to familiarize themselves with the seventeen **SDGs** \*. Registered students will be assigned individual countries to study and also be assigned to one of five regional groups.

**Class 2 (September 13)** examines energy and sustainable development from the perspectives of the customer and the end-user. Prior to class the **“Poor Peoples Energy Outlook 2014”** \* should be read. We will introduce and begin discussing a **Framework** \* for examining high-level, mid-level and on-the-ground issues, and discuss the transaction issues that influence consumer decisions regarding energy.

**Class 3 (September 20)** changes the perspective from that of the consumer to address energy and sustainable development at a country and government level. In advance of class students should familiarize themselves with the NDCs (nationally designated contributions) made by their assigned countries. We will discuss these commitments and continue introducing a framework for examining the high-, mid- and transaction-level issues. The last 20-30 minutes of class will be used for regional groups to meet.

**(September 27) Class 4** moves from the perspective of the consumer and that of the country to the perspective of international organizations and the programs these organizations plan and implement. Before class, participants will familiarize themselves with **Sustainable Energy for All’s global tracking framework report\*** and by visiting and surveying [www.gtf.esmap.org](http://www.gtf.esmap.org) ([Links to an external site.](#))[Links to an external site.](#) and [www.powerforall.org](http://www.powerforall.org) ([Links to an external site.](#))[Links to an external site.](#). We continue to use our framework to identify those elements that such organizations and programs must consider. **Assignment 1** – a profile of the assigned country and its place in its region, written from the perspective of energy and sustainable development – is to be handed in.

**(October 4) Class 5** changes the perspective once again. In this class we review the fundamentals of doing business as a product or service provider, or project developer, in frontier markets. Prior to class students should read the profiles of **SELCO (India) \***, **Toyola (Ghana) \***, **La Esperanza Project (Honduras) \***, and familiarize themselves with the **“Product and Project Financial Template” \***. The last 30-40 minutes of class will be used for regional groups to meet.

**(October 11) Class 6** asks how two distinct but related groups look at the issues of energy and sustainable development in smaller, less mature markets. The first of these groups are financiers who might fund cleaner, more sustainable energy projects and enterprises. The second group includes donors and non-governmental organizations that embrace market transformation as an objective. In this session we begin to emphasize the multi-dimensional changes that must occur in a market for it to move from project-program-transaction based to self-sustaining. In advance of class, participants will examine the **Shell Foundation’s theory of change \***. **Assignment 2** – an updated country profile and a description of the project, program or enterprise appropriate to that setting – is due.

**(October 18)** Whereas climate change and energy access have already been introduced as crosscutting issues in the energy and sustainable development field, in **Class 7** we take up the issue of Gender and Youth as an additional cross-cutting issue and perspective. Prior to class students will read about **gender mainstreaming in ECOWAS countries \*** and

visit [www.energia.org](http://www.energia.org) (Links to an external site.)Links to an external site.. The second half of this class will be set aside for groups to meet.

**(October 25) With Class 8** we switch from points of view to points of geography, examining the regional and country perspectives in West Africa. Prior to class students should visit [www.ecowas.int](http://www.ecowas.int) (Links to an external site.)Links to an external site. . In this class Group A will present its assessment of regional conditions, introduce the countries they have studied individually and the projects, programs or businesses they are planning. Group B will lead the questions and discussion.

**(November 1) In Class 9** we move from the perspective of West Africa to that of East Africa, asking what are the similarities and differences, opportunities and threats between these two regions. In advance of class visit [www.eac.int](http://www.eac.int) (Links to an external site.)Links to an external site.. In this class Group B will present its assessment of regional conditions, introduce the countries they have studied individually and the projects, programs or businesses they are planning. Group C will lead the questions and discussion.

**(November 8) Class 10** tries to round out a picture of Sub-Saharan Africa by examining Southern Africa. Students should visit [www.sadc.int](http://www.sadc.int) (Links to an external site.)Links to an external site.. In this class Group C will present its assessment of regional conditions, introduce the countries they have studied individually and the projects, programs or businesses they are planning. Group D will lead the questions and discussion.

**(November 15) Class 11** shifts the geographic focus to southeast Asia. Prepare for class by visiting [www.asean.org](http://www.asean.org) (Links to an external site.)Links to an external site. / asean–economic-community. In this class Group D will present its assessment of regional conditions, introduce the countries they have studied individually and the projects, programs or businesses they are planning. Group E will lead the questions and discussion.

There is no class on November 22<sup>nd</sup>.

**(November 29) Class 12** focuses on the Caribbean. In preparation for class students should survey [www.caricom.org](http://www.caricom.org) (Links to an external site.)Links to an external site.. In this class Group E will present its assessment of regional conditions, introduce the countries they have studied individually and the projects, programs or businesses they are planning. Group A will lead the questions and discussion.

**(December 6) Class 13** revisits the Sustainable Development Goals asking for points of view and priorities regarding the “fit” of energy *per se*, more sustainable energy and best available sustainable energy vis-à-vis- these goals. Participants are asked to re-examine the course syllabus, contrast the consumer perspective “on-the-ground” with the aspirations of multi-national agreements (e.g., Paris Agreement) and initiatives such as SE4All, and finally to assess the difference between transactional change and market transformation. Final papers are due at this class.

**Assignment 1** – 500 to 750 words: country and regional context: describing 1/ the energy-development context and headlines; 2/ the major sustainable development and energy problems and priorities of the country; 3/ its regional context and its participation in its regional intergovernmental body. 15 points

**Assignment 2** – 500 to 750 words: 1/ updated context to reflect group consideration of regional context; 2/ identification of a current energy project, program or business of note at the country level; 3/ and description of the country-level enterprise (program, project or business) you believe appropriate to and would propose for this market. 15 points

**Final Paper** – 10 pages, double-spaced: 1/ a summary and update of Assignments 1 and 2; 2/ a final country-level enterprise description, complete with basic assumptions as to size, target technologies and market; and 3/ an action plan of next steps and recommendations to take the chosen enterprise to the next stages of development, including the conditions that must be addressed to increase the likelihood of success. 40 points

**Group Presentations** -- to cover 1/ regional fundamentals; 2/ similarities and differences among countries; 3/ regional priorities; and 4/ one slide (per country) descriptions of selected enterprises. 15 points

**Individual Class Preparation and Participation** – 15 points