

**GIM – The Business of Renewable Energy in an International  
Setting: Germany, Great Britain, and the Czech Republic  
Syllabus**

Winter Quarter 2016

**Friday, 1:30 – 4:30 PM**

Instructor: Stephen Brick  
stephen.brick@kellogg.northwestern.edu  
Phone: 608-332-5711  
Office hours: Friday 11:30 AM-1:00 PM, room 5235

## GIM Program Objectives

The GIM Program enables Kellogg students to:

- Gain an understanding of the economic, political, social, and cultural characteristics of a country or region outside the United States.
- Learn about key business trends, industries, and sectors in a country or region outside the United States.
- Conduct international business research on a topic of interest.
- Further develop teamwork and leadership skills.

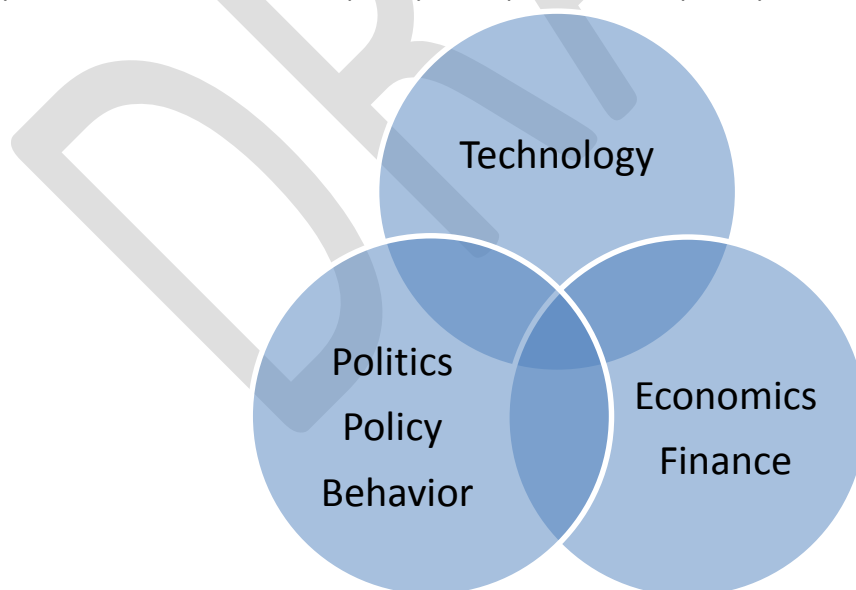
## Course Description and Objectives

### Course Objectives

This course will give students an opportunity to delve into questions surrounding the development and deployment of renewable energy. We will focus much of our attention on the most rapidly evolving global renewable energy market: electricity. Driven in equal part by changing technology, new market structures, and policy initiatives, renewable electricity offers an attractive platform for exploring energy markets in an international context. We will explore a toolkit of approaches and perspectives for thinking about the issues that drive investment and deployment of renewable electricity. We will consider renewables as substitutes for other fuels, as well, but electricity will be our predominant focus.

### Topic Description

Energy markets evolve and are shaped by a complex of forces, portrayed in the following Venn diagram:



Understanding energy affairs requires drawing on perspectives from each of these realms: technology,

governments, businesses, financing mechanisms, economics all interact to produce change. This intersection is where this course will focus.

We will focus much of our attention on electricity. Electricity markets in the developed world are in the midst of transformation that began in the late 1970s. At that time, nations and states began to change the ways in which electricity markets are structured and regulated, with the goal of increasing competition and reducing monopoly. Technology has evolved, and the development and deployment of new supply-side technologies (including the renewables that will be the focus of this course) is also a main driver of transformation. Innovations on the demand-side, such as energy efficiency, demand management, energy storage, and “smart” technologies, are also key agents of change. Environmental regulations have also altered the landscape, and efforts to reduce man-made greenhouse gas emissions have moved to center stage in the global political theater.

In spite of all of these agents, the end product remains unchanged—electricity; a commodity taken for granted by most consumers, essential to every home, office and factory in the developed world. Economic and reliable delivery of electricity depends upon an integrated and complex system; understanding this system is an essential underpinning of comprehending the market. We will also consider renewable alternatives to petroleum and natural gas, and study the ways governments and businesses are promoting their development and use.

We will look at examples from the US, Europe and elsewhere as we explore the ways in which technology, policy, and economics are interacting to change the face of the electricity landscape. We will visit three European countries that are in varying positions with respect to the global energy transformation. Germany is a world renewable energy leader, and contributions from wind and solar have skyrocketed there in the past decade. Steep price increases have led to a slowdown in renewable deployment, and Germany is seeking appropriate course corrections. The UK has also adopted policies to promote renewable electricity, but penetration there has not reached German levels. This is due, in part to the fact that Germany started earlier and offers more generous subsidies. The governing coalition has recently slowed the pace of change, also in light of concerns over rising costs. The Czech Republic has been on the receiving end of some of the negative consequences of Germany’s rapid expansion of renewables; while in Prague, we will have an opportunity to gather contrasting perspectives on aspects of the European energy transition.

## **Course Expectations/Guidelines**

Students are expected to complete all reading assignments, attend all lectures, and engage with speakers and classmates. This should be a collaborative learning experience, and one in which all participants responsibly carry out their responsibilities.

During lectures and discussions, this will be a screen-free course. Laptops, tablets, and cell phones are not permitted during these activities. A portion of each class period will be allocated to group work, during which time electronics are permitted (for class related work!).

## **Attendance Policy**

Due to the nature of the GIM program, attendance for all GIM classes is mandatory, as is participation in the two-week field experience. Attendance on the first day of class is also mandatory. If a student misses more than one class throughout the term, one letter grade will be deducted from his or her final grade. The faculty member may make exceptions in cases of extreme circumstances.

## **In-Country Academics**

Students are reminded that GIM is first and foremost an academic program. 15% of your overall grade will be based on your participation in the plenary meetings and engagement in other activities as assessed by the in-country advisor. In order to achieve a high grade, students are expected to not only attend all plenary meetings, but to be actively engaged during the meetings and other learning opportunities in country.

## **Role of the In-Country Advisor**

Throughout your GIM trip, your in-country advisor, Arlene Johnson, who is the Director of Executive Education Operations at Kellogg, will accompany the class. The in-country advisor is responsible for the integrity and quality of the in-country experience. Among other logistical roles during the trip, she will be assessing each student's level of participation during the plenary meetings and will be assigning 15% of the students' overall grade.

## **Kellogg Honor Code**

The students of the Kellogg School of Management regard honesty and integrity as qualities essential to the practice and profession of management. The purpose of the Kellogg Honor Code is to promote these qualities so that each student can fully develop his or her individual potential. Upon admission, each student makes an agreement with his or her fellow students to abide by the Kellogg Honor Code. Students who violate the Kellogg Honor Code violate this agreement and must accept the sanction(s) imposed by the Kellogg community.

The Kellogg Honor Code is administered by students and is based on the concept of self-government. The efficacy of such a student-administered honor code is dependent upon a high degree of dedication to the ideals of honesty, integrity, and equal opportunity reflected by the code. The Kellogg Honor Code requires that each student act with integrity in all Kellogg activities and that each student hold his or her peers to the same standard. In agreeing to abide by the code, Kellogg students also agree to report suspected violations. By not tolerating lapses in honesty and integrity, the Kellogg community affirms the importance of these values.

## Course Materials

### Required List

Books to purchase:
Vaclav Smil, <i>Power Density</i> , MIT Press (2015)
Course Packet

## Course Schedule and Assignments [subject to change]

Week 1	January 7
Lecture	<ul style="list-style-type: none"> <li>“Energy is Different: An Introduction to Thinking About Energy”</li> </ul>
Focus	<ul style="list-style-type: none"> <li>Introductory exposure to the overlapping forces of technology, economics and policy that affect the evolution of energy systems and the success (or failure) of energy businesses</li> </ul>
Guest Lecturer	<ul style="list-style-type: none"> <li>None</li> </ul>
Class Activities	<ul style="list-style-type: none"> <li>Course overview, expectations</li> <li>Introductions</li> <li>Project team assignments and discussion of project objectives</li> </ul>
Reading	<ul style="list-style-type: none"> <li>Smil, <i>Power Density</i>, chapters 1-3</li> <li>Browse Energy Policies of IEA Countries, Germany and England</li> </ul>

Week 2	January 14
Lecture	<ul style="list-style-type: none"> <li>“A Whirlwind Introduction to Electricity Utility Systems”</li> </ul>
Focus	<ul style="list-style-type: none"> <li>Basic system engineering/physics</li> <li>Basic system economics</li> <li>Historic and current market structures</li> <li>Why Renewables?</li> </ul>
Guest Lecturer	<ul style="list-style-type: none"> <li>None</li> </ul>
Reading	<ul style="list-style-type: none"> <li>Brief excerpts from Etzler (1836) and Scientific American (1883)</li> <li>Jacobson and DeLucci, <i>Scientific American</i>, <a href="http://www.scientificamerican.com/article/a-path-to-sustainable-energy-by-2030/">http://www.scientificamerican.com/article/a-path-to-sustainable-energy-by-2030/</a></li> </ul>

Week 3	January 21
Lecture	<ul style="list-style-type: none"> <li>“European Energy Policy, The Push for Renewables and Current Headwinds”</li> </ul>
Focus	<ul style="list-style-type: none"> <li>Structure and progress to date behind EU renewable energy policy</li> <li>Implications of staying on course</li> <li>Current challenges in Germany, UK and the Czech Republic</li> </ul>
Guest Lecturer	<ul style="list-style-type: none"> <li>Representatives of German, UK and Czech Republic Consulates</li> </ul>
Reading	<ul style="list-style-type: none"> <li>JP Morgan Chase, Annual Energy Paper, <i>A Brave New World: Deep Decarbonization of Electric Grids</i></li> </ul>

	<ul style="list-style-type: none"> <li>Hal Harvey, <i>A Tale of Two Countries</i>, <a href="http://energyinnovation.org/wp-content/uploads/2015/03/A-Tale-of-Two-Countries.pdf">http://energyinnovation.org/wp-content/uploads/2015/03/A-Tale-of-Two-Countries.pdf</a></li> </ul>
<i>Assignment</i>	<ul style="list-style-type: none"> <li>Topic proposal due</li> </ul>

<b>Week 4</b>	<b>January 28</b>
<i>Lecture</i>	<ul style="list-style-type: none"> <li>"How Do I Get My Money Back: The Challenge of Financing New Energy Infrastructure?"</li> </ul>
<i>Focus</i>	<ul style="list-style-type: none"> <li>Exposure to traditional and evolving strategies for financing energy projects</li> </ul>
<i>Guest Lecturer</i>	<ul style="list-style-type: none"> <li>Dan Reicher, Executive Director of the Steyer-Taylor Center for Energy policy and Finance, Stanford University</li> <li>Representative of JP Morgan Chase Chicago Office</li> </ul>
<i>Reading</i>	<ul style="list-style-type: none"> <li>Steyer-Taylor report on Germany (forthcoming)</li> <li>Simkins and Simkins (eds.), <i>Energy Finance and Economics</i>, chs. 3 and 24.</li> </ul>
<i>Assignment</i>	<ul style="list-style-type: none"> <li>Background research</li> </ul>

<b>Week 5</b>	<b>February 5</b>
<i>Lecture</i>	<ul style="list-style-type: none"> <li>"Growing Pains in Evolving Markets: A Utility Perspective"</li> </ul>
<i>Focus</i>	<ul style="list-style-type: none"> <li>How are incumbent market players being affected by and responding to the introduction of renewables?</li> </ul>
<i>Guest Lecturer</i>	<ul style="list-style-type: none"> <li>Chris Gould, Senior VP, Exelon</li> </ul>

<b>Week 6</b>	<b>February 12 - No class</b>
---------------	-------------------------------

<b>Week 7</b>	<b>February 19 - No class</b>
---------------	-------------------------------

<b>Week 8</b>	<b>February 26</b>
<i>Lecture</i>	<ul style="list-style-type: none"> <li>"Renewable Energy Project Development: How is a Project Financed and Built?"</li> </ul>
<i>Focus</i>	<ul style="list-style-type: none"> <li>What are the challenges faced by project developers in terms of siting (local opposition), licensing and financing?</li> </ul>
<i>Guest Lecturer</i>	<ul style="list-style-type: none"> <li>Kevin Johnson Managing Director, Federal &amp; Microgrid Business Development, Canadian Solar (USA), Inc.</li> <li>Representative of Invenergy</li> </ul>

<b>Week 9</b>	<b>March 4</b>
<i>Lecture</i>	<ul style="list-style-type: none"> <li>"Climate Math: What does deep decarbonization look like?"</li> </ul>
<i>Focus</i>	<ul style="list-style-type: none"> <li>What does current best science tell us about how deeply carbon must be reduced to stabilize climate?</li> <li>What does this science imply for the role of renewables and other resources in achieving global targets?</li> </ul>

<i>Guest Lecturer</i>	<ul style="list-style-type: none"> <li>Armond Cohen, Executive Director, Clean Air Task Force</li> </ul>
<b>Week 10</b>	<b>March 11</b>
<i>Lecture</i>	<ul style="list-style-type: none"> <li>TBD</li> </ul>
<i>Focus</i>	<ul style="list-style-type: none"> <li>Pre-departure preparation</li> </ul>
<b>March 15-23</b>	<b>In-Country Field Research</b>
<b>Final Class</b>	<b>April 6 (9:00-12:00 AM)</b>
<i>Focus</i>	<ul style="list-style-type: none"> <li>Final Project Presentations</li> </ul>

## Assessment

	%
<b>GIM Project</b>	<b>70%</b>
Background Research	10%
In-Country Research Plan	10%
In-Class Presentation	10%
Final Report	25%
Peer Evaluation	15%
<b>Other Assignments (Optional)</b>	
<b>Participation</b>	<b>30%</b>
In-Class Participation (attendance, discussion, engagement)	15%
In-Country Participation (plenary meetings; determined by GIM advisor)	15%

## GIM Project

The core of the GIM class is a group project. Groups of 4 to 6 students will select an international business, economic or management issue to study in depth. The students begin background research on their topic during the winter term, incorporating perspectives from class readings and speakers, and spend considerable time in-country speaking with resident experts, gathering local data, and testing their hypotheses and recommendations in the field. In general, the project should aim to meet the letter and spirit of both “think and do.” That is, it should be based on original research that contribute to an intellectual body of work but also strive to have certain practical applications pertaining to global energy markets.

*Students must conduct interviews for their projects in **every** city they visit throughout the trip.*

### *Research Topics*

Student teams typically develop their own research project, though they refine their topics with the help and advice of their faculty member. Good GIM projects are generally built around interesting, clear, and relatively narrow business questions, e.g. “Coffee in Southeast Asia: Development of an Expansion Strategy for Peet’s Coffee and Tea” or “Creating a Market Entry Strategy for the Indian Homecare Medical Device Industry.” Weak GIM projects often have lengthy and unfocused industry descriptions, e.g., “An Overview of the Brazilian Beverage Industry,” or “Challenges and Opportunities in Japanese Real Estate.”

### *Project Report Structure*

Results of the research must be presented in a report of approximately 20-25 pages in length before exhibits. Students, in consultation with their instructor, may choose from the following report formats:

- Traditional analytical research paper – A research question is described; competing answers to the question are discussed; evidence collected on the trip is used to argue for or against the alternative answers.
- Industry analysis – A particular industry is surveyed in order to examine a narrowly focused, well-defined topic pertaining to the competitive dynamics of the industry. An example is to pick a sector with potential growth and market opportunities in China (preferably a relatively untapped emerging segment), come up with different models for US investment into, or market entry strategies for, that sector.
- Business recommendation report – A consulting report recommending specific strategic, operational and organizational actions to solving a clearly defined business issue (e.g. strategies for overcoming cold-chain logistics and distribution challenges in China.). Another variation is to potentially take a thematic approach:
  - *Theme:* Reverse capital flows from China to the United States
  - *Context:* Chinese direct investment in the United States is expected to increase dramatically over next decade, as Chinese companies seek new markets and establish global brands.
  - *Project idea:* Design marketing strategies to elevate Chinese brands that most US consumers have never heard of.
- Business or industry case study – A case for eventual classroom use developed with a clear underlying business question in mind. It will be a deep-dive into a sector or a specific Chinese company to identify market opportunities, industry trends, and lessons for investors and practitioners on how to succeed and/or fail in the China market (lessons from failure is just as important as success). Teams pursuing this option are encouraged to work with Case Publishing before and after the trip to ensure a high quality product that may eventually be used in the



classroom.

Far from exhaustive, these are merely meant to generate ideas. Unconventional and out-of-the-box ideas need to be cleared by the instructor. But all project proposals need to adhere to a simple principle: they must be realistically executable, given the time and capacity constraints of the course and limited resources.

### *Project Deliverables*

- **Research Project Proposal** – Each project group will submit a 2-page description of their proposed research topic, including:
  - A description of the specific and narrowly-focused research question(s) to be addressed
  - Description of the topic's importance, timeliness, economic, or social significance
  - Identification of possible in-country visits with companies, governmental agencies, NGOs, etc.
- **Background Research Review** – Before departing for the in-country portion of the class, each project team must submit a review examining secondary information relevant to its research topic. This review may serve as a first draft of the background section of the final project report.
- **In-Country Plan** – This is a detailed matrix of five or more investigative research meetings arranged in country. The best plans will include day/time/location of meeting; name/description of organization; name/title/bio of interviewee; agenda and interview guide for each meeting.
- **In-Class Presentation** – During the final class, each project group will make a presentation in class summarizing their research findings. The purpose of this deliverable is to allow faculty members and students to learn about and provide feedback on the project groups' final findings. It is suggested that each team be given 15 minutes to present and 5 minutes for audience questions and suggestions.
- **Written Report** – The final report, generally 20-25 pages long before exhibits and appendices prepared according to one of the formats discussed above. In addition to turning in their papers to their instructors, students should submit an electronic copy to the Global Programs Office on the agreed upon date.
- **Peer Evaluation** – Each member within the project group will assess every other member's contributions to the project, including their own, with a confidential peer review form that takes into account each member's intellectual contribution, initiative and organization, workload contribution and overall contribution.

DRAFT