



Energy

Introduction

Energy is the basic ingredient in many macroeconomic, political, strategic, and environmental decisions. It is the engine of our modern economy, and as a scarce resource, it is of paramount importance to governments in order to maintain a competitive advantage. At the same time climate change and the impact of human civilization on our planet earth has increased the awareness on how we produce and consume that energy and the impact it has on the environment.

But while the world discusses these issues, 750 million people still lacks access to modern energy, leaving this part of the world population in the 19th century economy.

Energy today is at the midst of a perfect storm:

- The world geopolitically is changing: tight oil has made the US the major producer of oil worldwide; the EU becomes more dependent on Russia as other alternatives become riskier; and China leads the R&D worldwide, becoming the first producer of renewable energy assets.
- The return to national policies and protectionism, and the tacticism of modern democracies, always thinking about the next election, are changing national regulations, impacting on collaboration, system sustainability and the ability to solve problems such as climate change that can only be dealt at multistate level.
- The acknowledgement of the climate change effects in the long run has forced leading Governments, such as Japan, Korea, or the likely return of the US, to make long term commitments to reach 0 net emissions by 2050, and even China in 2060, but no intermediate action plans to reach that goal have been deployed.
- The empowerment of consumers and the civil society is leading to new investments in clean energy that threatens the traditional electricity value chain
- The Volkswagen'dieslegate has triggered the transformation of transportation, as it switches to new energy sources with reduced or no impact on the environment
- Coal has reached its peak and will disappear in the next years, while we observe how Petroleum giants such as BP enter the renewables business with massive investments, and Saudi Aramco did the largest worldwide IPO at the end of 2019.
- COVID-19 has seen an important reduction in CO2 emissions worldwide due to the lower

economic activity and the reduction in travel and commuting. Whether some of these trends are here to stay are key to a decarbonized future.

- The technological changes (massive solar PV, Nuclear fusion, ubiquitous geothermal, etc.) occurring as we speak may lead to a new industrial revolution and a change in the world order as we know it today: how would the world look like if energy becomes abundant and accessible.

While energy makes its transition to a new, and more environmentally friendly source, and as the developing economies catch up with the most developed world, many tensions, interests and failures will occur. It is our role as influential decision makers to make sure we walk in the right direction to achieve a fairer world, a cleaner planet and at the same time allowing for economical development. All our decisions will have an impact on these dimensions and it is never easy to find the right equilibrium.

Objectives

Over the course we will try to understand how energy works, its main sources, and the geopolitical, social, economical and environmental implications of its uses. To cover these topics, we will use the commonly accepted conceptual framework of the three dimensions of energy (the “3E”): environment, energy security, and economical efficiency.

As a second objective, we will use the current technology disruptions to understand how to prepare our companies to an unknown world with an increasingly fast change of pace.

Finally, we will try to understand the particular dynamics of a regulated industry and how it affects the decision making processes.

Competences

Basic Competences

- CB6. Possess and understand knowledge that provides a basis or opportunity to be original in the development and / or application of ideas, often in a research context.
- CB7. The students know how to apply the knowledge acquired and their ability to solve problems in new or unfamiliar environments within broader (or multidisciplinary) contexts related to their area of study.
- CB8. The students can integrate knowledge and face the complexity of formulating judgments based on information that, being incomplete or limited, includes reflections on social and ethical responsibilities linked to the application of their knowledge and judgments.
- CB9. Students know how to communicate their conclusions and the knowledge and ultimate reasons that support them to specialized and non-specialized audiences in a clear and unambiguous way.
- CB10. Students possess the learning skills that allow them to continue studying in a way that will be largely self-directed or autonomous.

General Competences

- CG1 - Listen, understand, and contrast the points of view of others to make an objective composition of a business situation. Communicate in a structured and persuasive way. (Interpersonal communication).

- CG3 - Critically evaluate the information and the context of a business situation to reach its own conclusions for making prudential decisions. (Critical thinking).
- CG5 - Apply proven ethical criteria in making business decisions, respecting the intrinsic dignity of each person and the achievement of the common good. (Integrity).
- CG6 - Develop a proactive and open mindset to organizational change in order to design and promote process improvement initiatives and facilitate one's ability to adapt to new organizational cultures. (Innovative spirit).

Specific Competences

- CE01 - Identify the relevant data to diagnose a business problem and generate sensible decision alternatives.
- CE16 - Apply strategic principles and tools in order to align the development and commercialization of a brand's products and services with the needs and desires of its customers ("Customer Centricity").

Content

The course will be structured around the following topics:

- i. Introduction to energy: history, uses and business relevance
- ii. Uses and Energy Outlook
- iii. Electricity markets
- iv. The 3E's of energy: environment, energy security, and economical efficiency
- v. Climate change: will we avoid the 2°C cap increase set by the UN
- vi. Disruption and new business models in the energy sector
- vii. The future of energy: trends, outlooks and beyond

Evaluation

Participant evaluation is based on two ratings:

Participation and attendance (30%) and a short essay write-up, 1-2 pages long (40%) and an exam (30%).

The IESE Business School's Honor Code and Learning Partnership apply to all activities in this course. For individual assignments, unless explicitly stated, you should not interact with anyone else. For deliverables to be done in teams you should interact only with the members of your team.