

The Changing Dynamics of Global Energy Paradigm :

Policy, Investment and Technology

Spring 2017

Prof. Seok Cho

Pre-requisite :

Class Meets:

Contact Information

Course Description: Welcome to the Energy World! This course is designed to provide you with an advanced knowledge of the global energy paradigm and share the various perspectives on major countries' energy policies. We will go into the changing dynamics of global energy paradigm, such as climate change, nuclear, fossil fuels and renewables. The trend of energy mix change for electricity production will be the important factor to find out energy paradigm shift. We will also survey the major global utility companies' strategy to respond the paradigm shift. Government's policy and company's strategy will show you the intuition to comprehend the complexity of energy world. Finally, we will review the Korea's energy policy so that we can get reference for energy deficient country how to survive through energy struggle.

Textbooks

조석, 새로운에너지세계, 2017

조석, 이지평, 김창섭외, 에너지에대한모든생각, 2016

UNFCCC, NDC 에 관한종합보고서, 2015

IEA, Energy balances of OECD/Non-OECD countries, 2015

IEA, World Energy Outlook, 2015

Annual Reports of Duke Energy, Exelon, E.On, RWE, EDF, Engie, TEPCO, KEPCO

EViews Program

Course Grades

Attendance and Class Participation: 20%

Survey Report : 50%

Term Paper and/or Presentation: 30%

Class Schedule and Course Outline

Week 1 : Welcome to Energy World

- Energy Issue : Ideology vs. Interest
- Think about energy policy purposes : 3E + S
- Discuss relationship among policies and value perspectives

Week 2 : Energy paradigm shift

- Trend of global energy policy :
Economy/Security/Environment & Safety
- Post 2020(New climate change regime)/ICT Technology
- Shift from supply management to demand control/
from economic energy mix to low carbon energy mix/
from closed(limited) system to open(participating) system of electricity market

Week 3 : Major Countries' Responses(Overview)

- Trend of global energy mix

Week 4~5 : USA

- energy mix trend
- major energy policies : post 2020/ investment on environment protective

energy/Obama Administration's energy policy- Market circumstance change :

- ① shale gas(oil) and change of electricity production cost of each energy
- ② price regulatory market vs. price competitive market

<Duke Energy>

- ① company overview and stock price trend
- ② major business strategies : M&A/gas power station and more

<Exelon>

- ① company overview and stock price trend
- ② major business strategies : efficiency maximization of nuclear power stations and more

Week 6~7 : Germany

- energy mix trend
- major energy policies : renewable energy act, feed in tariff, EU energy strategy 2020, energy shift policy
- Market circumstance change :
 - ① impact of post-nuclear power policy
 - ② impact of renewable energy biased policy

<E.ON>

- ① company overview and stock price trend

② major business strategies : company growth history, impact of the energy policy, company partition strategy and more

<RWE>

① company overview and stock price trend

② major business strategies : business portfolio, enlargement of overseas business, business diversification strategy and more

Week 8~9 : France

- energy mix trend

- major energy policies : history of energy policy and energy shift act

- Market circumstance change :

① change of nuclear power policy after Orland administration

② open market policy on electricity exchange

<EDF>

① company overview and stock price trend

② major business strategies : nuclear power oriented and nuclear power export focused

<Engie>

① company overview and stock price trend

② major business strategies : gas power focused strategy, overseas business promotions

Week 10~11 : Japan

- energy mix trend
- major energy policies

① overview : post oil shocks(energy diversification policy)post Fukushima(new challenge to new balanced energy mix)

- ② Evolutionary Energy and Environment Strategy
- ③ The 4th Basic Energy Plan

- Market circumstance change :

- ① Fukushima Accident and Stop of Nuclear power
- ② open market policy on electricity exchange

<TEPCO>

- ① company overview and stock price trend
- ② Restoration of Fukushima accident
- ③ major business strategies : power portfolio change, future coal power technology development and positive response to the market liberalization

<KEPCO>

- ① company overview and stock price trend
- ② major business strategies : balance of nuclear, coal and hydro power, response to the market liberalization

Week 12~13 : China

- energy mix trend

- major energy policies

① energy development strategy action plan

② 13.5 plan

③ The new electricity power industry reform program

- Market circumstance change :

① Shift toward nuclear and renewable energy

<CNNC>

① company overview

② domestic and overseas business of Chinese nuclear industry

Week 14 : Summary of ch. 3

Week 15~16 : Korea's Case

1) Korea's Energy Policy

- National Energy Plan : History, The basic energy plan, The electricity power supply and demand plan

- Major factors : electricity power cost fluctuation, circumstance change of each energy source, electricity demand trend

- Shift and prospect of energy Mix in electricity power

2) Major Issues in Nuclear Power Industry in Korea

- Current status of Korea's nuclear industry
- 3 Perspectives on nuclear industry : contribution vs. objection vs. temporary inevitable

3) New & Renewable Energy

- current status
- main policies on renewable energy

Week 17 : Where to go

- Demand control by moderation of desire and high price
- New energy world through technology renovation
- Overseas promotion of Korea's nuclear industry