

# **The Business of Climate Change: Investing and Managing in a Changing Environment**

**Professor Geoffrey Heal**  
**Fall 2020 B term**

Climate change is already affecting American and global business. Some industries will be transformed by climate change and the policies that respond to it. The coal industry, a mainstay of advanced economies since the start of the industrial revolution, is already collapsing. The oil and gas industry will be radically transformed and reduced in scale. The automobile industry will be transformed, with the growth of electric vehicles leading to the entry of new players in both vehicle production and component production for the first time in half a century. Construction and real estate will also be transformed, particularly in coastal areas. Tourism and many other leisure activities will undergo profound changes, and agriculture is already experiencing major challenges, which will continue and intensify. The rise of some new sectors and the decline of existing ones will lead to turbulence in financial markets, generating risks and opportunities

This course will provide a framework for thinking about climate change and its consequences for business. The last two sessions will be given over to student presentations and class discussions: earlier sessions will be a mix of lectures, student presentations and class discussions. After two introductory lectures giving overviews of the science and economics of climate change, the remaining classes will be organized around the themes of **decarbonization** and **adaptation**. To tackle climate change we have to decarbonize the economy, which means reducing the greenhouse gas outputs from electricity supply, transportation, heating space and water in buildings, process heating in industry, and from agriculture. We will discuss what this will mean for these sectors and what options are available. Even if we are successful in decarbonizing, the climate will still change, leading to rising oceans, more extreme storms, and more extreme heat. We will discuss some of the challenges that businesses will face in adapting to these changes.

The twelve sessions will be organized as follows:

## **General Overview of Climate Change and Its Impacts**

1. 3/26/19: Science of climate change: Prof. Jason Smerdon of Earth and Environmental Sciences
2. 3/28/19: Economic impacts of climate change
3. 4/2/19: Sea level rise and adaptation in coastal property markets: lecture & student presentations

## **Decarbonization**

4. 4/4/19: Decarbonization in electricity generation: lecture & discussion of SunEdison and the growth of the solar PV industry

5. 4/9/19: Decarbonization in transportation – EVs & Tesla: lecture and discussion
6. 4/11/19: Decarbonization and Financial Markets: Stranded Assets, Divestment & Green Bonds: lecture and discussion.
7. 4/16/19: Decarbonization in property – Andy Anderson, CEO EnergyWatch and CBS alum

### **Related Topics**

8. 4/18/19: Law Professor Mike Gerrard on the risks of law suits stemming from historic carbon emissions
9. 4/23/19: Carbon tax and Social Cost of Carbon/Infrastructure investment associated with decarbonization & adaptation
10. 4/25/19: Decarbonization in Agriculture & Forestry: lecture and discussion

### **Presentations**

11. 4/30/19: Group presentations
12. 5/2/19: Group presentations

## **Reading.**

### **Session 1 & 2:**

Intergovernmental Panel on Climate Change 5<sup>th</sup> Assessment Report. Technical summary. Available at [www.ipcc.ch](http://www.ipcc.ch)

Trevor Houser, Solomon Hsiang, Robert Kopp and Kate Larsen *The American Climate Prospectus* - report funded by Bloomberg, Paulson and Steyer on impact of climate change on the US economy. [This is probably the best single reading. Read chapters 4 through 11]

Heal, G., and Milner, A. "Uncertainty and Decision-Making in Climate Economics," Review of Environmental Economics and Policy, Vol 8 Issue 1, 2014, pages 120-137.

### **Session 3**

Geoffrey Heal and Marco Tedesco

### **Sessions 4 & 5**

Tesla case study

SunEdison case study

Geoffrey Heal: What would it take to reduce US Greenhouse Gas Emissions 807 by 2050? REEP

Thomas Covert, Michael Greenstone and Christopher Knittel. "Will we ever stop using fossil fuels?" Journal of Economic Perspectives, Vol 30 No 1 Winter 2016 pages 117-138.

McKinsey & Company. *Pathways to a low carbon economy*,  
[http://www.mckinsey.com/client\\_service/sustainability/latest\\_thinking/pathways\\_to\\_a\\_low\\_carbon\\_economy](http://www.mckinsey.com/client_service/sustainability/latest_thinking/pathways_to_a_low_carbon_economy).

G. Heal *Endangered Economies: How the Neglect of Nature Threatens Our Prosperity*. Columbia University Press 2016. Chapters 1-5.

Gernot Wagner and Martin Weitzman (2015) *Climate Shock: The Economic Consequences of a Hotter Planet* Princeton University Press, 2015.

John Heywood et al. "An Action Plan for Cars - The Policies Needed to Reduce U.S. Petroleum Consumption and Greenhouse Gas Emissions." MIT Energy Initiative Report, December 2009, at <https://mitei.mit.edu/system/files/actionplan.pdf>

Henry Lee and Grant Lovellette, Kennedy School Belfer Center Discussion Papers "Will Electric Cars Transform the U.S. Vehicle Market? An Analysis of the Key Determinants." Discussion Paper 2011-08 July 2011

Christopher Knittel "Reducing petroleum consumption from transportation" Journal of Economic Perspectives Winter 2012 Vol 26 No 1 pp 93-118

"Tesla Might Be the Next Model T." Bloomberg at  
<http://www.bloomberg.com/news/articles/2015-08-10/here-s-how-elon-musk-takes-tesla-to-500-000-cars-in-five-years>

## Assessment

Class participation 40%

Final presentation 60%