

# **Environmental Management: Law and Policy**

## **LGST 215/815**

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Classes: Mondays, 3:00 pm to 6:00 pm, JMHH 420

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### **Course Objectives**

1. Understand the role of environmental management in business today, as it relates to corporate strategy, business operations, financial objectives, and social responsibility.
2. Learn how environmental regulation, policy, and laws impact business and how to effectively develop strategies to address them in operations.
3. Focus on real world issues through case study and current news, enabling exposure to how environmental management, law, and policy is being debated, managed, evolving, and creating opportunities in business today.

### **Course Overview**

Before the year 2000, “environmental management” for a business was typically driven by the need to respond to restrictions imposed by environmental regulation. But at the dawn of the new millennium, leading businesses began to change their concept of environmental management to look beyond simply meeting governmental dictates, and to start creating new ways to improve their business by bringing sustainability to their core as a strategic imperative. This seismic shift in view was accompanied by a bottom line emphasis that in some cases revealed sustainability efforts as profit centers.

While previously it was acceptable to leave environmental issues to be addressed almost solely as a matter of regulatory compliance and risk mitigation, in this new paradigm, the need for organization-wide understanding of the laws, policies, and sustainability strategies impacting the company became critical for leaders in almost every business function. Today, to effectively work in senior management, an executive needs to be knowledgeable not only about his or her specific business function but also how his or her business overall will be impacted by laws, governmental policies, corporate sustainability policies, green marketing regulations, industry guidelines or ‘best practices’, environmental metrics, and how best to report their business units success and challenges.

This course will focus on environmental management within this new paradigm. It is meant to be introductory, yet provide a comprehensive overview of emerging approaches to environmental management, as well as the environmental laws and policies impacting business. While it will cover many of the principal philosophical issues in environmental management today, the class will be integrative and practical in its application of environmental management, tactics, strategies, and tools.

## Organization of the Course

The course is broken into two distinct pieces which are strongly interconnected. We will begin by learning about different *Approaches to Environmental Management*. The subject matter in this part of the course will cover a wide range of environmental issues that impact business. We will discuss environmental management systems and strategy, measuring a company's or product's environmental footprint, sustainability measurement/metrics, and environmental marketing. The main emphasis will be on understanding how managers need to incorporate sustainable thinking into their business strategy, planning, and execution.

We will then move on to the second major focus which is *Perspectives in Environmental Law and Policy*. Here we will dive into the concepts of governmental regulation, policy and laws. We will begin by studying the classic Tragedy of the Commons and the justification for collective action, and review the different tools through which environmental laws are implemented. We will next investigate specific laws/regulations and policies for managing air, water, waste, and toxics; and explore economic incentives, markets, and other "next generation" regulatory policies which can protect the environment more efficiently.

Additionally, time will be spent in two key areas impacting business today. We will review emerging issues in energy policy and their relationship to business operations and strategy. Our final subject area will be the growing areas of eco-entrepreneurship and cleantech business.

The time spent in class will be integral to the learning experience. Each class will begin with a discussion of current environmental news and events. Particular emphasis will be given to topics that deal with environmental policy, laws, and innovative corporate strategies within the sustainability space. As well, lectures will include interactive discussions integrating digital media and online resources. Finally, most classes will include case analyses that complement the lecture topic.

## Course Plan

Meeting Date	Focus Area	Lecturer
1/14/12	Intro- Environmental Management Strategy, Policy, and Law	Survis
	<b>Part I: Approaches to Environmental Management</b>	
1/21/12	NO CLASS- MARTIN LUTHER KING DAY	
1/28/12	Environmental Management- Systems & Strategy	Survis
2/4/12	An Organization's Environmental Footprint	Survis
2/11/12	Environmental Metrics, Benchmarking, and Reporting	Survis
2/18/12	Green Marketing & Regulation	Survis
2/25/12	The Green Marketing Mix	Survis
3/4/12	NO CLASS- SPRING BREAK	Survis
	<b>Part II: Perspectives on Environmental Law &amp; Policy</b>	
3/11/12	Environmental Law & Policy	Howland
3/18/12	Air and Water Pollution Regulation (1 <sup>st</sup> night Passover)	Howland
3/25/12	Regulation of Toxics and Waste	Howland

4/1/12	Energy: Policy & Business Strategies	Survis
4/8/12	Eco- Entrepreneurship and Cleantech Business	Survis
4/15/12	Project Presentation	Survis
4/22/12	Project Presentation	Survis

## **Course Requirements**

*Class Participation:* The success of our class time is dependent on a vibrant, participatory group. The weighting on your course grade reflects this importance. Emphasis in participation grading will be on consistent, meaningful contribution to the class, not on amount of talking time—it is quality over quantity. As well, on a weekly basis you are asked to contribute to discussions on our Facebook page ([www.Facebook.com/whartonenvironment](http://www.Facebook.com/whartonenvironment) ) and/or participate on our blog ([www.whartonenvironmentalmanagement.com](http://www.whartonenvironmentalmanagement.com) PW:whartongreen).

*Readings:* It is expected that all required readings and will be completed prior to attending class. Readings that are required will be denoted with an asterisk (\*). Additional readings may be listed for a given topic and are not required. They are provided in the hope that they may spark additional exploration and add to the class discussion.

*Cases:* Most topics will have associated cases listed. These cases are provided to bring the subject alive and challenge the students to broaden their understanding of a topic by encountering real world issues with all of their complexity. Some cases will be for individual write-up (no more than 2-3 pages), others will be studied by a group for write-up (up to 10 pages), and a few will be only for class discussion. Guidelines for case write-ups will be provided in a separate document.

*Final Capstone Project:* The capstone project of the course will be a group presentation and paper on how a single business manages all of the aspects of environmental management covered in the class. The analysis should be comprehensive and include detailed research of CSR reports, news, and primary documents. The goal is to integrate the knowledge learned in class, readings, and cases and present a comprehensive picture of a major corporation’s environmental management strategies and actions. The papers will be no longer than 15 pages. Full details of the paper requirements will be provided separately.

## **Assessment**

### **Weighting**

Class Participation	25%
Group Case Analyses	10%
Individual Case Analyses	30%
Final Capstone Project	35%

### **Grading**

A+	97-100
A	93-96
A-	90-92
B+	87-89
B	84-86
B-	80-83
C+	77-79
C	74-76
C-	70-73

Below these scores...let's talk!

### **Books for the Class:**

Hoffman, Andrew J. *Competitive Environmental Strategy: A Guide to the Changing Business Landscape*, 2000. (Amazon \$42.61 (free shipping Prime))

McDonough, William and Braungart, Michael. *Cradle to Cradle: Remaking the Way We Make Things*, 2002- (Amazon \$16.77 (free shipping Prime), Kindle available \$12.99)

Ottman, Jacquelyn. *The New Rules of Green Marketing: Strategies, Tools, and Inspiration for Sustainable Branding*, 2011 (Amazon \$14.02 (free shipping Prime), Kindle available \$8.79)

Russo, Michael V. *Environmental Management: Readings and Cases, 2nd Edition*, 2008. (Amazon \$53.40 (free shipping Prime))

Salzman, James and Thompson, Barton H. Jr. *Environmental Law and Policy, 3d (Concepts and Insights)*, 2010- (Amazon \$39.60 (free shipping Prime), Kindle available \$31.20)

There is a study.net pack of cases and several readings

## **Curriculum and Assignments**

**NOTE: \* denotes required reading**

### ***1/28- Focus Concept I: Environmental Management- Strategy & Systems***

Environmental management has evolved from simply developing systems to manage environmental risks to encompassing the broader issue of environmental strategy. Organizations are required to study the full spectrum of environmental issues impacting their ability to compete. Many organizations understand that a competitive advantage may be gained by crafting environmental strategies and leveraging them to establish strategic strongholds.

#### Areas of Inquiry

- What is the difference between environmental management and environmental strategy?
- What are environmental management systems (EMS)?
- How is ISO 14001 used as the basis for an EMS?
- Who are the stakeholders and what are the drivers of environmental strategy?
- What are the organizational issues impacting environmental strategy?
- How can a corporation achieve competitive advantage through its environmental strategy?

**CASE FOR CLASS DISCUSSION:** *Cascade's Environmental Management Model in 2006, At the Crossroads*, by Pierre Batellier and Emmanuel Raufflet, **Source:** Russo pgs 631-646.

\*Hoffman, 3-125

\*Russo, Chapter 27, *Environmental Management Systems and Eco-Control*, 417-453

\*Russo, Chapter 1, *Beyond Greening: Strategies for a Sustainable World*, 3-14

\*Sustainability Nears a Tipping Point, MIT Sloan Management Review Staff and the Boston Consulting Group, *MIT Sloan Management Review*, Research Report, Winter 2012.

\*Green & Competitive: Ending the Stalemate, Michael Porter & Claas Van der Linde, *Harvard Business Review*, 73/5 (September/October 1995) : 122-133.

\*Competitive Environmental Strategies : When Does it Pay to be Green? Renato J. Orsato, *California Management review*, vol. 48, n°2 (Winter 2006) : 127-143

Corporate Greening through ISO 14001: A Rational Myth?, Olivier Boiral, *Organization Science*, Vol. 18, No. 1, January–February 2007, pp. 127–146

Sustaining America, John C. Dernbach, Environmental Law Institute, The Environmental Forum, Environmental Law Institute, May/June 2012

## 2/4- Focus Concept II: An Organization's Environmental Footprint

Every organization has an environmental footprint. The ability for a business to perform a base line analysis of its impact both "upstream" and "downstream" is critical in developing an environmental strategy. Multiple approaches are available to quantify environmental impact and should be evaluated as tools to deliver meaningful progress against sustainability goals.

### Areas of Inquiry

- What are the key components of a Life Cycle Assessment (LCA)?
- Why organizations begin assessing their footprint with an LCA?
- What is the "cradle-to-cradle" perspective?
- How is Life Cycle Management (LCM) deployed in organizations?
- How do organizations utilize LCA to drive sustainable strategy?
- What is the triple bottom line?
- Can environmental accounting provide a meaningful approach for organizations to better understand their footprint?

**INDIVIDUAL CASE WRITE-UP:** *Cradle-to-Cradle Design at Herman Miller: Moving Toward Environmental Sustainability* by Deishin Lee, Lionel Bony, Source: Harvard Business School.

\*Mcdonough & Braungart, 3-117

\*Russo, Chapter 23, *An Intro to Environmental Accounting as a Business Tool*, 369-384

\*Russo, Chapter 24, *Note on Lifecycle Analysis*, 385-394

\*Russo, Chapter 4, *The Triple Bottom Line: Sustainability's Accountants*, 49-66

Life Cycle Management: How business uses it to decrease footprint, create opportunities and make value chains more sustainable, UNEP/SETAC 2009. **(Highly Recommended)**

The Triple Bottom Line: What Is It and How Does It Work? Timothy F. Slaper, Ph.D, *Indiana Business Review*, Spring 2011, p4-8

Sustainability as a Business Operating System, William Blackburn, Corporate Environmental Strategy, International Journal for Sustainable Business, Vol 12, Issue 2 (February 2005)

## 2/11- Focus Concept III: Environmental Metrics, Benchmarks, and Reporting

Business lives by numbers. So does environmental management. From basic tracking metrics to sophisticated systems for studying customized aspects of a business, the measurement of environmental performance is critical. Yet, this is a relatively new space and there are few agreed upon guidelines or benchmarks. Equally important is how a company decides the best way to report its progress in meeting environmental goals.

### Areas of Inquiry

- What are the basic metrics for measuring environmental impact?
- How are metrics incorporated into an EMS?
- Why is benchmarking sustainability metrics so difficult?
- What is the role of eco-certifications?
- What is the ROI of sustainability?
- What standards exist for measuring and reporting environmental business?
- How does the need to balance transparency with maintaining proprietary business information impact Corporate Social Responsibility (CSR) reporting?
- What are the benefits of the concept of “radical transparency”?

**CASE FOR CLASS DISCUSSION:** *WalMart's Sustainability Strategy (A)* by Erica Plambeck, Lyn Denend, Source: Stanford Graduate School of Business.

\*Russo, Chapter 15, *Transparency, Openness, and Accountability*, 228-242

\*Briefing: Sustainability Reporting, Ethical Corporation, September 2012, pg. 11-21

\*Russo, Chapter 16, *A Primer on the Global Reporting Initiative*, 243-261

How Radical Sustainability Can Save Your Business, Raphael Bemporad AND Jefferey Holander, *FastCompany.Com*

The Metrics Navigator, Global Environmental Management Initiative, March, 2007

Finding Common Ground on Metrics that Matter, Soyka and Bateman, Feb. 2012

Walmart Sustainability Index, Version 1.0.

### **2/18- Focus Concept IV: Green Marketing and Regulation**

Whether it has been called green, sustainable, environmental, or ecological marketing, the practice of marketing a product’s environmentally beneficial attributes has evolved over the decades. It is important to understand how green marketing has moved into the mainstream and the reasons why it has both succeeded and failed. The definition of the target green consumer is critical to success in the market.

For years, meaningless environmental claims have been made by businesses hoping to position their products as “earth friendly.” Recent FTC actions have made it clear that a thorough understanding of how to promote a product’s green attributes is critical. As well, companies with an international presence face a multitude of additional regulations that countries and regions have developed to control green marketing.

### Areas of Inquiry

- How did green marketing move from niche to mainstream?
- What have been the failures of green marketing?
- Who is the green consumer?
- How do green consumers make purchase decisions?
- What are the FTC Green Guides?
- What are the FTC definitions of key green marketing terms?
- How are certifications and seals regulated?
- What are some of the recent actions brought by the FTC?
- What are some international rules for green marketing?

**INDIVIDUAL CASE WRITE-UP:** *Starkist (A)* by Richard H.K. Vietor, Forest Reinhardt, Peggy Duxbury, Source: Harvard Business School.

\*Ottman, 1-55

\*Russo, Chapter 19, *Avoiding Green Marketing Myopia*, 296-314

\*Mainstream Green: Moving sustainability from niche to normal Graceann Bennett & Freya Williams, Ogilvy & Mather: *The Red Papers*, April 2011.

\*Environmental Claims: Summary of the Green Guides, Federal Trade Commission, Oct, 2012.

\*Green Marketing is Over: Let's Move On, Makower, Joel. *Greenbiz.com* , 16 May 2011.

Russo, Chapter 18, *Understanding the LOHAS Market Report*, 289-295

## **2/25- Focus Concept V: The Green Marketing Mix**

Traditional marketing's four P's are equally relevant to the study of green marketing. In fact, when analyzing individual environmental product classes or markets, it is critical to understand how each of these elements has contributed to the success or failure of green marketing efforts. While it is important to incorporate green marketing into the overall marketing mix, there is also a need to understand the unique considerations and issues inherent in environmental marketing.

### Areas of Inquiry

- Pricing
  - What pricing strategies are available for green products?
  - How much will consumers pay for green products?
  - How do eco-labels impact green product pricing?



- Product
  - What is sustainable design?
  - What is sustainable packaging?
  - How does life cycle analysis impact product design?
  - How does sustainable design create competitive advantage?
- Promotion
  - Why has some green advertising succeeded while others have failed?
  - How does digital marketing fit into a green marketing strategy?
  - What is “Green Washing”?
  - How can business leverage NGO Partnerships for success?
  - How does eco-labeling impact consumer choice?
  - How are green certifications leveraged to benefit product marketing?
- Place (logistics/distribution)
  - How does a supply chain impact sustainability?
  - Does “local” improve environmental claims?
  - What are the elements of green logistics?

**GROUP CASE WRITE-UP:** FIJI Water and Corporate Social Responsibility - Green Makeover or "Greenwashing"? by James McMaster, Jan Nowak, Source: Harvard Business School.

\*Ottman, 56-87, 107-181

\*The Sins of Greenwashing: Home and Family Edition 2010. Terrachoice Environmental Marketing Inc., 2010

\*Greening the Supply Chain: Best Practices & Future Trends, Knowledge@Wharton and IGEL, 2012

Russo, Chapter 14, Environmental Product Differentiation: Implications for Corporate Strategy, 205-224

Going Green to Be Seen: Status, Reputation, and Conspicuous Conservation. Griskevicius, Vladas; Tybur, Joshua M.; Van den Bergh, Bram. *Journal of Personality & Social Psychology*, Mar2010, Vol. 98 Issue 3, p392-404

Why Sustainability Is Now the Key Driver of Innovation, Ram Nidumolu, C K Prahalad, M R Rangaswam, *Harvard Business Review*, Sept 2009, Vol. 87, p57-64

Framework for Responsible Environmental Marketing Communications, ICC Commission on Marketing and Advertising, January 2010

The paradoxes of green logistics, Rodrigue, Jean-Paul, Brian Slack, and Claude Comtois (2001), in *World Conference on Transport Research (WCTR).* Seoul.

### 3/11- Focus Concept VI: Bases of Environmental Law and Policy

Since its birth in the 1970's, environmental law and policy has evolved significantly. The basis of the U.S. environmental law, policy, and regulation has been influenced by multiple philosophical approaches and public response to environmental flash points. To understand how business needs to incorporate environmental law and regulations into its operations, it is critical to understand both the conceptual underpinnings and structure of U. S. environmental policy.

#### Areas of Inquiry

- What is “The Tragedy of the Commons” and how does collective action lead to its destruction?
- Conceptual underpinnings
  - Why is environmental law needed?
  - Can free markets adequately address environmental issues?
  - What are some of the different philosophical bases for environmental law?
  - What does the history of Thalidomide tell us about current issues in environmental law?
  - Why are new facilities often more tightly regulated than older facilities, and what are the implications for business planning?
- The structure of the principal U.S. environmental laws
  - How are the different philosophical bases for environmental law reflected in the actual regulations and liability rules under which businesses operate today?
  - What is “Environmental Federalism”: the different roles that federal, state and local governments play in creating and implementing environmental law and policy?
  - What are the principal policy tools of environmental law?
  - What is the role of judicial decision making in environmental law?
- What is the impact of regulatory uncertainty on business decision making?
- What is “community based” environmental protection?
- What is the role of “sustainability” in environmental law enforcement?

\*Russo, Chapter 5, *The Tragedy of the Commons*, 69-78

\*Russo, Chapter 6, *EPA and the Evolution of Federal Regulation*

\*Salzman and Thompson, Chapters 1-3, 1-79

\*Hoffman, U.S. Environmental Laws, 243-248

\*Environmental Policy: The Next Generation, Donald F. Kettl, Policy Brief #37, October 1998 (The Brookings Institution).

\* Rechtshaffen, Ch. 1, An Overview of Environmental Federalism, *Reinventing Environmental Enforcement & the State/Federal Relationship*, Environmental Law Institute (2003), pp. 13 – 44,

\* Myths of the Reinvented State, Rena Steinzor, 29 Cap. U.L. Rev. 223 (2001)

Do Voluntary Programs Work?, Richard MacLean, The Environmental Forum, Environmental Law Institute, March/April 2008, pp. 24-28

### **3/18- Focus Concept VII: Air and Water Pollution Regulation**

The expectation of clean air and clean water seems to be the most basic of human rights. Yet, until the 1970's neither were comprehensively regulated by the U.S. government. In over 40 years, both the Clean Air and Water Acts have made significant improvements to air and water quality. However, over time, these laws have evolved and challenged corporations to remain in compliance across the spectrum of business operations.

#### Areas of Inquiry

- What are the basic components of the federal Clean Air and Clean Water Acts (CAA & CWA) that directly impact businesses?
  - What are the role of airsheds and watersheds in air and water pollution law?
  - How, and why, are “conventional,” and “toxic” or “hazardous” chemicals treated differently under the CWA and CAA?
  - The “technology forcing” provisions of the CWA and CAA: What are they; are they effective; do they create business opportunities?
  - How do sector-wide new source construction regulations, and individual source permits, apply to businesses today under the CWA and the CAA?
  - What is the legal and practical significance of a “point source” under the CWA?
  - What is the impact of Total Maximum Daily Load requirements under the CWA?
- Reduce, reuse, recycle under the CAA and the CWA: implementing the Environmental Management tools discussed in the first half of the seminar
  - What are the implications of these principles, in this order, for businesses today?
  - Are there business advantages to going “beyond compliance”?
  - Where are the profit opportunities?
- Climate Change:
  - What is the science; what are the impacts and legal responses?
  - What is difference between “mitigation” and “adaptation” in responding to climate change?

Air:

\* Salzman and Thompson, Chapters 4 & 5, 87-145

\* U.S. Emissions Market Resets with New Clean Air Rules, Paul Tesoriero, Philip Ammirato, and Peter Vail, Evolution Markets Executive Brief, Edition 42, July 13, 2011,

\* *Summit Petroleum Corporation v. EPA*, 6th Cir., Nos. 09-4348, 10-4572, 8/7/12

Turn Down the Heat: Why a 4°C Warmer World Must be Avoided, Executive Summary: A Report for the World Bank by the Potsdam Institute for Climate Impact Research, November 2012,

112(r) General Duty Clause Fact Sheet,

Water:

\* Salzman and Thompson, Chapter 5, 146-174

\* Nutrient Credit Trading for the Chesapeake Bay: An Economic Study, May, 2012,

\* Financing Stormwater Retrofits in Philadelphia and Beyond, February 2012, Alisa Valderrama & Larry Levine, Natural Resources Defense Council,

Water Permitting 101, EPA Office of Wastewater Management - Water Permitting,

### ***3/25- Focus Concept VIII: Regulation of Toxics and Waste***

Business has a long history of releasing toxics and waste into the environment. The effect of these actions has raised public sensitivity to these issues and resulted in regulation to manage their impact. Business professionals must understand how to incorporate regulatory adherence in the release of toxics and management of waste into operations.

#### Areas of Inquiry

- What are the principal elements of the Toxic Substances Control Act (TSCA), the Resource Conservation and Recovery Act (RCRA), and the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA, or Superfund) that directly affect businesses?
- How do the principals of strict, and joint and several, liability under CERCLA impact business decision making?
- What are the implications of RCRA and CERCLA for encouraging development on Brownfields vs. Greenfields?
- Reduce, reuse, and recycle: what are the implications of these principles, in this order, for businesses today under RCRA & CERCLA?
- What are the implications of the European REACH requirements for U.S. businesses?

**CASE FOR CLASS DISCUSSION:** *Allied-Signal: Managing the Hazardous Waste Liability Risk* by Richard H.K. Vietor, Edward Prewitt, Source: Harvard Business School.

\*Salzman and Thompson, Chapters 7-8, 175-236

\* Project XL Site-Specific Rulemaking for the Ortho-McNeil Pharmaceutical, Inc. Facility in Spring House, Pennsylvania, Project XL Site-Specific Rulemaking, 66 Fed. Reg. No. 142, pp. 38396-38404 (July 24, 2001),

## RE-Powering America's Land Potential Advantages of Reusing Potentially Contaminated Land for Renewable Energy

Will Superfund Rise Again?, Rena Steinzor, The Environmental Forum, Environmental Law Institute, November/December 2006, pp. 28 - 34

### **4/1- Focus Concept IX: Energy: Policy and Business Strategies**

The U.S. government energy policy was an important issue in the last presidential election. Yet, the U.S. continues to lack a comprehensive energy policy. Energy prices are a key component of an organization's cost structure. Corporations need to understand future energy pricing to incorporate it into their business planning and strategy development. As well, each business must understand how to evaluate the "real costs" of fossil fuels and renewable energy.

#### Areas of Inquiry

- How is energy production and use regulated today?
- What are the impacts of energy production and use on climate change?
- How does our energy infrastructure impact business?
- What are the outlooks for, environmental impacts of, different energy sources in the coming decade?
  - Unconventional fossil fuels (Marcellus shale, coal tar sands, etc.)?
  - Nuclear resurgence?
  - Renewables?
- What are the opportunities in energy efficiency?
- What are the advantages of distributed generation?
- Government's role:
  - What is the role of government energy efficiency standards?
  - What government energy production incentives exist today for fossil fuels, renewable resources, and nuclear power?
- Does "clean coal" exist?

**INDIVIDUAL CASE WRITE-UP:** *REI's Solar Energy Program* by David W. Hoyt, Stefan Reichelstein, Source: Stanford Graduate School of Business.

\*Salzman and Thompson, Chapter 11, 302-315

\*How a Broken Energy Policy Hurts Business, Vincent Ryan, CFO.com, September, 2012

\*U.S. Energy Regulations, [www.wikiinvest.com](http://www.wikiinvest.com)

\*Sustainable Energy for All: The Business Opportunity, United Nations Global Compact/Accenture, 2012

\*Federal Incentives/Policies for Renewable Energy and Efficiency, [www.desireusa.org](http://www.desireusa.org)

\*Government Incentives to Promote Renewable Energy, Wang Mingyuan, *Temple Journal of Science Technology and Environmental Law*. L. 24 (2005): 355.

Burning Love, Elizabeth Kolbert, *New Yorker Magazine*, December 5, 2011

Energy and Business, Deloitte Debates,

Aging power grid on overload as U.S. demands more electricity, Ashley Halsey III, *Washington Post*, 8/1/12

Shale Gas: A Global Perspective, KPMG, Dec, 2011

#### **4/8- Focus Concept X: Eco-Entrepreneurship and Cleantech Business**

The evolution of environmental improvement that focused solely on governmental regulation to one that embraced entrepreneurial solutions has been significant in the last 10 years. Eco-entrepreneurship has been an engine for uncovering major opportunities to reduce environmental impact. In particular, cleantech businesses have been the focus of venture firms because of the leading edge deployment of technology and the hoped for high returns on investment.

##### Areas of Inquiry

- What environmental issues have cleantech businesses addressed?
- How do government tax incentives support cleantech business?
- What is the current venture environment for cleantech businesses?
- What are some successful cleantech business models?
- What are the challenges of cleantech businesses?
- How do EPA regulations create opportunities in cleantech?
- Which Eco-Entrepreneurs have made a difference?
- Which countries provide the best opportunities for cleantech business?

**CASE FOR CLASS DISCUSSION:** *Aquion Energy* by Thomas R. Eisenmann, David Kiron , Source: Harvard Business School.

\*Russo, Chapter 17, *The Eco-Advantage*, pg. 262-288

\*Ottman, 88-106

\*Cleantech matters: Global cleantech insights and trends report, Ernst & Young, 2012

\*Mobilizing for a Resource Revolution, Richard Dobbs, Jeremy Oppenheim, and Fraser Thompson, *McKinsey Quarterly*, January, 2012

Sustainability Doesn't Make Money without a Solid Business Plan, FastCompany.com

New sources, new uses Raising Cleantech capital in a changing environment, Deloitte, 2012