

**Universität Basel**  
**Summer School for Law, Economics & Public Policy**

**Professor John Wargo**  
**“Environmental Law and Public Policy:  
 Risk & Regulation in the Global Food Sector”**

*August 6-16, 2018. 9:45-12:15 h*

**Overview:**

This graduate seminar will explore key trends and challenges in the global food sector related to environmental quality and human health. We will focus on corporate innovation, government regulation, and third-party certification programs.

Comparisons will be made among Swiss, EU, and US laws, regulations, and corporate policies. Students will examine corporate strategies in the food sector, differing legal standards among nations, changing consumer preferences, public subsidies, trade barriers, vertical integration of supply chains, branding trends, and organic certification standards.

Students will learn to evaluate the effectiveness of environmental law and policy, and to judge the quality and uncertainty of scientific evidence used to claim that a risk is significant. Each topic will explore how environmental and health risks are assessed, the current legal and policy context, and alternative government and corporate strategies that might encourage healthier and more environmentally protective food supplies. The following challenges will be considered:

1. *Overview: Risk & Regulation in the Global Food Sector*
2. *Agricultural Chemicals: Risk Assessment, Regulation*
3. *International Regulation & Certification: Palm Oil Case*
4. *Risk-Benefit Balancing and Standard Setting in the Plastics Industry*
5. *Regulation of Pharmaceuticals in the Livestock Sector*
6. *Genetically Engineered Foods: Regional & National Regulations as Trade Barriers*
7. *Private Sector Self-Governance: Comparative Food Certification Programs*
8. *Course Conclusions & Challenge Presentations*

*For each of these 8 cases, students will be challenged to consider and evaluate the following:*

1. *Law & Regulation: Current Intent & Effectiveness*
2. *Economic Valuation of Benefits & Externalities*
3. *Scientific Evaluation of Environmental & Health Risks*
4. *Ethical Dimensions of Each Problem*
5. *Private and Public Sector Management Options*

***Readings: Only Numbered Readings are Required!***

Readings are assigned for each session. Readings are now available on the course Google Drive, at no cost.

[https://drive.google.com/drive/folders/1hMz4S8cXzDIXY\\_MWPNemZfd\\_PLL-GMnD?usp=sharing](https://drive.google.com/drive/folders/1hMz4S8cXzDIXY_MWPNemZfd_PLL-GMnD?usp=sharing).

*Please complete the readings before the course begins!*

### **Course Grading:**

50% Discussion of Readings & Class Participation

50% Final Take Home Exam

### **Course Schedule:**

#### **Aug 6: Course Overview: Environmental Law & Public Policy**

##### **A. Readings**

*\*\*Wargo. The Legacy of Nuclear Testing. Green Intelligence. Yale Press. Ch 1-4.*

##### **B. Session Questions**

1. *What types of national and international law and policy have been used to protect the environment and human health?*
2. *What public and private sector policies have been applied in the food sector?*
3. *How is air and water protection related to the quality of the international food supply?*
4. *How are risks and benefits of technologies evaluated and what role do they play in regulation?*
5. *How is scientific information created and used to regulate food and agriculture?*
6. *What role does secrecy play in the management of hazardous technologies?*
7. *How has the anti-nuclear movement been dependent upon environmental science?*

#### **Aug 7: Pesticide, Risk, & Regulation**

##### **A. Readings:**

1. *Wargo. What is Acceptable Risk? Green Intelligence. Yale Press*
2. *Goldberg & Holden. Codex Alimentarius & Food Labeling. Harvard.*
3. *Zhang et al. 2015. Agric Pesticide Use and food safety: California's Model. J. Int. Agric.*
4. *Curl 2003. Organophosphate Pesticide Exposure....Diets. Env. Health Persp. 111:3.*

##### **B. Session Questions**

1. *What are the primary benefits of pesticide use?*
2. *What are the primary dangers of pesticides, and how do these risks vary in the world?*
3. *What types of regulations are most often adopted to manage pesticide risks?*
4. *How do pesticide regulations vary among nations?*
5. *When do these differences become trade barriers?*
6. *How are humans exposed to pesticides, and which route is most important?*
7. *What population groups are more susceptible to health loss from pesticides?*
8. *Does this variance lead to the export/import of risky products?*
9. *When products are banned in one country, should they be banned in others, or globally?*

### **Aug 8: International Law Regulating Palm Oil**

#### **A. Readings**

1. *Cramb & McCarthy. 2016. Introduction. The Palm Oil Complex. NUS Press.*
2. *Pye. 2016. Deconstructing the Roundtable on Sustainable Palm Oil. Ibid.*
3. *RSPO Princip & Crit Palm Oil 2013*
4. *Palm Investor Review. WWF*  
*Greenpeace: Indonesia Under Fire*  
*WWF Palm 2012*  
*Palm Oil Sat Fat & CVD*  
*Chisholm\_et\_al-2016-Conservation\_Biology*

#### **B. Session Questions**

1. *What are the environmental and health consequences of palm oil production and consumption?*
2. *What are the social and economic consequences?*
3. *How have large producers changed their behavior in response to public criticism?*
4. *Is it possible to trace the supply chain of palm oil from producers to consumers?*
5. *Why do tropical forests burn, and what are the human health implications?*
6. *ASEAN nations have adopted a treaty that prohibits trans-national air pollution including forest fire smoke. What are the key provisions of this treaty, how effective has it been, and why?*
7. *How is the palm sector reliant on immigrant labor, and how are their human rights abused?*

#### **C. Class Challenge**

*Major palm producers and processors have adopted their own policies to convince consumers and investors that their production and use of palm is “sustainable”. (Unilever, Nestle, Wilmar, GoldenAgri). Critique the Roundtable on Sustainable Palm certification program. Identify its strengths and weaknesses. What alternative certification program do you propose?*

## **Aug 9: Plastics: Energy, Waste, Health, & Environment**

### **A. Readings:**

1. Wargo. 2010. *Quiet Revolution in Plastics, Green Intelligence*. Yale Press.
2. *Phthalates & Diet Food Nano Overview*, 2016
3. *Phthalates in China's Foods*. 2012. *J Ag. Food Chem*.
4. *Food Coatings Nanotechnology*, Echegoyen
5. *Food Nano Overview 2016*.

### **B. Session Questions**

1. *What role do plastics play in the global food sector?*
2. *What energy savings occur due to plastic food packaging?*
3. *What types of plastic are used in the food sector and what is their lifecycle?*
4. *What environmental and health effects do plastics cause?*
5. *What factors influence effective recovery/recycling efforts?*
6. *What are the worker risks from recycling in the US vs China?*
7. *What private and public sector recovery policies have been effective and why?*
8. *What are the implications of the using nanotechnology for polymer food packaging?*
9. *What policies or incentives might induce producers to be responsible for wastes & recycling?*
10. *What recent innovations in smart packaging could reduce plastic wastes; how and why?*
11. *Could embedded electronic codes track plastic ingredients?*
12. *What is the state of the field of bioplastics that are degradable into harmless products?*

### **C. Class Challenge: Plastics & Water**

*The bottled water industry is among the fastest growing food sectors. The content of polymers is poorly regulated. Bottled water has important and indisputable health benefits, yet it has produced a global condition of energy expenditure and waste. What legal or voluntary certification strategies might governments and manufacturers adopt to encourage more responsible behavior?*

## **Aug 13: Pharmaceutical Regulation in Livestock Production**

### **A. Session Questions:**

1. *What is global dietary convergence & why is it a concern?*
2. *What human health effects result from a diet high in animal products?*
3. *Should governments act to reduce diet-related illnesses & their social costs?*
4. *What human health risks are associated with the drug resistance microbes in foods?*
5. *What is the prevalence of food-borne diseases?*
6. *What dietary patterns are associated with food-borne diseases?*
7. *How are pharmaceuticals employed in livestock production, and what are their purposes?*
8. *Which drugs are used, and are they also prescribed to treat human illnesses?*
9. *What factors govern the likelihood that microbial resistance will develop following administration of pharmaceuticals to animals?*
10. *What types of corporate and government policies would be required to reduce use of drugs for livestock production that are medically important for humans?*

### **B. Readings**

1. *European regulation of antibiotics in animals.*
2. *CDC 2013 Antibiotic Resistance.*
3. *Denmark Pharma Use Livestock 2014.*
4. *Sapkota. What Do We Feed to Food Production Animals?*  
*Flynn. FDA: Treading the Path of Least Resistance.*  
*Silbergeld. Arsenic in Animal Feed.*  
*Pharma Animal FDA 2016*

### **C. Class Challenge: Reducing Microbial Resistance**

Routing administration to of pharmaceuticals to livestock creates two significant problems. The first is widespread contamination of water supplies, landscapes, and human tissues via the food chain. The second problem is that low level presence of pharmaceutical residues creates an environment highly supporting evolution of resistant strains of bacteria. The US Food and Drug Administration has done little to diminish the use of drugs, and some are hormonally active and promote rapid growth and development of livestock. Three major stakeholders include drug manufacturers, farmers, food processors, retail markets, and

consumers, in addition to government regulatory bodies. How might these parties cooperate to reduce pharmaceutical use of in livestock production? What incentives and types of regulation do you recommend?

#### **Aug 14: Genetically Modified Foods: Benefits and Risks**

##### **A. Session Readings**

1. *Nobel Laureates GMO's 2016.pdf*
2. *AAAS Board GMO Foods 2012.pdf*
3. *Benbrook Weeds 2012.pdf*
- EU Legislation on GMOs.pdf*
- Norway Reg GMO's 2015.pdf*
- Vermont Act 120 2016 GMO Labelling.pdf*
- CA Prop 37 Debate.pdf*
- CFS Enlist Duo Legal Overview & Critique.pdf*
- Enogen Approval NYTimes 2011.pdf*
- Enlist Duo US Cong Challenge 2016.pdf*
- Vandana Shiva's Crusade .pdf*
- Food-Feed-Fuel Competition GMO's 2011.pdf*

##### **B. Session Questions**

1. *What is the scale of adoption of GM seed technologies, for which crops, and where?*
2. *How concentrated is the industry; trends in mergers & acquisitions?*
3. *What are the benefits of genetically modified plants for food production?*
4. *What are the environmental and health threats?*
5. *What explains the national variation in regulation of GMO's?*
6. *What are the possible regulatory policies to control GMO risks?*
7. *Why has labeling of GMO's become a popular policy?*
8. *Why have food firms in the US begun to label products with GMO's voluntarily?*
9. *Is it possible to segregate GM from conventional ingredients?*
10. *What are the strengths and limitations of labeling as a policy to manage risk?*
11. *What is the relationship between GM seeds and pesticides?*
12. *Have GM products resulted in diminished pesticide use?*

##### **C. Class Challenges**

1. *Consider the Enlist Duo history. What problems do you find to be associated with GM technologies – they may be environmental, health, social, economic, abusive or discriminatory?*

*What suite of legal strategies do you propose to manage the problems you feel to be important? How should intellectual property rights to genetically altered products be managed?*

*2. Food labeling requirements are the primary legal strategy used by most governments to encourage healthy consumption patterns. What are the strengths and limits of labeling as a method to educate consumers and encourage healthy dietary patterns? What else should be done by corporations and governments to encourage healthier diets?*

### **Aug 15: Energy & Climate Change**

#### **A. Session Readings:**

1. *\*\*Parfitt et al. 2010. Food waste within food supply chains – to 2050.*
2. *\*\*Cuellar & Webber. 2010. Wasted Food, Wasted Energy. EST 44.*
3. *\*\*FAO. 2013. Food Wastage.*
4. *Ventak. 2011. Climate Change & Food Waste in US. Int J Food System Dynamics. 2 (4).*
5. *Jaya. 2010. Waste materials from meat, poultry & fish. J Food Sci Tech.*

#### **B. Session Questions:**

1. *Which foods have the highest energy input/caloric output ratios?*
2. *How are dietary patterns related to climate change?*
3. *What foods require the most and least energy to produce, and why?*
4. *What dietary patterns would be the most energy efficient, and why?*
5. *What government policies might encourage a more energy efficient diet?*
6. *What corporate policies might encourage a more efficient diet?*

#### **C. Class Challenge**

*Imagine that your president has asked you to develop a plan to reduce Switzerland's contribution to climate change from agriculture and dietary intake.*

*What combination of regulation, education, tax incentives, subsidies, labeling, and advertising would you rely upon?*

*What would you suggest be done to encourage your nation to adopt healthy dietary practices that also would reduce the expenditure of energy and diminish the influence of agriculture on climate?*

**Aug 16: Food Certification or Regulation?****A. Session Readings:**

1. FIBL: Org Agric 2016
2. US Organic Standards 2012
3. Global Food Certification
4. E.U. Food Certification Schemes
5. Thai Organic Consumer Trust
6. China Food Certification Programs

**B. Session Questions:**

1. *What institutional forms exist to certify food (government, corporate, NGO, etc.)?*
2. *What are the primary elements of the EU, US, and Swiss organic food standards?*
3. *How does regulation differ from "certification"?*
4. *How should we judge the effectiveness of these standards; what criteria should we use?*
5. *Do organic food certification programs vary significantly among nations?*
6. *If yes, what might be done to protect the global food supply?*
7. *What advantages does certification provide to food producers, processors, retailers, and consumers?*
8. *Why do US and European cultural attitudes toward responsible food differ so much? Provide examples of contrasting legal decisions to manage food.*

**C. Class Certification Challenge**

*All of the challenges considered in the course demonstrate the potential to increase the benefits of the global food supply, while reducing its negative health and environmental effects. Design a food certification program that will address one or more of the problems considered in the course, or of special concern to your team. Address 5 of the following issues:*

1. *Mission*
2. *Public, Private, or NGO Sector Origin & Suggested Membership?*
3. *Focus by Food? Beef, Milk, Palm Oil, Fish, Peanuts, Corn, Peanut Butter...*
4. *Focus by Target Organization? Growers, Processors, Distributors, Retailer, Restaurants, And Institutional Food Services...*
5. *Values to Protect? Ecological Health, Human Health, Biodiversity, Energy Efficiency, Climate Effects, Pollution Control, Contamination Control, Waste Minimization, Resource Recovery, Water, Genetic Manipulation, Pharmaceuticals, Plastics, Irradiation, Worker Protection, Animal Welfare, Fair Trade....*
6. *Evaluation Criteria, Metrics, and Scoring System: How will you judge performance sufficiency*

7. *Relation of Program to National & International Laws*
8. *IPR: Transparency, Secrecy, and Confidential Business Information?*
9. *Accountability: Auditing & Certificate Sunsets*