

# Theoretical and Practical Challenges in the Adoption of Renewable Energy

Joel West

Keck Graduate Institute  
SolarProf.com

August 15, 2011



KECK GRADUATE INSTITUTE  
*of Applied Life Sciences*



## State of RE adoption

- Photovoltaic cells nearly 60 years old
  - Other RE technologies are older
- In most locations, still not cost-competitive without policy intervention
- Why now?
  - Concern about AGW
  - Politicians, entrepreneurs, VCs selling “green jobs”

## Levels of analysis & concerns

- Societal level (ONE):
  - AGW & saving the planet
- Industry level (TIM):
  - Technological innovation & adoption
- Firm level (ENT)
  - Firm creation, growth, profitability

## Societal level

- Increasing concern about AGW, CC
- Daunting scale of implementation
  - Transforming mature \$1+T industries
- Political challenges
  - Separation of costs and benefits
  - Global negative externalities
  - Long-term commitment
  - Pressing economic concerns of past 3 yrs

## Industry level

- Competing with proven substitutes
  - Price-sensitive buyers
  - No Moore's law
  - Extreme dependence on policy
- New model of technological innovation
  - No differentiation-based strategies
    - ❖ Perhaps green vs. brown, not within green
- Massive scale of deployment

## Firm level

- Normal new TBF challenges
- Technology
    - Long lifespan, commodity products
  - Access to capital
    - Venture and non-venture sources
    - Beyond VC scale?
  - Legitimacy of firm, industry

## Today's speakers

	Society	Industry	Firm
Hansen et al	X	X	
Gao et al		X	X
Pacheco		X	X
HAMPL et al			X