

# **Alternative Energy and the Economic Crisis**

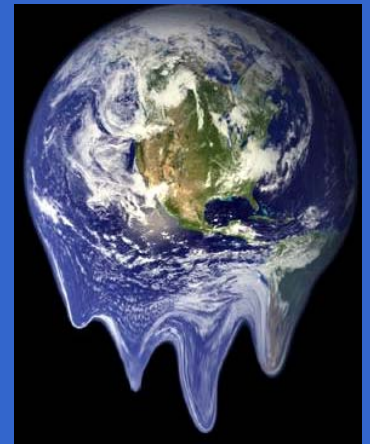


# Climate Change

- Global Warming – the release into the atmosphere of carbon dioxide, which traps heat and causes temperatures to rise
- Can cause severe storms, droughts, rising sea levels, and spread of disease
- Threatens to submerge islands
- Disrupts animal habitats, possibly driving some species to extinction

# Some Facts on Climate Change

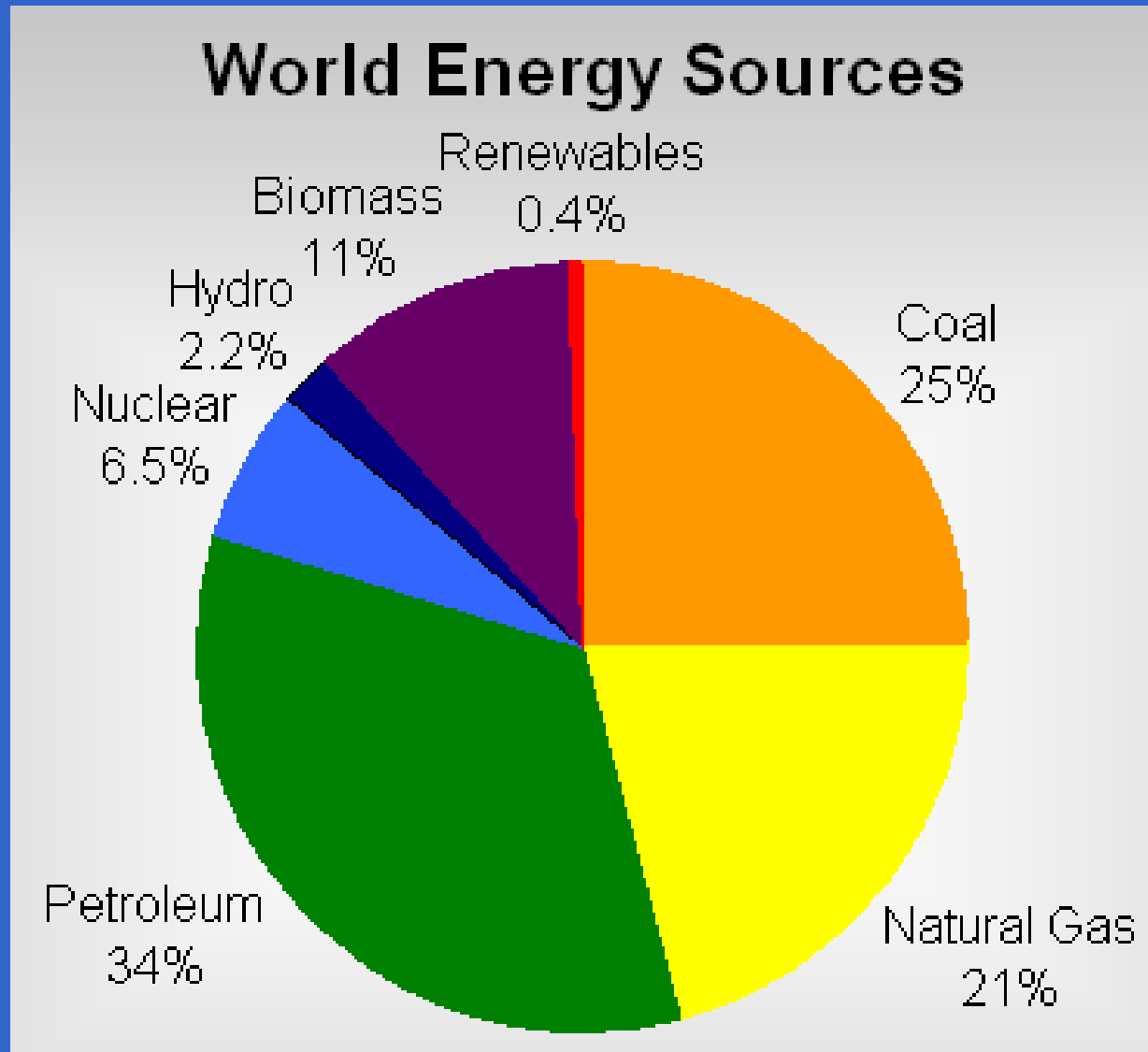
- Data from Antarctic ice cores show that CO<sub>2</sub> concentrations are the highest in 650,000 years.
- Since 1978, the Arctic Sea ice has shrunk by 9% every 10 years.
- Seagulls were spotted at the North Pole in 2000 for the first time.



# Current Energy Production

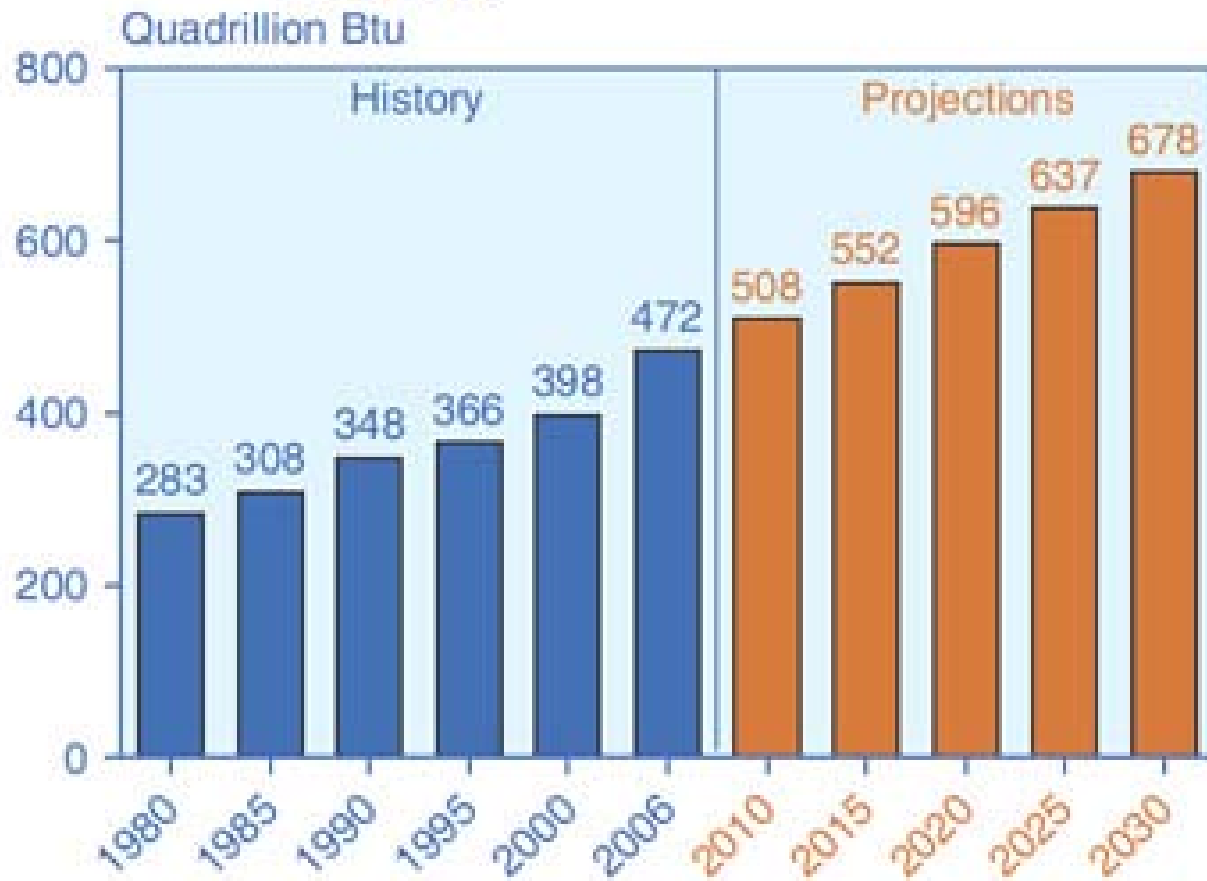
- 80% of the world's current energy needs are met by the combustion of fossil fuels
  - Bad for the environment
    - 80% of greenhouse gas emissions are from the production of energy from fossil fuels
  - Expensive (coal = 6 cents/kWh)
  - Unsustainable
- World energy consumption is expected to increase nearly 44% through 2030

# Current Energy Production

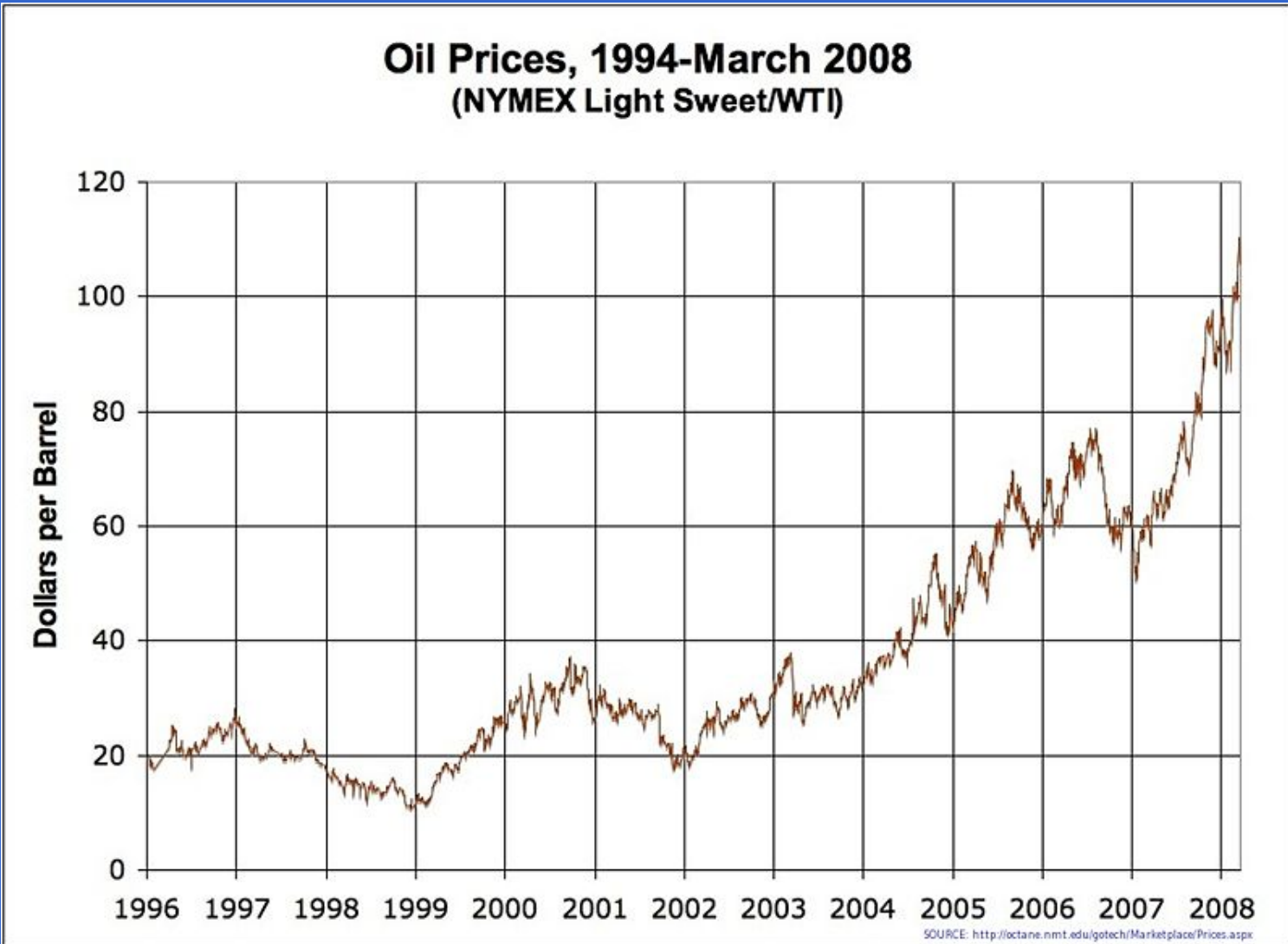


# Energy Consumption

Figure 10. World Marketed Energy Consumption, 1980-2030

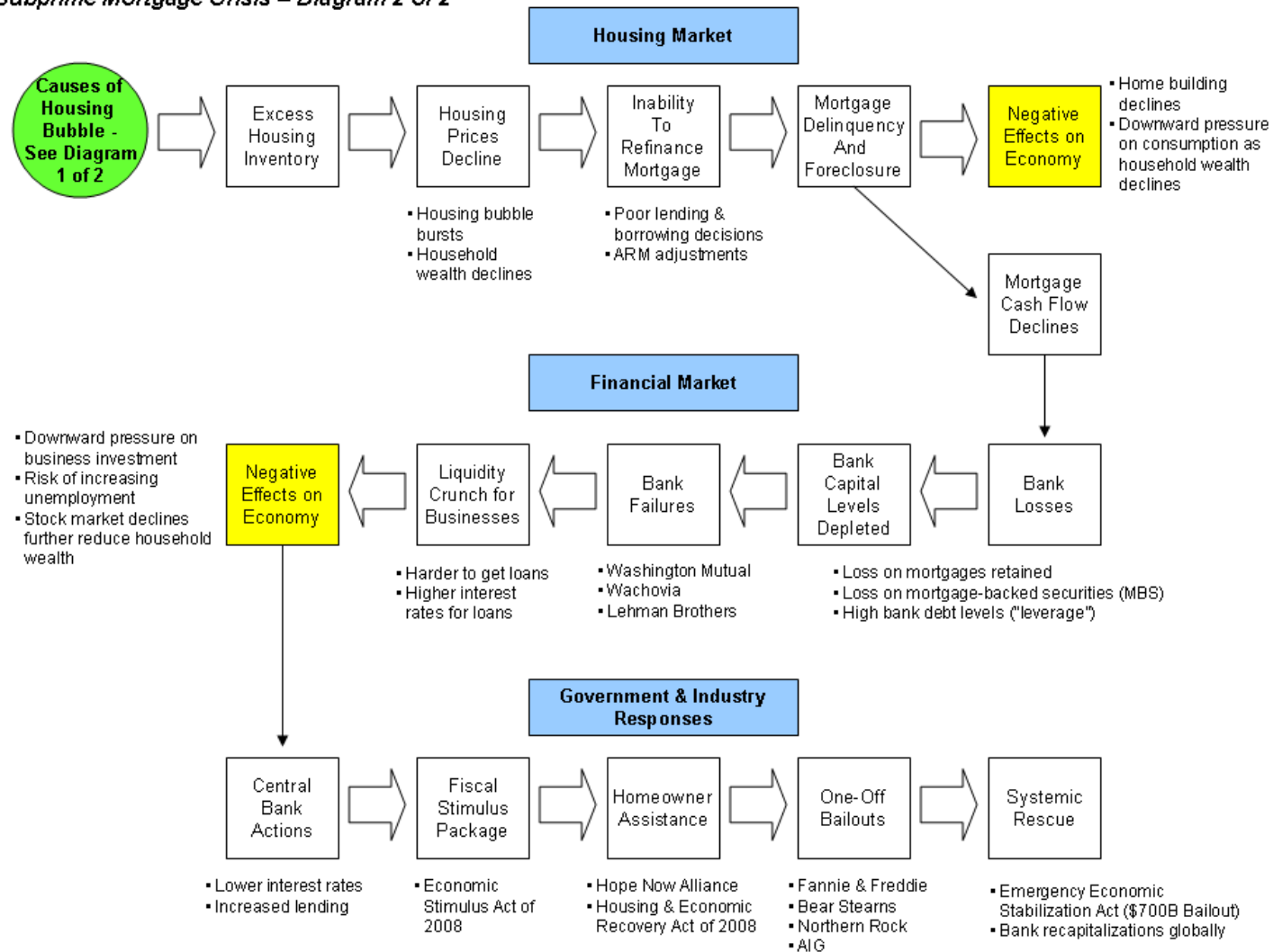


# Price of Fossil Fuels

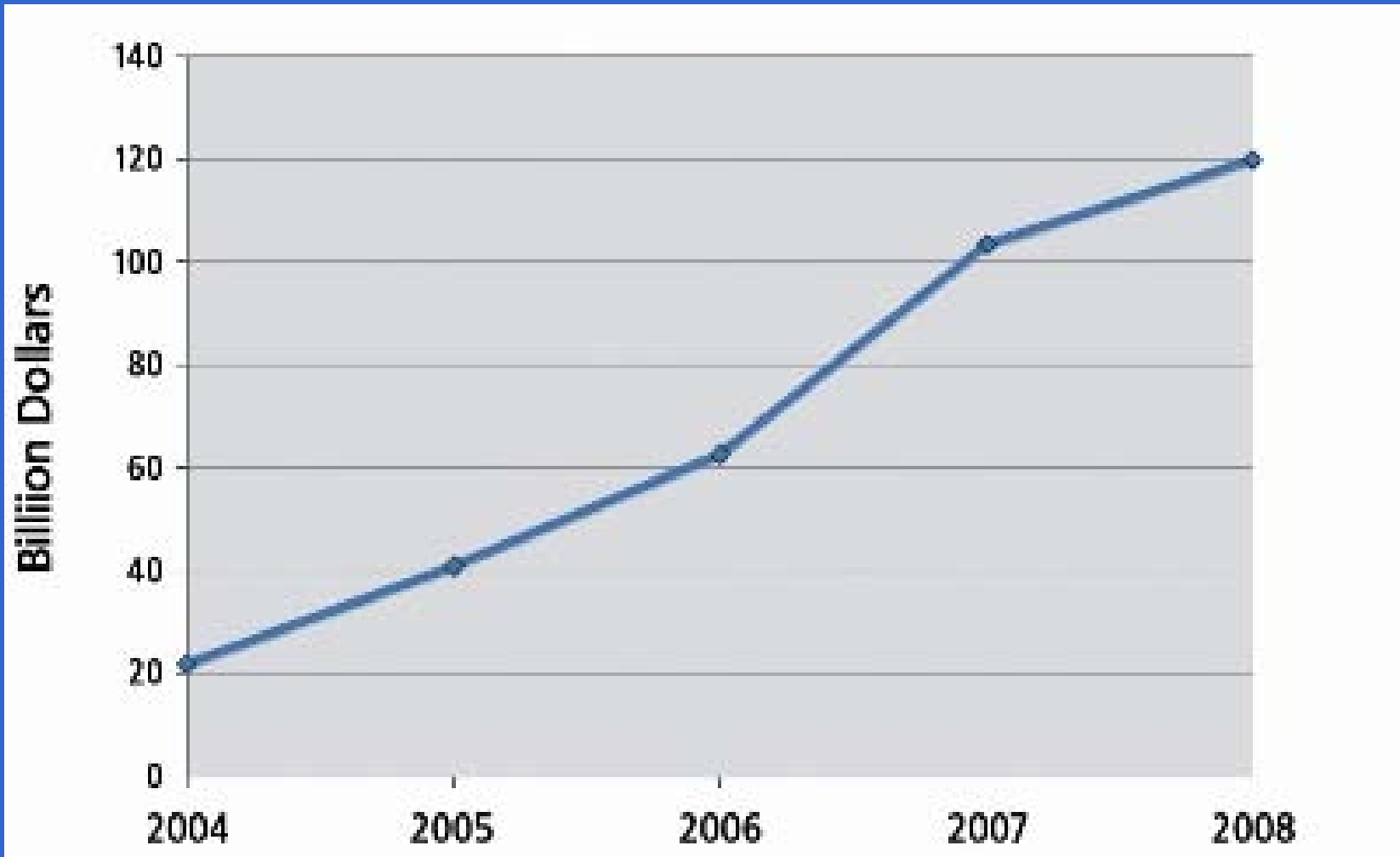


# Financial Crisis

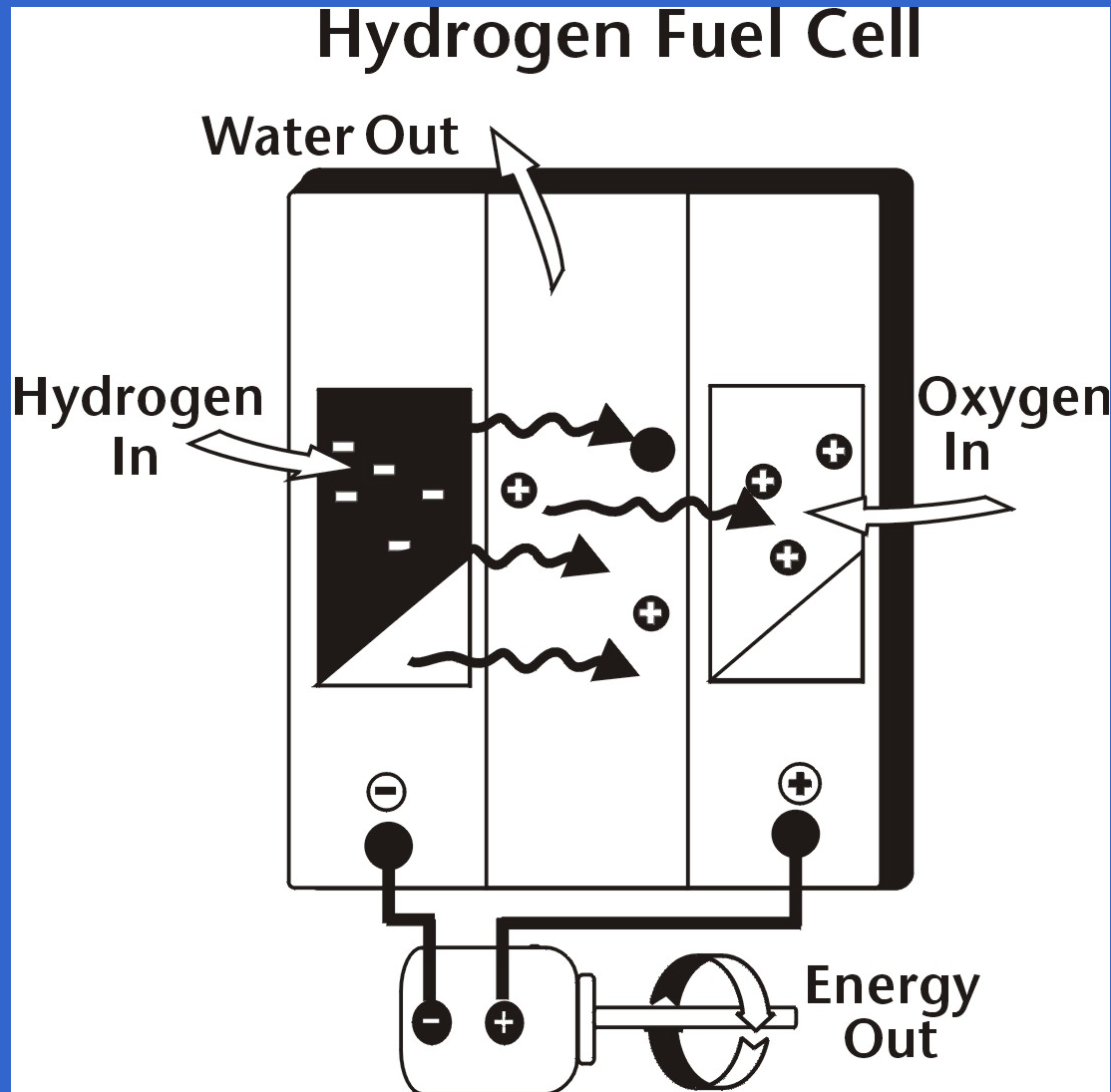
Subprime Mortgage Crisis – Diagram 2 of 2



# Investment in Renewable Energy

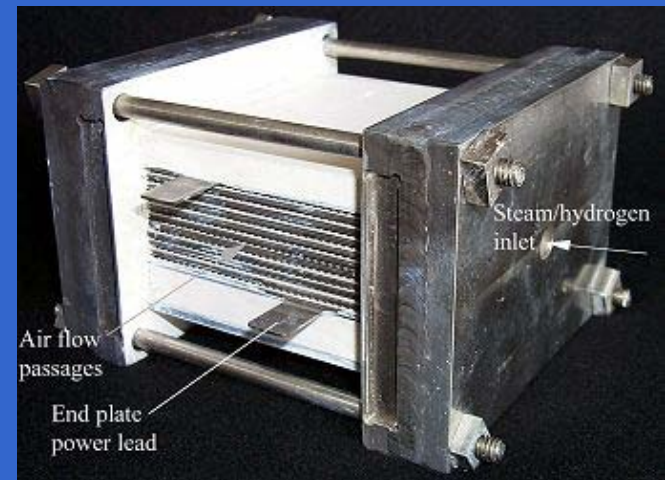


# Hydrogen Fuel Cells



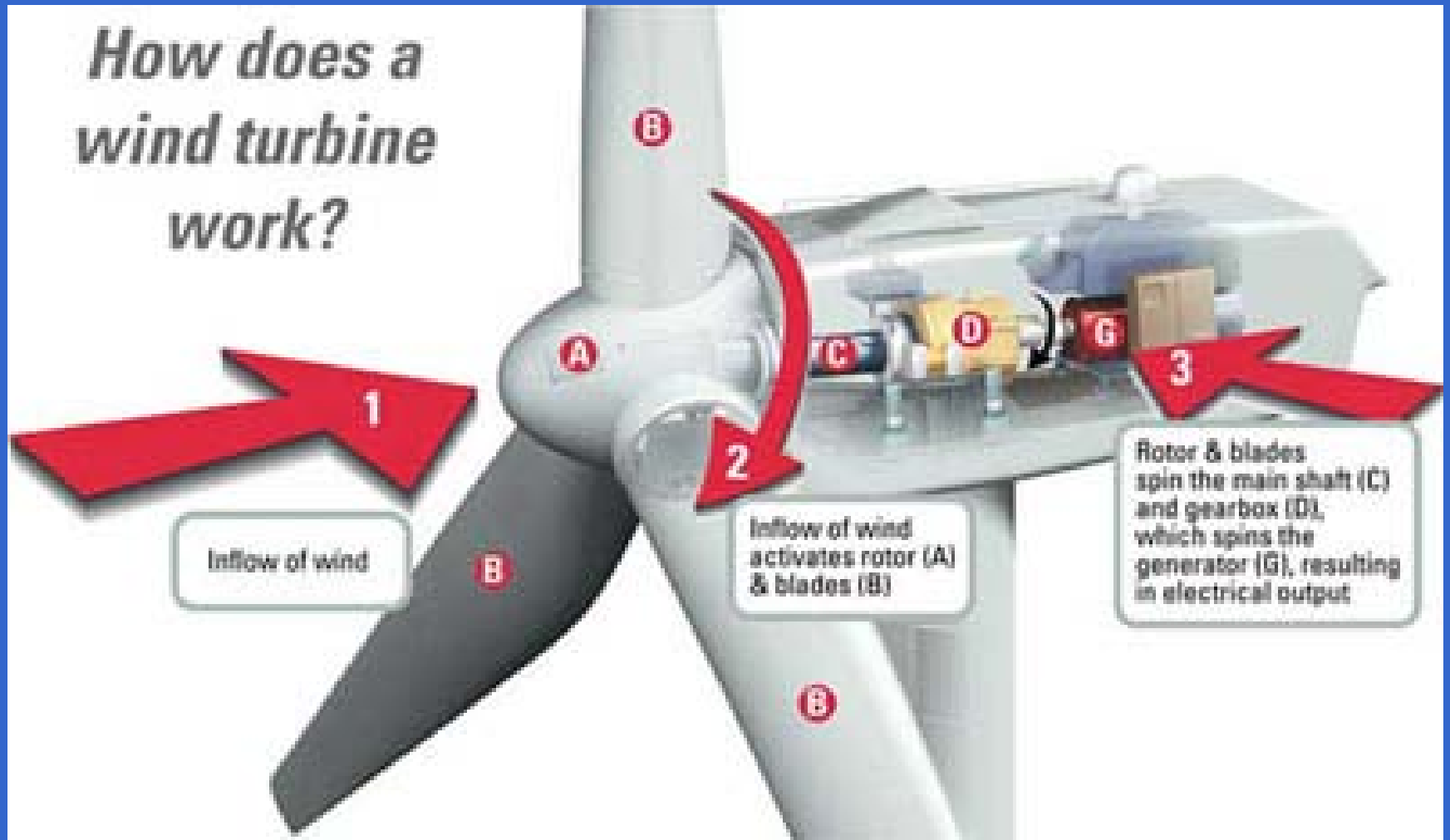
# Hydrogen Fuel Cells

- Pros:
  - No CO<sub>2</sub> emissions
  - Renewable and sustainable
  - Very energy efficient
- Cons:
  - Technology is not quite there yet
    - Procuring hydrogen from the environment requires massive amounts of energy
  - Incredibly expensive



# Wind

*How does a  
wind turbine  
work?*



# Wind

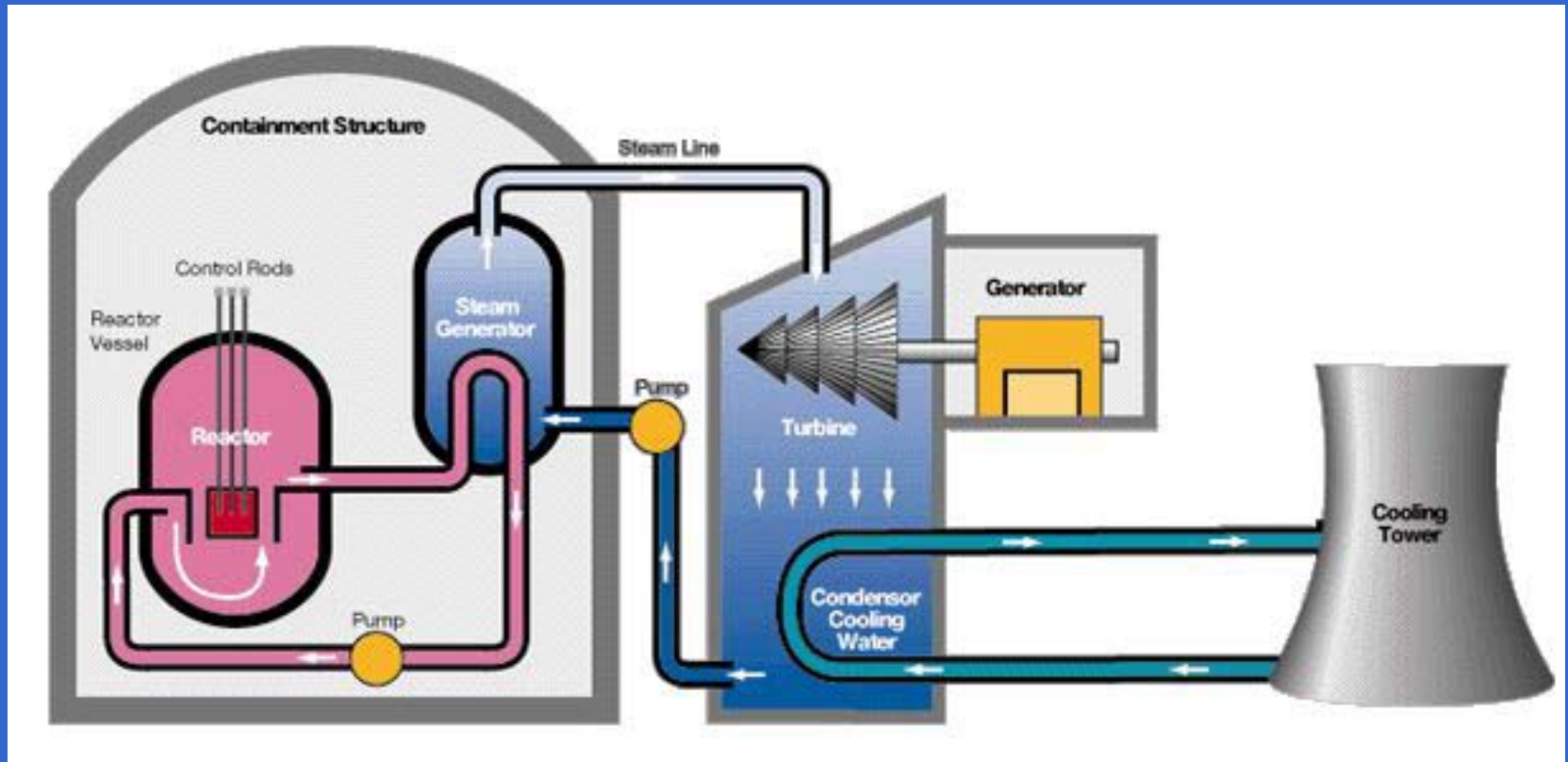
- Pros:
  - Renewable and Sustainable source of electricity
  - Zero Pollution
  - Massive Theoretical Potential (72 TW)
- Cons:
  - Intermittent
  - Relatively expensive (2.88-6.56 cents/kWh)



# Wind Energy

- The price of wind turbines has increased dramatically in recent years
  - 89% since 2007
- Despite economic crisis, the use of wind energy is predicted to increase dramatically
  - 42% increase in use between 2007 and 2008
  - Predicted annual growth of 15.7% through 2013

# Nuclear Energy

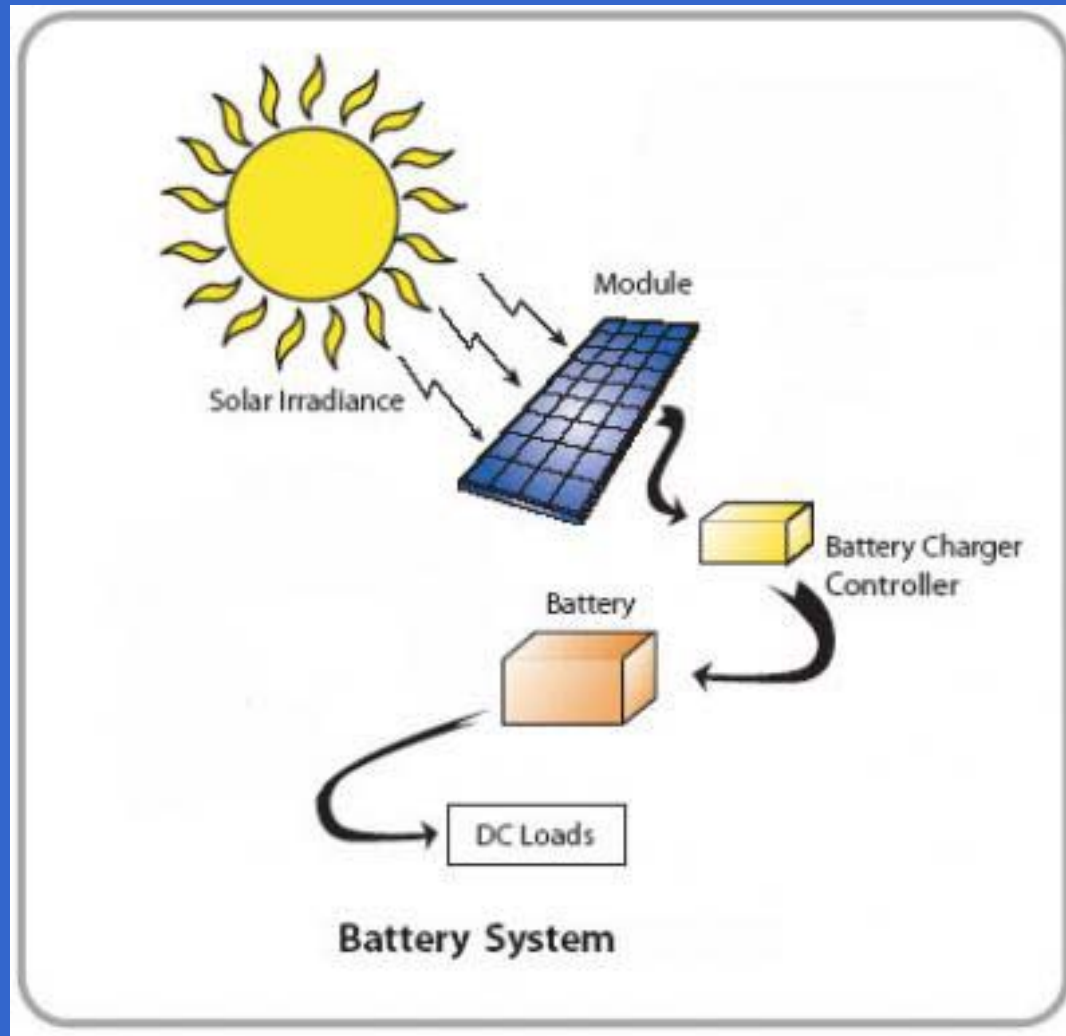


# Nuclear Energy

- Pros:
  - Very cheap (3.3 cents/kWh)
    - Operate for well over 80 years
  - Zero Pollution
  - Massive potential
- Cons:
  - Non-renewable
  - Nuclear Waste



# Solar Energy

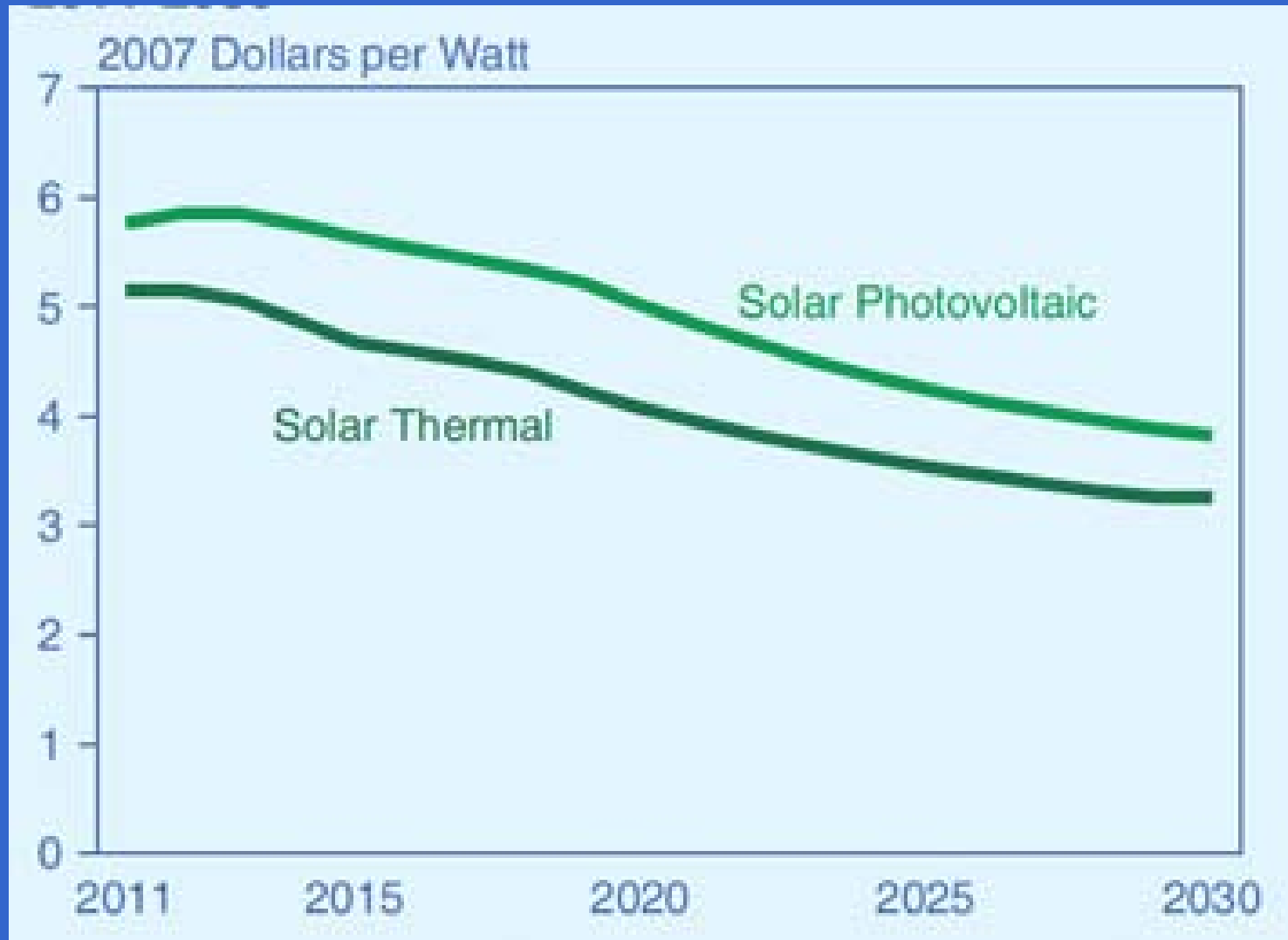


# Solar Energy

- Pros:
  - Renewable and Sustainable
- Cons:
  - Intermittent
    - Requires expensive storage technologies
  - Very expensive
  - Cadmium Telluride



# Solar Energy



# In Conclusion

- Climate Change is a clear and credible threat to everyone
  - This crisis can be mitigated with the widespread use of alternative energies
- The further development of alternative energy requires large amounts of capital
  - Luckily, the financial crisis has not caused a decrease in investment
- While still not completely ready, several promising alternatives exist