The Clean Tech Revolution

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THE CLEAN-TECH MARKET AUTHORITY

About Clean Edge

Clean Edge, Inc. is a research and publishing firm that helps companies, investors, and policymakers understand and profit from clean technologies.

Products and services include:

- **research and reports**
- **conferences and events**
- **strategic consulting services**

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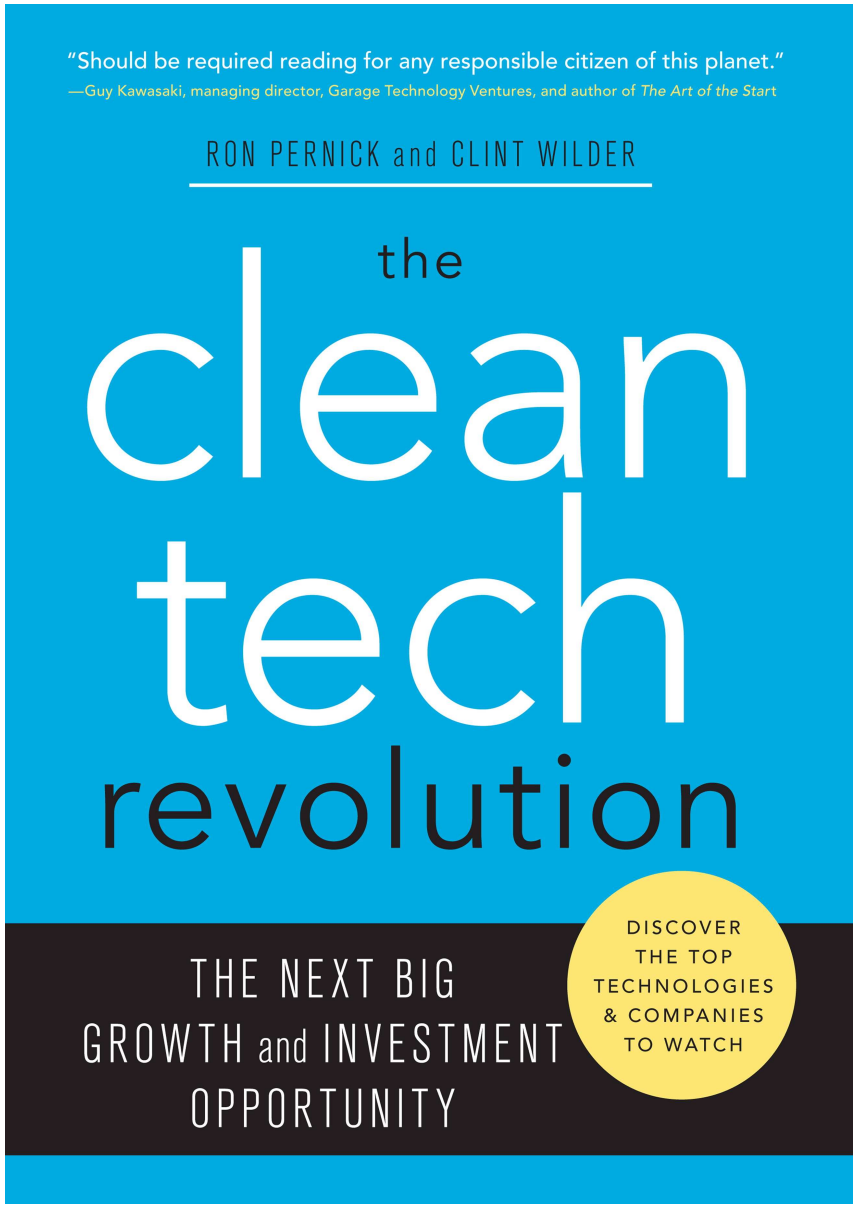

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What Is Clean Technology?
Clean Tech's Four Domains

Energy	Transportation
Biofuels	Battery storage
Fuel cells	Electro propulsion
Geothermal	Fuel-cell vehicles
Microturbines	Hybrid-electric vehicles
Solar Photovoltaics	Plug-in Hybrids
Small-scale hydro	Ultra-efficient aircraft
Wave/tidal power	Diesel hybrid locomotives
Wind power	Flex-Fuel Vehicles
Materials/Buildings	**Water**
Biobased materials	Biological water filtration
Nanotech materials	Distributed systems
Green buildings	Small-scale desalination
Green chemistry	Ultraviolet purification
Phytoremediation	Nanotech-based filtration

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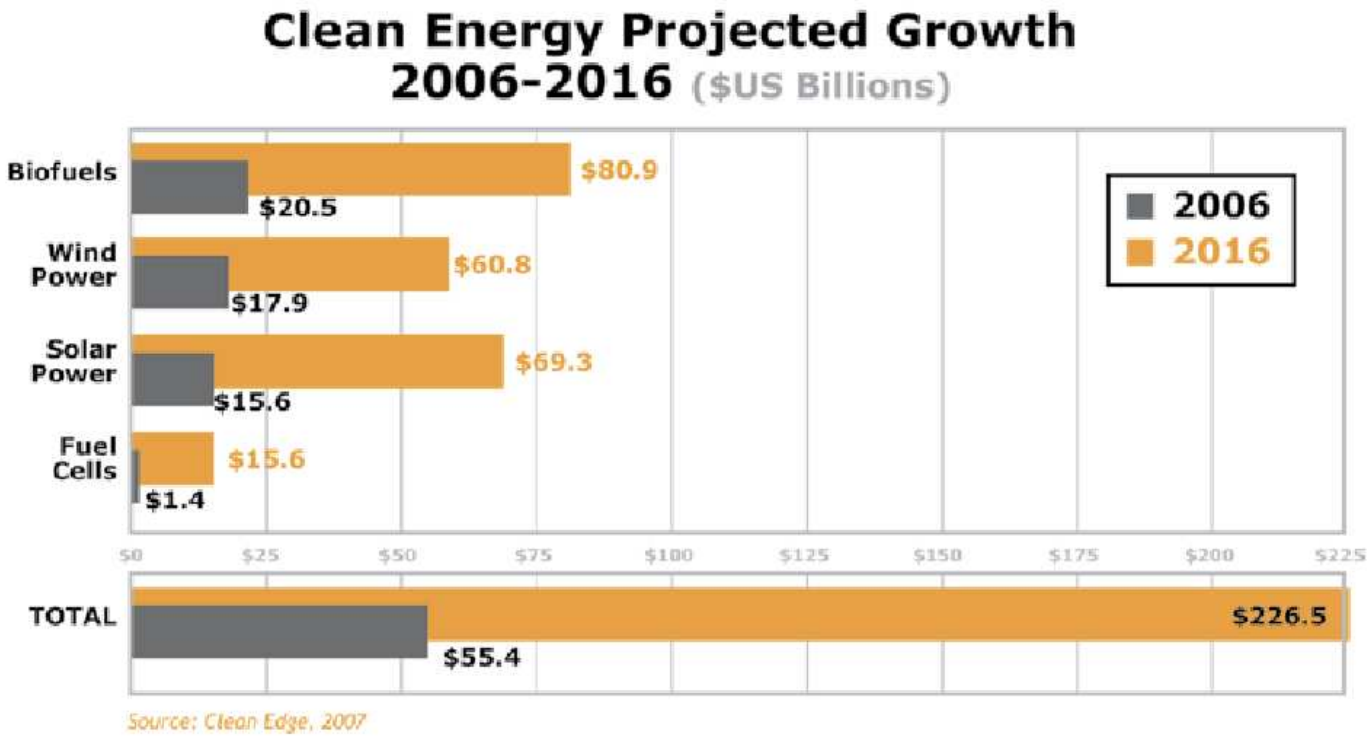
From Niche to Mainstream: Clean Energy Is a Multi-Billion $ Industry



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Why Now?
A Confluence of Forces: The Six C's

- **Costs**
- **Capital**
- **Competition**
- **Climate**
- **Consumers**
- **China**

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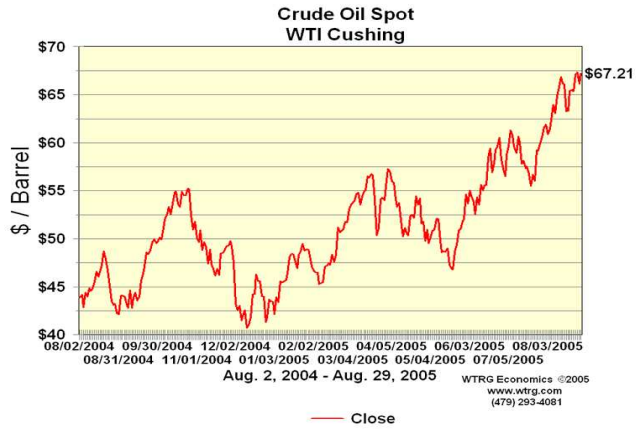
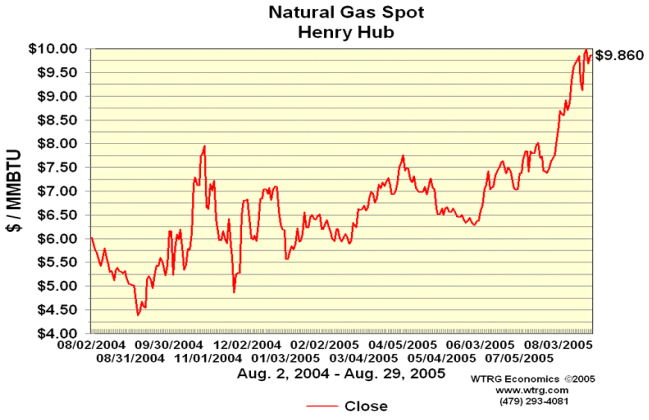
Driving Forces: Costs

While the Costs of Conventional Energy Sources Are Rising . . .





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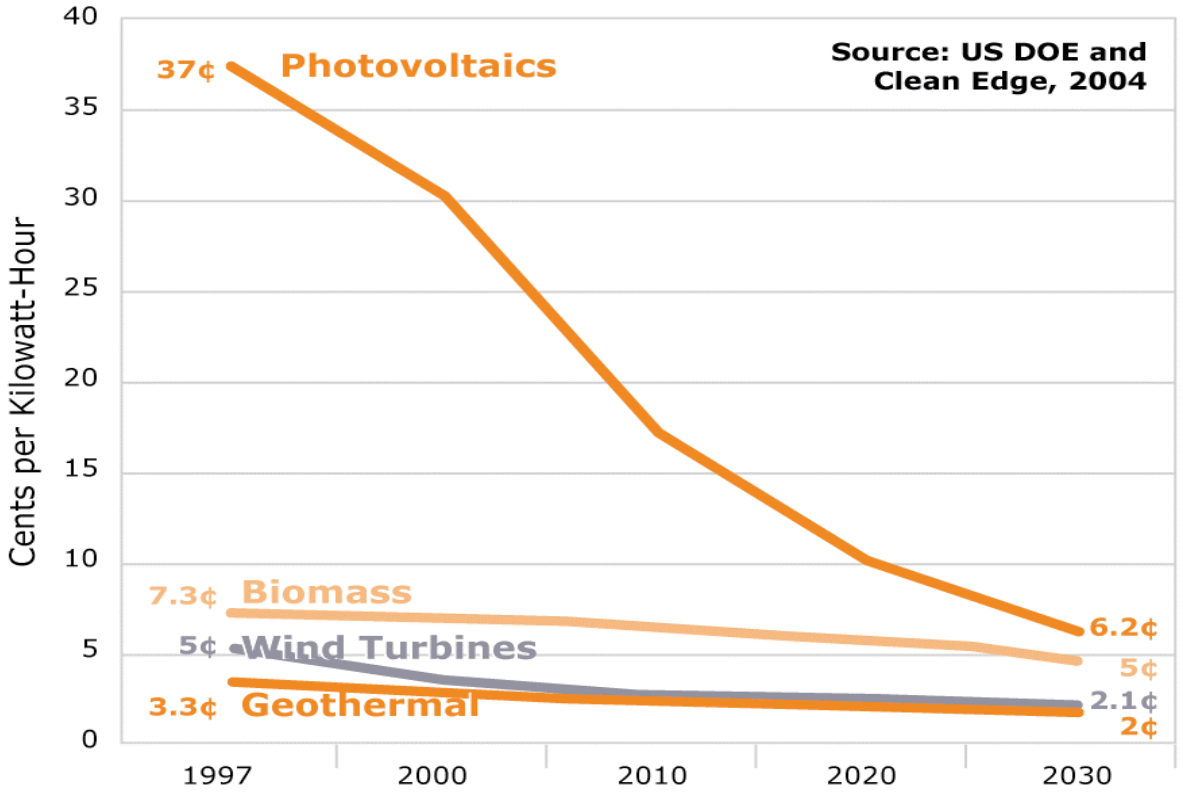
. . . The Costs of Clean Energy Are Declining



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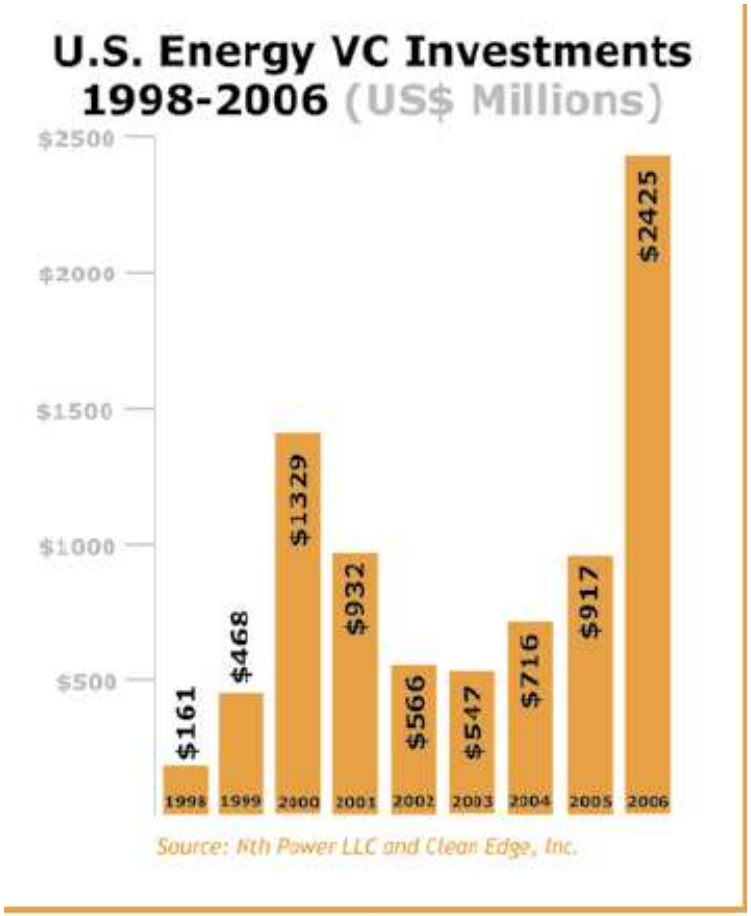
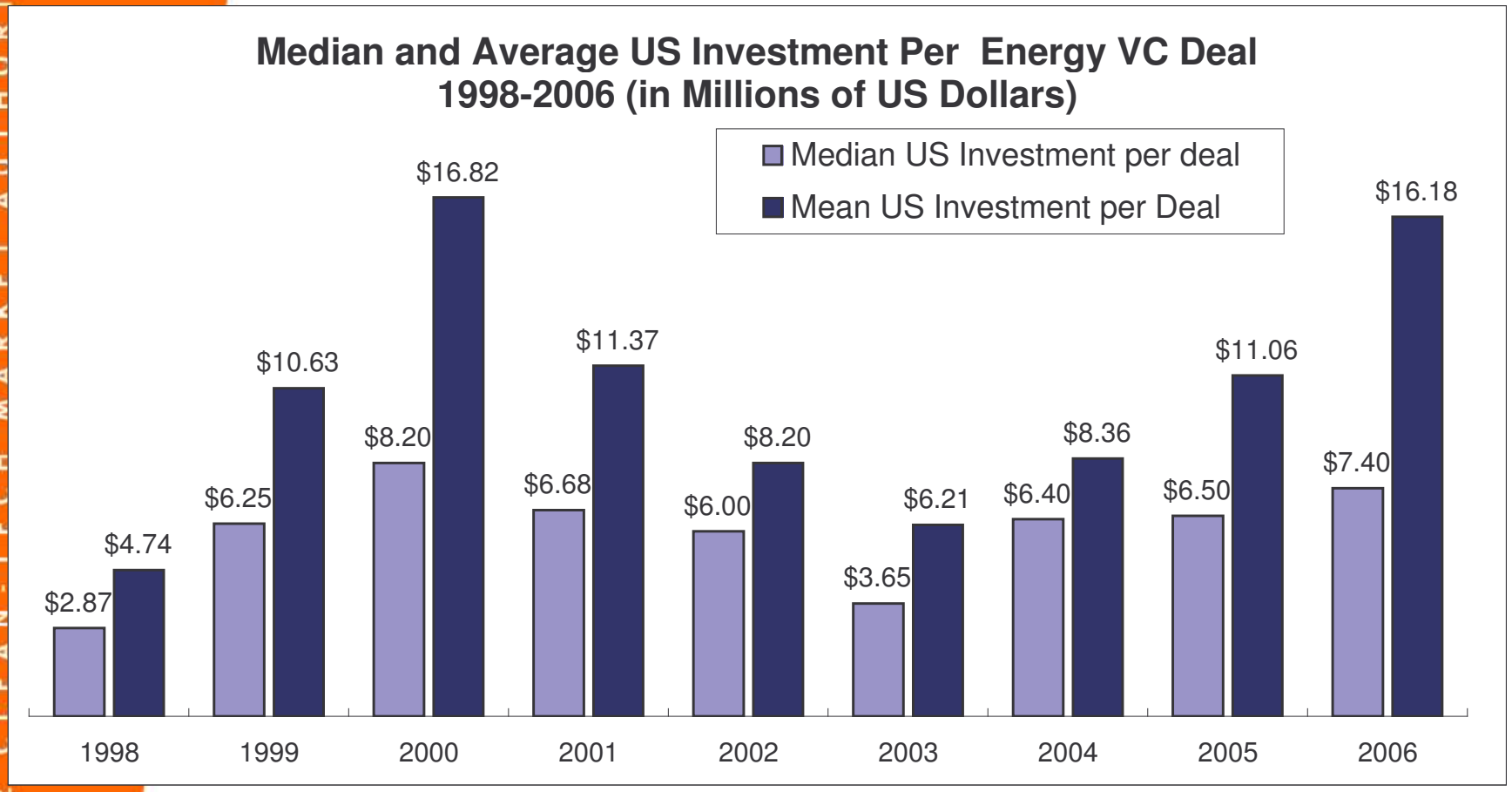
Driving Forces: Capital

A Boom in Clean Tech Venture Capital



Energy VC Average Investments



Source: Nth Power

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Driving Forces: Clean Energy Venture Capital Increasing as a Percent of Total

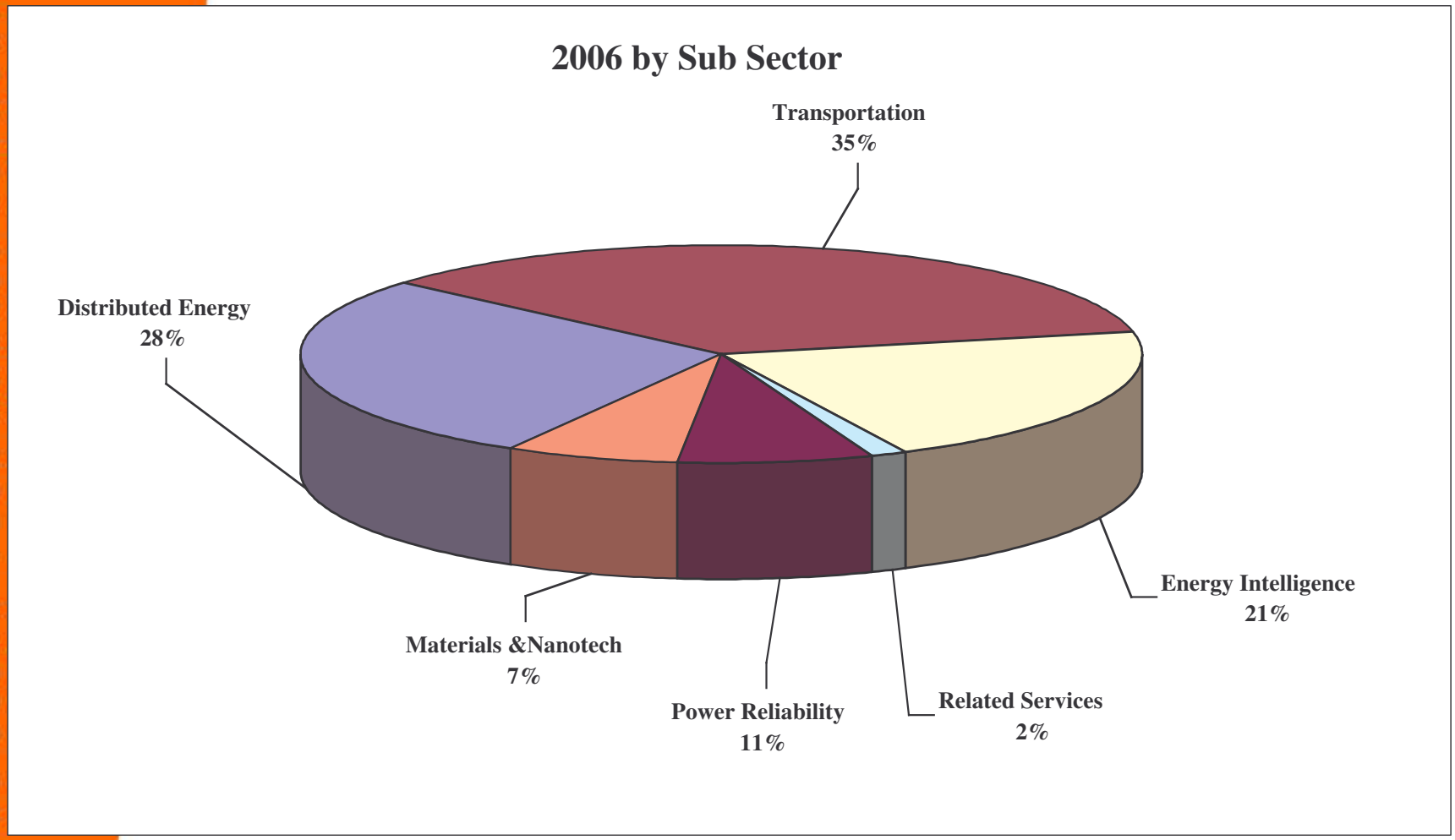
Clean Energy Venture Capital Investments in U.S.-Based Companies as Percent of Total

Year	Total Venture Investments (US$ Billions)	Energy Technology Investments (US$ Millions)	Energy Technology Percentage of Venture Total
1999	$59	$468	0.8%
2000	$103	$1,329	1.3%
2001	$41	$932	2.3%
2002	$21	$566	2.7%
2003	$18	$547	3.0%
2004	$20	$716	3.3%
2005	$22	$917	4.2%
2006	$25.5	$2,425	9.4%

Source: Nth Power LLC and Clean Edge, Inc.

US-based venture investments in clean energy have expanded from less than 1% of all VC to nearly 10% over the last eight years.

Investments by Subsector



Source: Nth Power

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Driving Forces: Competition
Clean Energy = Job Opportunities

Table 1.2
U.S. Jobs in Renewable Energy Industries

Energy Source	Direct U.S. Jobs
Biomass	66,000[3]
Solar Photo-voltaic	20,000[4]
Wind	17,000[5]
Geothermal	12,300[6]
Total	115,300

The clean energy industry currently accounts for more than 115,000 jobs in the U.S., compared to just 80,000 jobs for the entire coal industry

Source: "Creating the California Cleantech Cluster" report, 2004

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Driving Forces: Competition
Government Commitments Make A Difference

- Renewable Portfolio Standards (RPS)
- Tax Credits and Rebates
- Public Venture Funds
- Government Procurement Programs
- Government Bonds (SF Solar, etc.)
- R&D Funding
- Carbon and REC Trading Markets

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Driving Forces: Competition (and China) Government Commitments Make A Difference

Country	Commitment	Country	Commitment
China	15% of total primary energy from renewables by 2020.	**Iceland**	Virtually all energy from hydrogen and other renewable sources by 2030.
Denmark	13% of primary energy from wind, solar, and biomass by 2005, 35% by 2030.	**Japan**	3% of its energy supply from renewables by 2010.
European Union	20% of all electricity from renewable sources by 2010.	**Netherlands**	10% of total energy supply from renewables by 2020.
France	21% of all electricity from renewable sources by 2010.	**United Kingdom**	10% of total energy supply from renewables by 2010.
Germany	10% of total energy supply from renewables by 2010.	**California**	20% renewables target by 2017.

Source: Clean Edge, 2006

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Back to the Future

- Henry Ford's vision of biofuels and biomaterials
- First fuel cell invented in 1840
- Solar photovoltaic cells are more than 50 years old
- Wind energy dates back centuries

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