

# The Role of Cleantech in Global Economic Development – Trends, Challenges and Opportunities



# Topics

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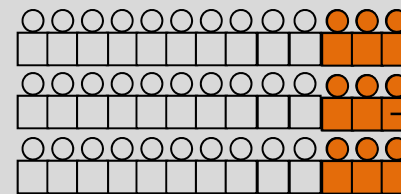
- Trends
- Opportunities
- Challenges

# Increased demand and limited supply are key drivers in the various utility markets

Consider the challenge ahead.

2025 PREDICTED POPULATION

**8 Billion**



**30% higher  
than today**

GLOBAL ENERGY DEMAND

**+30%**

Projected to increase by 30% by 2025

UNITED STATES 2009 ENERGY  
INFRASTRUCTURE GRADE

**D+**

GLOBAL WATER DEMAND

**+22%**

The world will need to develop 22% more primary water supply by 2025 to meet increasing demands

UNITED STATES 2009 WATER  
INFRASTRUCTURE GRADE

**D-**

# CleanTech Trends

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- **Evolving energy mix**

- The IEA predicts that power generation using renewables will triple between 2010 and 2035.
- Fossil fuels such as oil and coal will lose market share over time, as natural gas and nuclear power contribute to the diversified energy mix.

- **Clean energy is a national competitive advantage**

- Many governments are aggressively implementing clean energy policies, setting emissions targets and providing incentives for clean-tech investing
- China, Germany, India and Brazil are gaining leadership positions in solar, wind and biofuels
- Israel, is rapidly emerging as a leader in clean technology with more than 300 companies specializing in the field and over 300 million dollars invested in the last two years

- **MNCs are beginning to make Cleantech a strategic priority**

# CleanTech- The 2<sup>nd</sup> Industrial Revolution

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- Cleantech is an organization-wide or business unit-level initiative for 89% of respondents;
  - 33% spend 3% or more of total revenues on cleantech and 75% expect cleantech spending to increase over the next five years.
- Governments also view cleantech as a national strategic platform for creating jobs, fostering innovation and establishing local industries.
  - investment in cleantech surged 30% in 2010 over the previous year to US\$243b, double the amount recorded in 2006 and nearly five times that of 2004. (Bloomberg New Energy Finance)

Ernst & Young's 2010 global survey of corporations with more than US\$1b in revenue

# Capital gaps could slow the transition to a low-carbon economy

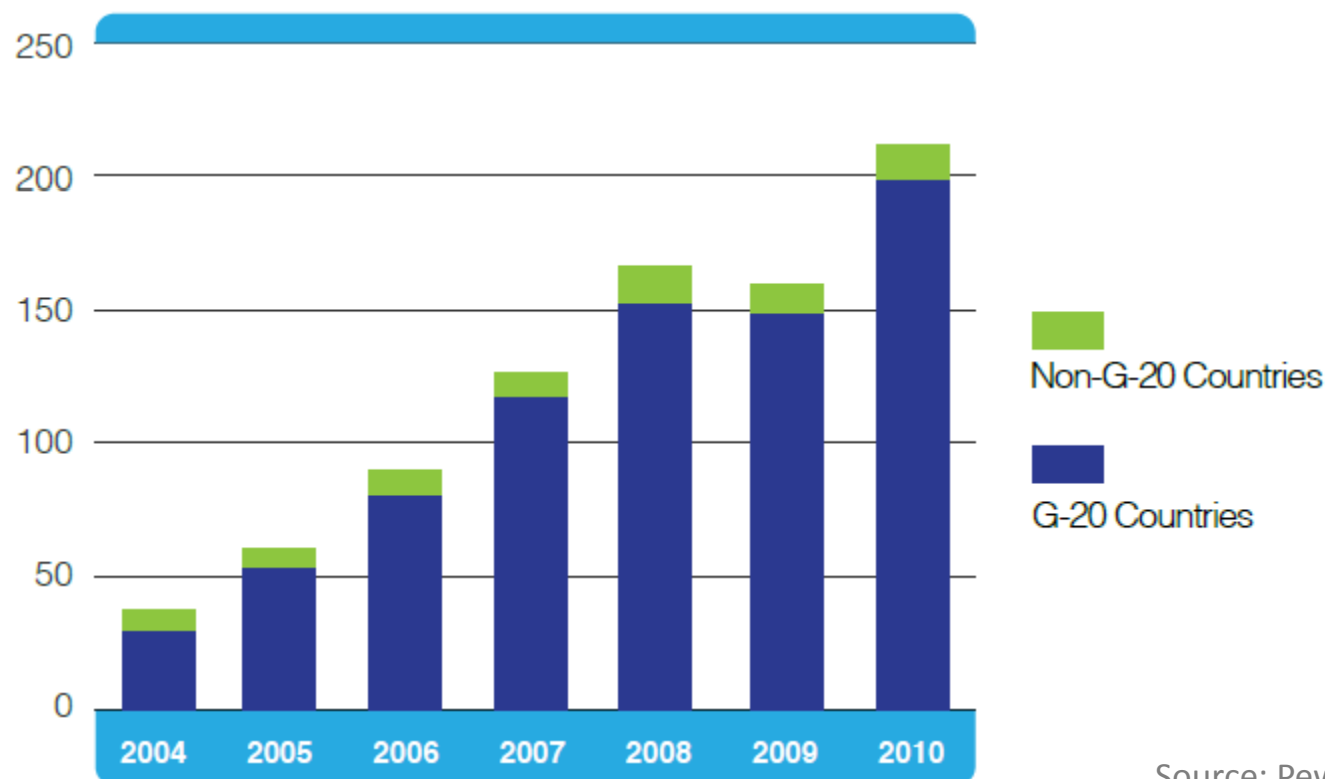
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- Primary energy demand is expected to grow by 36% worldwide between 2019 and 2035, with the bulk of that new energy use (93%) coming from emerging markets.
  - By 2035, China alone will see its energy needs rise by 75%, according to the International Energy Agency (IEA) report, World Energy Outlook 2010.

# In 2010, worldwide finance and investment in clean energy grew 30 percent to a record \$243 billion

GLOBAL AND G-20 CLEAN ENERGY INVESTMENT, 2004-10 (BILLIONS OF \$)

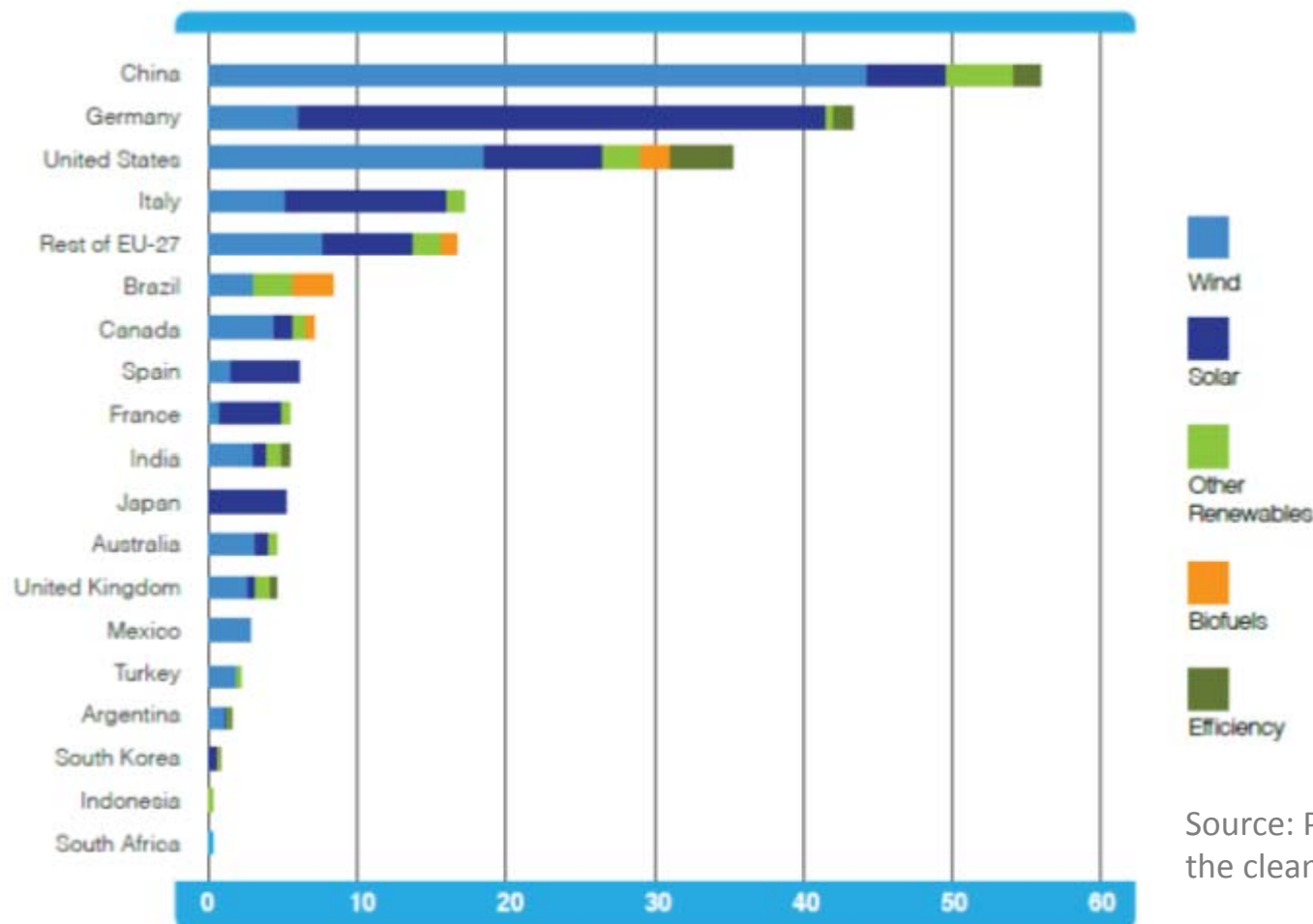


\* Does not include research and development investments

Source: Pew Trust – Who's winning the clean energy race?, 2010

# China leads by attracting a record \$54 billion in investments in 2010

INVESTMENT BY COUNTRY AND SECTOR, 2010 (BILLIONS OF \$)



Germany saw private investments double to \$41.2 billion and was second in the G-20, up from third last year.

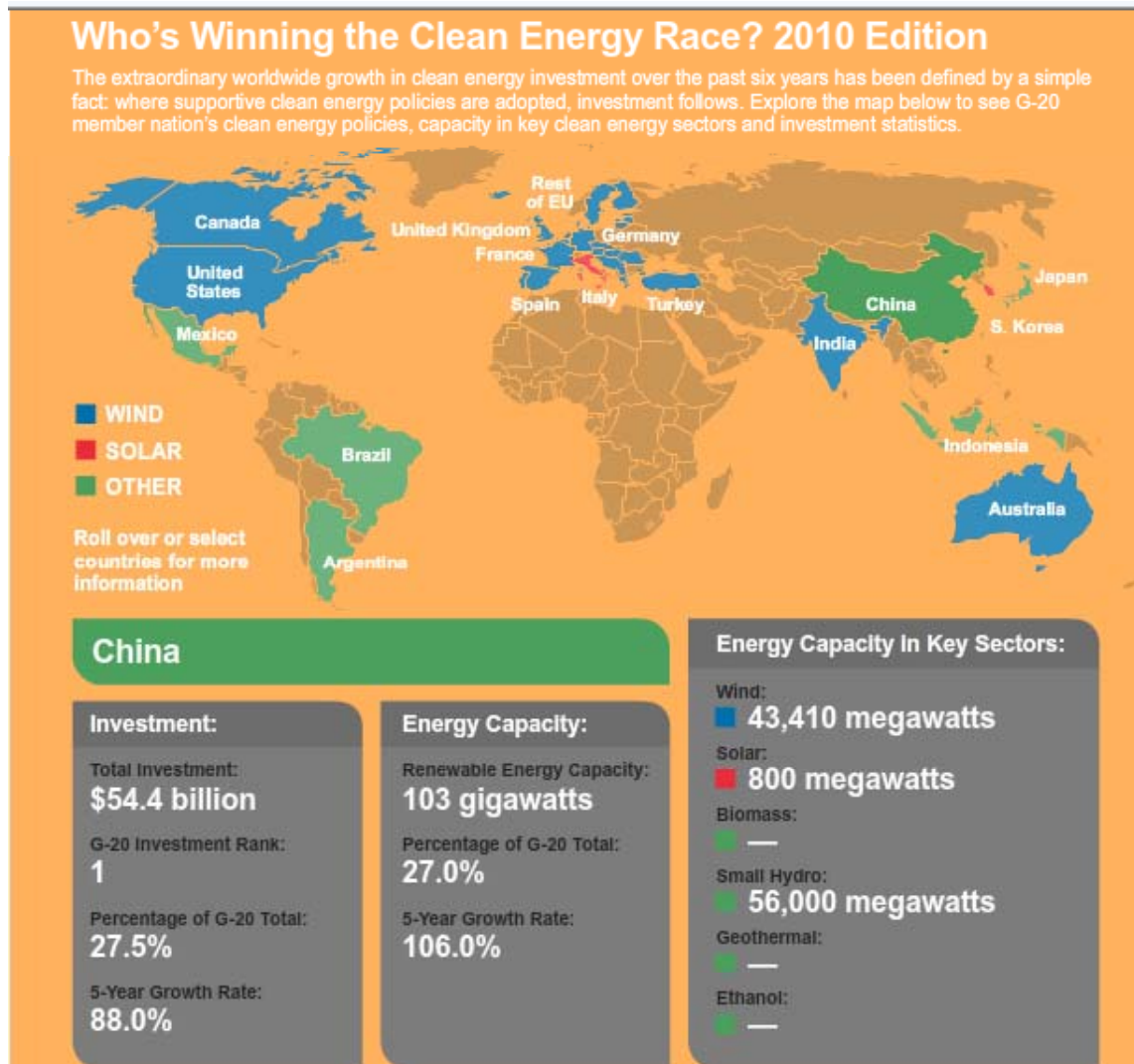
The United States, which had maintained the [top spot](#) until 2008, fell another rung in 2010 to third with \$34 billion in private clean energy investments.

- The United States remains the global leader in clean energy innovation, receiving 75 percent of all venture capital investment in the sector, a total of \$6 billion in 2010,
- but the U.S. has not been creating demand for deployment of clean energy. As a result it is losing out on opportunities to attract investment, create manufacturing capabilities and spur job growth. For example, worldwide, China is now the leading manufacturer of wind turbines and solar panels
- Source: Pew Trust

Source: Pew Trust – Who's winning the clean energy race?, 2010



In 2010, worldwide finance and investment grew 30 percent to a record \$243 billion



- 2010 clean energy investments in China are equal to total global investments in 2004.
- China accounted for almost 50% of all manufacturing of solar modules and wind turbines

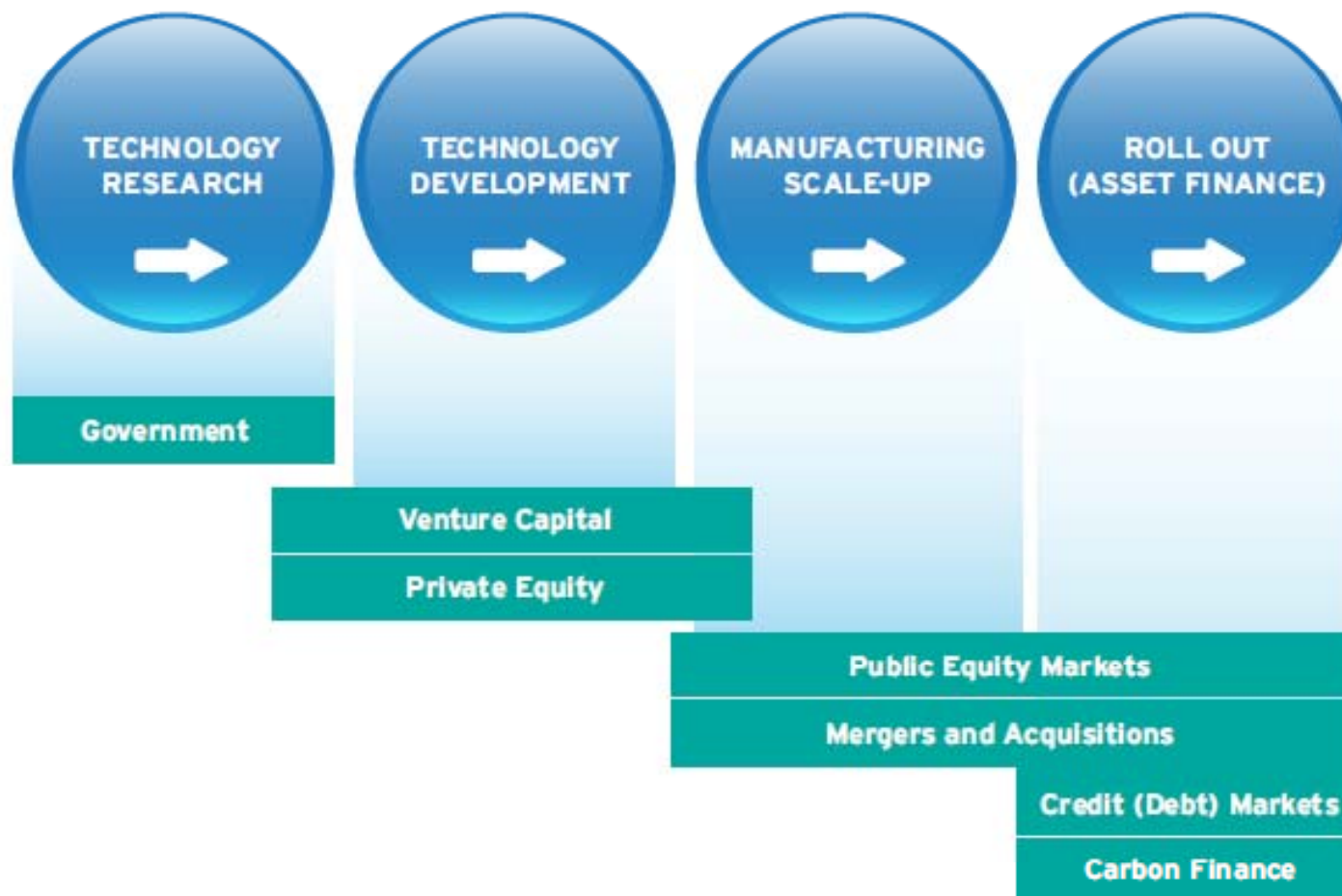
Source: Pew Trust – Who's winning the clean energy race?, 2010

# Stimulus Funds for Clean Energy - 2010

Country	Total Announced	Total Spent	Total Remaining	Percent Spent
United States	65	23.2	41.8	36%
China	46.1	31.9	14.2	69%
South Korea	32.1	11.8	20.4	37%
Germany	15.2	8.9	6.3	59%
Rest of EU 27	11.1	4.2	6.9	38%
Japan	10.4	8.9	1.5	86%
Australia	3.7	1.6	2.1	44%
United Kingdom	3.4	1.1	2.3	34%
Brazil	2.5	0.2	2.3	7%
France	2.1	2.1	0	100%
Spain	1.7	0.6	1.1	36%
Canada	0.8	0.13	0.65	17%
<b>Total</b>	<b>194.3</b>	<b>94.8</b>	<b>99.5</b>	<b>49%</b>

Source: Bloomberg New Energy Finance

# Clean Tech Financing Continuum



# Urban clusters are investing in CleanTech- example San Jose



- **Create 25,000 Clean Tech jobs** as the World Center of Clean Tech Innovation
- Reduce per capita energy use by 50 percent
- Receive 100 percent of electrical power from clean renewable sources
- Build or retrofit 50 million square feet of green buildings
- Divert 100 percent of the waste from landfill and convert waste to energy
- Recycle or beneficially reuse 100 percent of wastewater (100 million gallons per day)
- Adopt a General Plan with measurable standards for sustainable development
- Ensure that 100 percent of public fleet vehicles run on alternative fuels
- Plant 100,000 new trees and replace 100 percent of streetlights with smart, zero-emission lighting
- Create 100 miles of interconnected trails

# CleanTech Challenges

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- Right choice of renewable & a holistic view on the impact of alternatives on the environment
- IP Development and sharing
- Adequate Capital Flow
- Slow Market development
- Going beyond 'just energy' to the 'Vital FEW'
  - Food, Energy & Water
- Global Education in Sustainable Development

# Opportunities to Sustain CTR

## □ Leadership

- Courage & Commitment
- Political Will
- National & Global Alignment
- Setting the Context

## □ Public-Private Partnering

- Role of Govt from regulations to market making
- Eliminating Tariffs and other geographic boundaries
- Local to Global
- Sustained National investment in Innovation



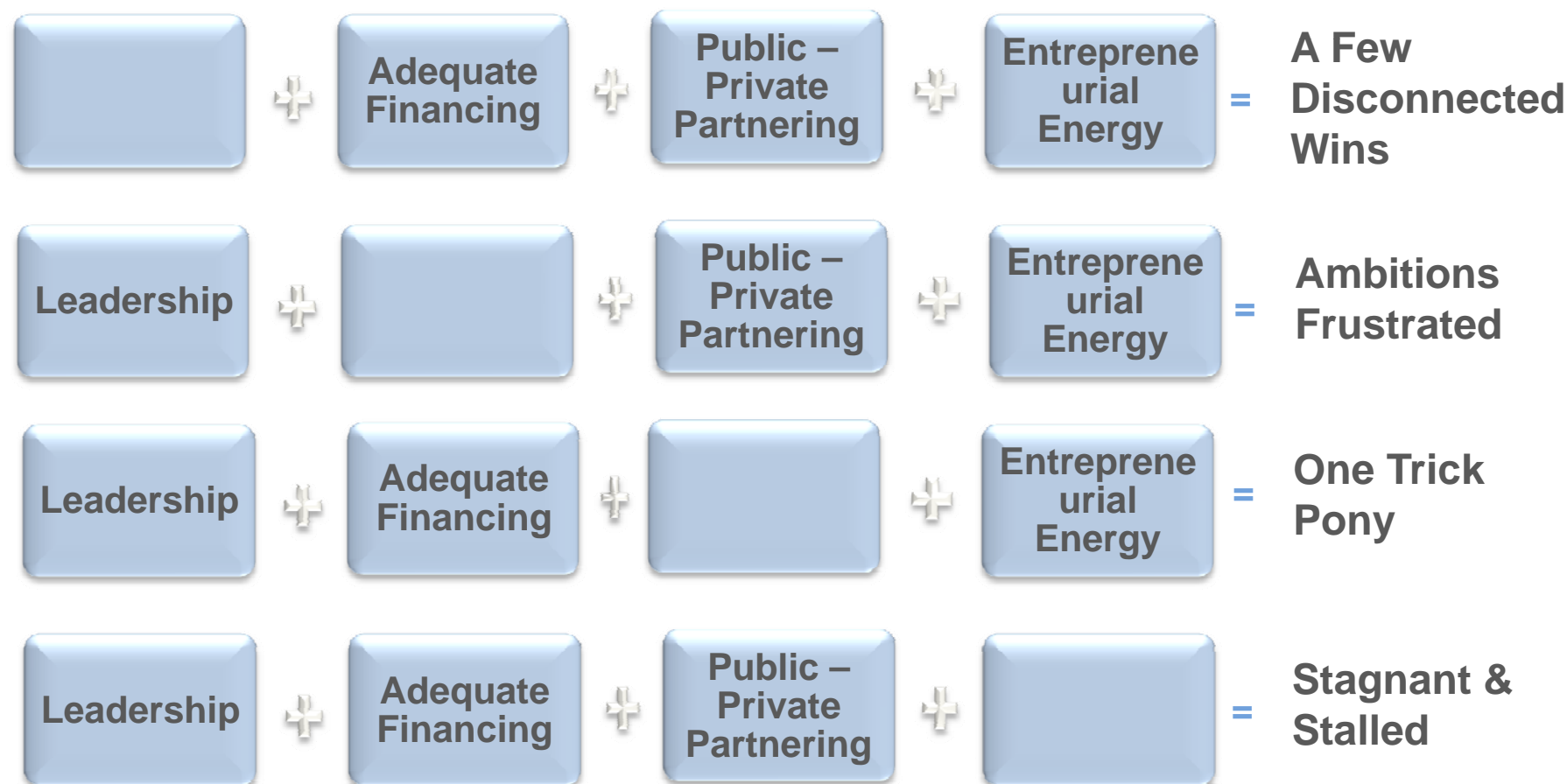
## □ Adequate Financing

- At all stages of a Co's Lifecycle
- Local vs global
- LT perspectives on returns
- Going beyond IP

## □ Nurturing Entrepreneurial Energy

- Remove IP Barriers
- Develop Innovation Clusters
- CT Education from early childhood
- Celebrate wins, rewards

# Opportunities to Sustain CTR



# Company Background

Noveda's award-winning technology was developed in 2006 by the team that created the first commercial net-zero electric building in the US - the 31 Tannery Project



**White House  
recognition**  
Company driving  
economic growth in  
the US and India



**2010 Clean Energy  
Manufacturing Fund**  
NJ Board of Public  
Utilities and Economic  
Development

**2010 New Jersey  
Technology Council**  
Enviro-Energy  
Company of the Year



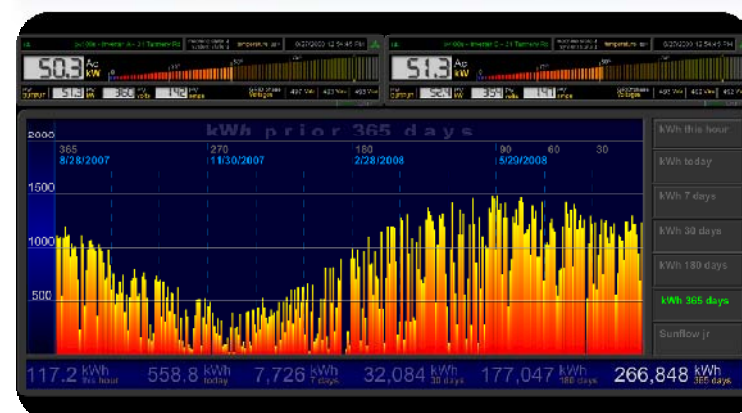
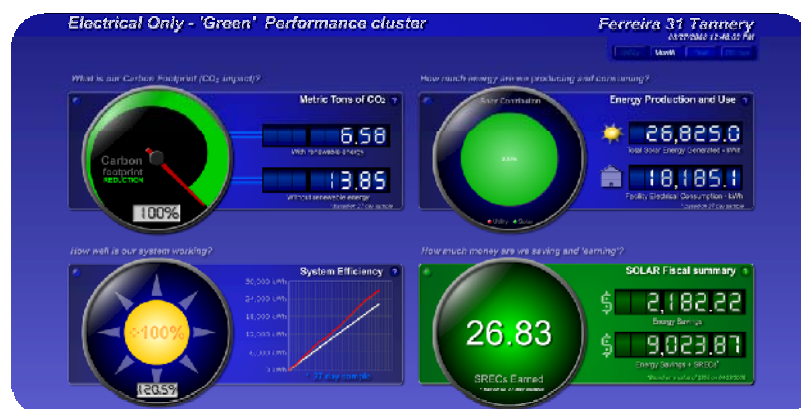
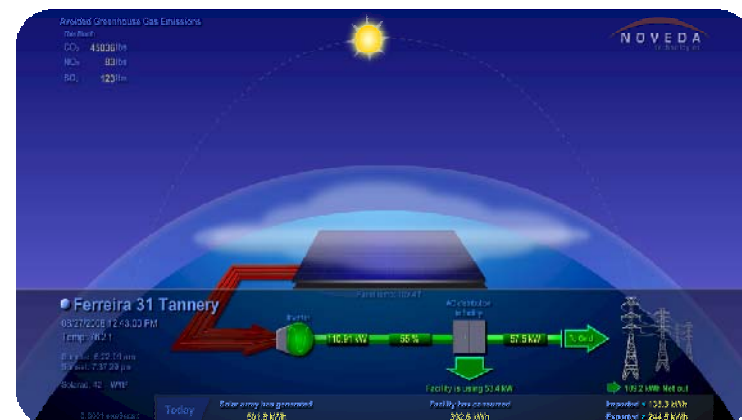
**2007 New Jersey  
Clean Energy Leader**  
NJ Board of Public  
Utilities





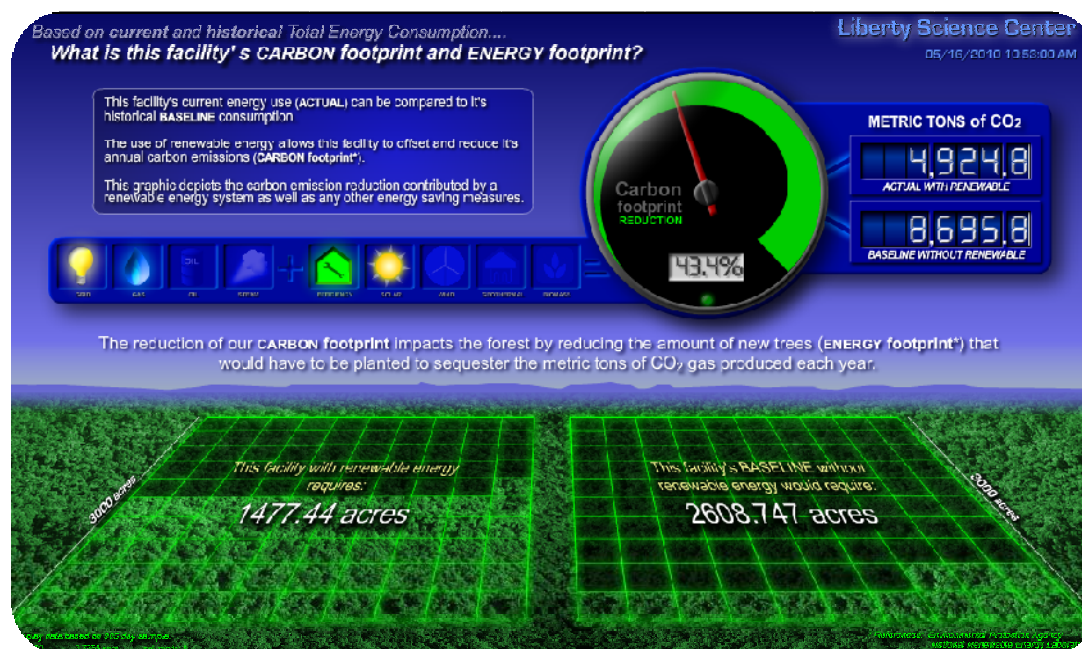
# Real Time Energy & Water Monitoring

- Real-time web-based monitoring of any and all energy and water systems
- Advanced analytics & reporting includes RECs tracking
- Customizable alerts and alarms
- Automated billing for PPA providers
- Minimizing O&M costs with Remote fault diagnosis and remote test capabilities
- Carbon footprint measurement and monitoring



# Carbon Footprint Monitor™

- Real-time view
- Customizable graphics
- Easy to comprehend
- Comparison against baseline



# Thank You

**Realize energy and water savings in real-time**



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