Emerging Trends in Energy Technology Venturing

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Themes

1. Energy Outlook
2. Corporate Venturing
3. BP Ventures
Corporate Venturing
Venturing is used by digital and biotech sectors and increasingly by energy

Venture capital study:
- Start-ups backed by VC since 1970:
  - employ 9% of US private sector
  - accounts for 16.6% of US GDP
- Total VC investment 0.2% of GDP

VC and innovation:
- Venture capital investments have 3 times higher innovation/patent output than R&D
### Market trends: Rise of corporates in energy ventures

**Selected recent corporate cleantech investments**

<table>
<thead>
<tr>
<th>Sector</th>
<th>Venture/Start-up</th>
<th>Corporate investor</th>
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<tbody>
<tr>
<td>Electric vehicles</td>
<td>Reva</td>
<td>Mahindra &amp; Mahindra</td>
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<tr>
<td>Concentred solar power</td>
<td>Brightsource</td>
<td>Alstom</td>
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<td>Electric vehicles</td>
<td>Tesla</td>
<td>Toyota</td>
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<td>Advanced biofuels</td>
<td>Virent</td>
<td>Shell/Cargill</td>
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<td>Solar</td>
<td>Stion</td>
<td>TSMC</td>
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<td>Advanced biofuels</td>
<td>Amyris</td>
<td>Total</td>
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<td>Offshore wind</td>
<td>A2Sea</td>
<td>Siemens</td>
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<tr>
<td>Advanced biofuels</td>
<td>Verenium</td>
<td>BP</td>
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<td>Energy Efficiency</td>
<td>SynapseSense</td>
<td>GE</td>
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<td>Material/Solar</td>
<td>Nanosys</td>
<td>Samsung</td>
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<tr>
<td>Electric vehicles</td>
<td>Bright Automotive</td>
<td>GM</td>
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<tr>
<td>Solar</td>
<td>Solarfun</td>
<td>Hanwha Chemicals</td>
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Market trends: Shift to ‘All Energy’ funds from Cleantech

Shift to “All Energy” funds

Cleantech investments declining

US continue to dominate

Source: Cleantech Group
# Market Trends: New CVC models in Energy

## Creating Partnerships
With other corporates or financial investors

**Energy Technology Ventures**
- Joint venture investment vehicle for GE, NRG Energy, and ConocoPhillips
- Focused across the energy space, from upstream O&G to renewables

**Écomobilité Ventures**
- Joint fund between Total, PSA Peugeot Citroën, Orange, and SNCF
- Joint fund to focus on sustainable mobility across transportation

**aster capital**
- Originally joint CVC fund between Schneider Electric, Alstom, and Rhodia (Solvay)
- Moved to VC fund manager model with corporates as LPs

**EDF and Idinvest** have combined to form Electranova Capital
- €60m fund is open to financial LPs
- Fund an portfolio companies will have access to EDF R&D

## Enriching the Ecosystem

### Competitions
- Running innovation competitions
- Cash or access prizes
- May be specific to industry segment or broader category such as cleantech
- Raises corporate profile in innovation community
- Alternative form of sourcing deal-flow
- Maintains knowledge of new innovations

### Events
- Organization of industry events
- May be either industry wide or more focused on a company’s portfolio and/or immediate ecosystem
- Puts staff at the center of an innovation network
- Builds thought leadership
- Forms informal links with start-ups

### Fund Investments
- Participating as LP’s in sector specific, or geography specific funds.
- May also create new funds and open to others.
- Enhanced access to deal flow.
- Leverages other’s expertise.
- Leverages other’s capital

### Examples
- Shell springboard
- Bosch Venture Forum
- WATEC
- Energy Ventures

**Source:** Cleantech Group
BP Ventures
BP Ventures

- Team active since 2006, housed in BP Alternative Energy with strong linkages across the Group
- Evolved from Alternative Energy Ventures to BP Ventures
- 35 investments with $190m committed, partnering with more than 50 organizations
- Key innovation tool for disciplined experimentation
- Strategic value has primacy, with financial return boundary condition
- Focus on 5 sectors: oil and gas, bioenergy, energy efficiency & storage, carbon management, renewable power
Scanning across multiple sectors today

- Oil + gas
  - Drilling
  - Downhole sensing
  - Unconventional oil
  - Unconventional gas

- Bioenergy + biomaterials
  - Biofuels
  - Lubricants
  - Biochemicals

- Energy efficiency + storage
  - Storage
  - Waste-heat recovery

- Renewable power
  - Solar power
  - Wind power
  - Geothermal power

- Carbon management
  - CO₂ capture
  - Carbon markets
  - CO₂ utilization
An integral part of BP’s innovation ecosystem

Examples of BP’s major research partnerships

Examples of corporate venturing

Internal R&D – 7 major technology centres

- Hull, UK
- Pangbourne, UK
- Sunbury, UK
- Bochum, Germany
- Naperville, USA
- San Diego, USA
- Houston, USA